AFRICAN COMPETITION FORUM

FORUM AFRICAIN DE LA CONCURRENCE

CROSS-COUNTRY STUDY ON **INTERNATIONAL ROAMING CHARGES**

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FOREWARD

It is my pleasure to introduce readers to the collaborative African Competition Forum (ACF) roaming cross-country study. The completion of this collaborative study comes when much of the world has adopted a hybrid approach to work following the Covid19 pandemic. With an increase in remote working possibilities, travel is on the rise and seamless connectivity en route and outside a traveller's home jurisdiction has become paramount. in order to maximise African economic participation in this fluid and digital economy, mobile networks must facilitate connectivity at affordable roaming charges.

However, as the roaming study points out, the regulation of roaming rates across borders presents unique challenges. Given the international nature of mobile roaming and the fact that wholesale roaming costs are set outside the home country's jurisdiction, the reduction of roaming charges by way of regulation will not be effective if only implemented by the regulator of the home country. The national regulator of the home country cannot regulate the wholesale charges set by an operator in a different country. These are the same challenges that led Europe, in 2014, to establish a single market for electronic communications within the European Union and to abolish roaming charges in their RLAH or roam-like-at-home regulation, which is discussed in more detail in the study. Thus, to ensure that international roaming prices are efficient, national authorities must coordinate the regulation of wholesale and retail international roaming charges. The African Continental Free Trade Area ("AfCFTA") presents both the infrastructure, opportunity and political will to achieve such a coordinated outcome for the benefit of all Africans.

To aid this continental conversation, the ACF roaming study can serve as a useful reference document for understanding how mobile sectors operate in the various jurisdictions represented in the report; for understanding the state of competition within these sectors; for an exposition of roaming charges across jurisdictions and for recommendations for appropriate regulations to address concerns identified in the report.

There are eight ACF members that have contributed to this study, namely Angola, Botswana, COMESA, Kenya, Mauritius, South Africa, Zambia and Zimbabwe. The objectives of the ACF roaming study are (1) to understand the market structure, bargaining dynamics, state involvement and the regulatory setting of the telecommunications industry in the jurisdictions of ACF members, with a particular focus on the determination of roaming charges that impact continental trade and tourism; (2) to get an understanding of the competition concerns that exist regarding roaming charges in the different ACF member countries; and (3) to provide a platform for identifying regional and continental priorities in respect of roaming on the African continent. Each chapter contains interesting insights on voice and data roaming, how they compare across jurisdictions and what may have led to the sometimes alarming differences in roaming charges across jurisdictions.

I would like to thank all the contributors, from researchers to writers, editors and designers for producing a comprehensive report which will undoubtedly prove useful for years to come. We trust this collaborative publication from ACF member bodies will contribute to the growing body of knowledge in this area and add weight to the call for an intentional and harmonious approach to regulating international roaming charges.

Ms. Doris Tshepe

CHAIR OF THE AFRICAN COMPETITION FORUM

OVERARCHING CHAPTER

CONTEXT

1. Cross-border interconnection plays an important role in facilitating increased competition in domestic markets and increased integration across borders. High international roaming tariffs have long been viewed as an obstacle to cross-border trade and the free movement of persons.[1] Given the high and increasing levels of mobile penetration in Africa, excessive international roaming tariffs on the continent serve as a penalty on regional cooperation and economic activity. Evidence to date from studies evaluating the European Union's (the "EU's") Roam-Like-At-Home regulation ("RLAH") have demonstrated that the elimination of roaming surcharges has resulted in an increase in total welfare of domestic costumers, driven by consumer surplus gains that far outweigh the reduced profitability of mobile network operators ("MNOs").[2] As of the end of March 2018, the consumption of mobile data by travellers increased fourfold on average and the number of calls increased by a factor of 1.7 on average compared to before the implementation of RLAH.[3] The regulation also brought significant benefits to businesses by triggering gains in productivity and expenditure for business travellers.[4]

2. Given the international nature of mobile roaming and the fact that wholesale roaming costs are set outside the home country's jurisdiction, the reduction of roaming prices by way of regulation will not be effective if only implemented by the regulator of the home country. The national regulator of the home country cannot regulate the wholesale prices set by an operator in a different country. While a national regulator can ensure that retail roaming prices are reflective of the costs faced by the MNOs under its own jurisdiction, it cannot ensure that the costs faced by these domestic MNOs that are levied by other country MNOs – and, ultimately, the place an upward pressure on the retail roaming prices faced by the customers of these MNOs – are efficient and reflect the actual costs of providing roaming services. Thus, to ensure that international roaming prices are efficient, it is imperative that national regulators coordinate on the regulation of wholesale and retail international roaming prices. African heads of state declared that free trading would officially begin on 1 January 2022 under the rules of the African Continental Free Trade Area ("AfCFTA")[5] and the second phase of negotiations are now underway.[6] As such, the need for a coordinated regulatory response to curb roaming surcharges and harmonise the regulation of roaming on the continent has become more pressing.

3. Opponents to regional roaming regulations that apply roaming at home country tariffs typically argue that such regulations would introduce distortions in the market(s) for international roaming services:

   3.1 Overconsumption: if retail roaming prices are set at levels equivalent to national prices, then the price of roaming services would be below the additional cost of providing international roaming services.

   3.2 Harm to the long-run profitability of MNOs: the main effect of the regulations would be a transfer of surplus from producers to consumers, which would discourage investments to achieve lower costs by MNOs.

   3.3 Redistribution of surplus among different consumer groups: frequent travellers would benefit at the expense of non-travellers due to the waterbed effect, where operators raise domestic prices to compensate for the loss of roaming revenues.

1 Canzian, G., Mazzarella, G., Verboven, F., Verzillo, S., and Ronchail, L. (2021) Evaluating the Impact of Price Caps - Evidence from the European Roam-Like-at-Home Regulation. CESifo Working Paper, No. 9303, Center for Economic Studies and ifo Institute (CESifo), Munich. Available at: https://www.econstor.eu/bitstream/10419/245484/1/cesifo1_wp9303.pdf [Last accessed on 24 March 2022]

2 Martin Quinn, Miguel Godinho de Matos, Christian Peukert (2022) The Welfare Effects of Mobile Internet Access – Evidence from Roam-Like-at-Home. CESifo Working Paper, No. 9612, Center for Economic Studies and ifo Institute (CESifo), Munich. Available at: https://www.cesifo.org/DocDL/cesifo1_wp9612.pdf [Last accessed on 24 March 2022]; Canzian, G., Mazzarella, G., Verboven, F., Verzillo, S., and Ronchail, L. (2021) Evaluating the Impact of Price Caps - Evidence from the European Roam-Like-at-Home Regulation. CESifo Working Paper, No. 9303, Center for Economic Studies and ifo Institute (CESifo), Munich. Available at: https://www.econstor.eu/bitstream/10419/245484/1/cesifo1_wp9303.pdf [Last accessed on 24 March 2022]

3 European Commission (2018) Report from the Commission to the European Parliament and the Council on the implementation of Regulation (EU) 531/2012 of the European Parliament and of the Council of 13 June 2012 on roaming on public mobile communications networks within the Union, as amended by Regulation (EU) 2015/2120 and Regulation (EU) 2017/920. Brussels, 12 December 2018. Available at: https://web.archive.org/web/20181214195853/https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=56174 [Last accessed on 5 April 2022]

4 BELTUG (2018). Roam like at home in the business market. October 2018.

5 Ighobor, K. (2022) One year of free trading in Africa calls for celebration despite teething problems. African Renewal, United Nations, 5 January 2022. Available at: https://www.un.org/africarenewal/magazine/january-2022/one-year-free-trading-africa-calls-celebration-despite-teething-problems [Last accessed on 14 July 2022]

6 James, N. (2022). Preparations under way for AfCFTA's long implementation voyage. Engineering News, 4 March 2022. Available at: https://www.engineeringnews.co.za/article/preparations-under-way-for-afcftas-long-implementation-voyage-2022-03-04-1 [Last accessed on 14 March 2022]

4. However, evidence from the EU's RLAH experience demonstrate that these concerns are largely unfounded or have been consciously mitigated by regulatory design. To prevent overconsumption, the RLAH regulations included a fair use policy intended to prevent consumers from engaging in permanent roaming[7] or other abusive or anomalous use of roaming services. While MNOs did experience a net decrease in profits,[8] these losses were dwarfed by the consumer surplus gains,[9] which were estimated at almost double the decrease in profits[10].[11] Furthermore, the RLAH regulations included sustainability derogations, which would allow operators to apply roaming surcharges every year if these operators could demonstrate that they could not afford to implement the roaming provisions. Wholesale price caps were also not set too low to preserve MNOs' incentives to invest in infrastructure, but low enough to compensate smaller operators that suffer the most from retail roaming revenue losses.[12] To date, there has been no evidence demonstrating the so-called a possible waterbed effect in response to the roaming regulations – there has been no observed increase in MNOs' domestic prices following the implementation of RLAH.[13]

5. Given the substantial gains that have been observed in the EU, it is apparent that regional cooperation on the regulation of international roaming has the potential to result in substantial benefits to consumers and businesses in Africa. The inclusion of safeguards such as the Fair Use Policy and the sustainability derogations have proven robust at preventing potential distortions in the relevant markets and the anticipated harms predicted by opponents to the regulations have not come to fruition.

6. The benefits experienced by consumers were disproportionately large for small, open economies with a relatively large number of travellers, but also for those countries that experienced high pre-regulation international roaming prices.[14] There have long been concerns that international roaming prices in Africa are high.

6.1 The dominant operator in Angola, Unitel, charges higher prices for roaming on all services except for calls made locally in the roaming country. Data prices are prohibitive with a flat rate applied in all the countries analysed.

6.2 Botswana is one of the countries with the highest voice roaming charges in Africa, but fares better when it comes to mobile data with the 15th highest data roaming charges out of 33 countries. Mobile operators also tend to include exclusionary clauses in their wholesale roaming agreements with MVNOs preventing these firms from offering competing roaming services.

6.3 Roaming prices for customers originating from COMESA are high, but lower charges are observed for subscribers to MNOs that have an extensive network within the common market, such as Airtel and Vodafone. Countries with special regional or bilateral agreements also experience lower roaming tariffs.

6.4 For Kenyan customers, regional dynamics play a significant role in the cost of roaming. COMESA is the most expensive region, while the EAC is the cheapest region. In spite of Airtel's presence in 15 countries, Airtel Kenya has the highest cost of roaming, while Safaricom has notable lower tariffs for other countries where it has partner operations.

6.5 While Mauritius has some of the lowest roaming tariffs in the region, benchmarking these against international long distance and local tariffs indicate that roaming charges may still be high. The two dominant players in Mauritius charge lower roaming prices, except for mobile data.

7 Permanent roaming is when a consumer subscribes to a foreign operator with low prices and uses their services in their home country

8 Outbound retail profits decreased by 1.4 billion Euros, while wholesale roaming profits increased (due to increased volumes) by 310 million Euros. The net change in profitability was estimated to be a decrease of just over 1 billion Euros.

9 The total increase in consumer surplus has been estimated at almost 2 billion Euros.

10 The total increase in consumer surplus has been estimated at almost 2 billion Euros.

11 Canzian, G., Mazzarella, G., Verboven, F., Verzillo, S., and Ronchail, L. (2021) Evaluating the Impact of Price Caps - Evidence from the European Roam-Like-at-Home Regulation. CESifo Working Paper, No. 9303, Center for Economic Studies and ifo Institute (CESifo), Munich. Available at: https://www.econstor.eu/bitstream/10419/245484/1/cesifo1_wp9303.pdf [Last accessed on 24 March 2022]

12 Canzian, G., Mazzarella, G., Verboven, F., Verzillo, S., and Ronchail, L. (2021) Evaluating the Impact of Price Caps - Evidence from the European Roam-Like-at-Home Regulation. CESifo Working Paper, No. 9303, Center for Economic Studies and ifo Institute (CESifo), Munich. Available at: https://www.econstor.eu/bitstream/10419/245484/1/cesifo1_wp9303.pdf [Last accessed on 24 March 2022]

13 Grzybowski, L. and Muñoz-Acevedo, A. (2021) Impact of Roaming Regulation on Revenues and Prices of Mobile Operators in the EU. CESifo Working Paper, No. 9235, Center for Economic Studies and ifo Institute (CESifo), Munich. Available at: https://www.cesifo.org/DocDL/cesifo1_wp9235.pdf [Last accessed on 6 April 2022]

14 Canzian, G., Mazzarella, G., Verboven, F., Verzillo, S., and Ronchail, L. (2021) Evaluating the Impact of Price Caps - Evidence from the European Roam-Like-at-Home Regulation. CESifo Working Paper, No. 9303, Center for Economic Studies and ifo Institute (CESifo), Munich. Available at: https://www.econstor.eu/bitstream/10419/245484/1/cesifo1_wp9303.pdf [Last accessed on 24 March 2022]

6.6 The analysis of South Africa's international roaming tariffs indicate that South Africa's tariffs are high, but they also vary significantly across the continent dependent largely on the relevant MNO contracted within the visited country. International roaming tariffs are lower when roaming on the network of an MNO in the visited country that belongs to the same corporate group as the South African MNO.

6.7 Lower roaming prices for subscribers of multinational MNOs were also observed in Zambia with a substantial difference between the prices of Airtel and Zamtel. This could also be explained by the much larger size of Airtel in terms of subscribers. Data prices for customers roaming in land-locked countries were relatively high compared to other countries.

6.8 In Zimbabwe, Econet holds a near monopoly position in the market and this is reflected in its relatively low roaming prices, although there is some variation depending on the partner country and service.

7. Various factors were identified in each of the country chapters to explain the observed price outcomes and it is informative to disentangle the effects of each using an econometric exercise. This analysis considers the effect of different regional groupings, whether the home country MNO and roaming country MNO belong to the same group of companies, and whether the home country operator is dominant, where dominance is denoted by a market share of 40% or more in terms of the number of subscribers.

7.1 The retail roaming price for calls made back to the home country are 23.75% higher for countries belonging to the Arab Maghreb Union ("AMU"), 14.07% higher for countries belonging to the Common Market for Eastern and Southern Africa ("COMESA"), 20.93% lower for countries belonging to the East African Community ("EAC"), and 15.11% higher for countries belonging to Economic Community of Central African States ("ECCAS") as compared to countries that do not below to the respective regional communities. Other regional communities did not have a statistically significant effect on roaming prices. If the home country MNO and the roaming country MNO belong to the same group of companies, roaming prices are 63.78% lower compared to when they are not. If the home country operator is dominant, prices are 146% higher as compared to when the home country operator is not dominant.

7.2 The retail roaming price for local calls made in the roaming country is 9.77% higher from countries in the Community of Sahel–Saharan States ("CEN-SAD") and 14.41% lower from countries in the EAC as compared to countries not in these regional communities. Other regional groupings did not have a statistically significant effect on roaming prices. If the home country MNO and the roaming country MNO belong to the same group of companies, roaming prices are 62.99% lower compared to when they are not. If the home country operator is dominant, prices are 204.78% higher than if the home country operator is not dominant.

7.3 The roaming cost for receiving calls in the roaming country are 25.14% higher for countries in the AMU, 7.36% higher for countries in COMESA, and 15.00% higher for countries ECCAS as compared to countries not in these regional communities. Other regional groupings did not have a statistically significant effect on roaming prices. If the home country MNO and the roaming country MNO belong to the same group of companies, roaming prices are 31.35% lower compared to when they are not. If the home country operator is dominant, prices are 193.78% higher than if the home country operator is not dominant.

7.4 The retail roaming price per SMS sent in the roaming country is 17.00% higher for countries in the AMU, 8.65% higher for countries in CEN-SAD, and 12.46% lower for countries in the EAC as compared to countries not in these regional communities. Other regional groupings did not have a statistically significant effect on roaming prices. If the home country MNO and the roaming country MNO belong to the same group of companies, roaming prices are 42.03% lower compared to when they are not. If the home country operator is dominant, prices are 170.01% higher than if the home country operator is not dominant.

7.5 The price for data per MB is 50.98% higher for countries in the AMU, 26.86% higher for countries in COMESA, 29.65% lower for countries in the EAC, and 29.28% higher for countries in the Intergovernmental Authority on Development ("IGAD") as compared to countries not in these regional communities. Other regional groupings did not have a statistically significant effect on roaming prices. If the home country MNO and the roaming country MNO belong to the same group of companies, roaming prices are 135.77% lower compared to when they are not. If the home country operator is dominant, prices are 479.58% higher than if the home country operator is not dominant.

8. The results suggest that there is a clear downward pressure on roaming prices when the home country belongs to the EAC, which reflects the success of the region in controlling international roaming prices. Prices are also depressed when the home country operator of the subscriber and the roaming country operator that the subscriber uses in the visited country belong to the same multinational group of companies. Prices are inflated when the home country operator is dominant, which suggests that dominant firms do not have an incentive to charge their subscribers lower prices for roaming as customers do not respond to price changes in international roaming when choosing their mobile operator and have the ability to secure excess margins without the risk of losing subscribers.

STUDY OBJECTIVES

9. The study has the following objectives:

9.1 To understand the market structure, bargaining dynamics, state involvement and the regulatory setting of the telecommunications industry in ACF member countries, with a particular focus on the determination of roaming charges that impact continental trade and tourism;

9.2 To get an understanding of the type of competition concerns that exist regarding roaming charges in the different ACF member countries; and

9.3 To provide a platform for identifying regional and continental priorities in respect of roaming African continent.

METHODOLOGY AND SCOPE

10. The scope of the study is limited to the provision of international roaming voice and data services between or among African states. The study does not consider fixed-line telecommunications services and does not consider the provision of SMS over SIM-supported mobile devices.

11. International roaming markets are assessed based on MNO pairs within country-to-country pairs. Thus, the study considers voice and data services offered between all MNO pairs for the respective country pairs.

12. The December 2021 roaming charges are used in the study and such data was procured from Tarifica and shared with the participating countries. Tarifica was not able to provide historical data. Prices were collected by Tarifica in the local currency of the MNOs and have been converted to United States Dollars using the average exchange rate during December 2021.

REGIONAL AND CONTINENTAL PRIORITIES

13. A recurring theme across the different country chapters is the stark difference in roaming price outcomes for customers roaming in countries that are members of the EAC versus those that are roaming in other African countries. Similarly, several chapters identified the high cost of roaming when travelling to countries in COMESA. It is apparent that the EAC has made the most progress in reducing and harmonising roaming charges within the region. This was made possible largely by the adoption and successful implementation of the One Network Area (ONA) roaming initiative. While the SADC region has also adopted roaming regulations, progress has stalled and roaming prices for visitors to the region remain stubbornly high. Regional economic communities would do well to emulate the approach undertaken in the EAC to lower roaming prices, as these have proven to be the most effective and it would serve the dual purpose of implementing a harmonised regulatory regime across the continent.

14. The other significant observation from this study is the lower cost for roaming when roaming on a network that is part of the same multinational group as the home country operator, which reflects the bargaining power dynamics at play between MNOs in different countries. This suggests that a regulatory intervention involving the application of non-discrimination rules to wholesale roaming agreements may prove effective in reducing retail roaming prices for stand-alone MNOs. Such an intervention would be particularly effective in reducing the retail roaming prices faced by subscribers of these independent MNOs in countries where multinational MNOs operate.

AGENCY PARTICIPATION

15. Eight (8) ACF member country/regional competitions authorities participated in this study on international roaming charges in Africa. The participating regulators include the Autoridade Reguladora da Concorrência of Angola, the Competition and Consumer Authority of Botswana, the COMESA Competition Commission, the Competition Authority of Kenya, the Competition Commission of Mauritius, the Competition Commission of South Africa, the Competition and Consumer Protection Commission of Zambia, and the Competition and Tariff Authority of Zimbabwe.

STRUCTURE OF THE REPORT

16. The remainder of this study consists of separate chapters prepared by each of the participating regulators on roaming charges within their jurisdictions. Chapter 1 consists of the contributions made by the Autoridade Reguladora da Concorrência of Angola. Chapter 2 contains the contributions prepared by the Competition and Consumer Authority of Botswana. Chapter 3 contains the contributions prepared by the COMESA Competition Commission. Chapter 4 consists of the contributions made by the Competition Authority of Kenya. Chapter 5 includes the contributions prepared by the Competition Commission of Mauritius. Chapter 6 covers the contributions prepared by the Competition Commission of South Africa. Chapter 7 covers the contributions prepared by the Competition and Consumer Protection Commission of Zambia. Finally, Chapter 8 covers the contributions made by the Competition and Tariff Authority of Zimbabwe.

CHAPTER 1: ANGOLA

INTRODUCTION

1. Technology plays a key role in how markets evolve, and cross-border interconnection is no different. Since most of Angola's telecom is access through a mobile phone[1]. International roaming has the potential to bring about benefits to consumers and businesses by allowing for better trade and movement of travellers.

2. However, such potential is highly dependent on the degree of competition. Its absence could lead to higher tariffs which could, in turn, limit regional cooperation, free movement of people and economic activity.

3. In this context, the African Competition Forum´s (ACF) cross country study on "the cost of roaming charges in Africa", presents an important opportunity for the Competition Regulatory Authority to launch the present study in order determine the cost of roaming charges in Angola, in compliance to the Competition Act (approved by Law 5/18, of 10 May).

4. The current study is organized by following sections:

    4.1 An overview of the telecom sector and mobile roaming in Angola;
    4.2 Study objectives;
    4.3 The methodology and scope applied in the report;
    4.4 Value chain;
    4.5 The general state of competition in the sector;
    4.6 Cost of roaming;
    4.7 Competition concerns in the market;
    4.8 Regional and continent priorities;
    4.9 Recommendation to address competition concerns

1 INACOM (2021) Estatísticas de Teledensidade em 2021. Available at: https://inacom.gov.ao/ao/mercado/estatistica/teledensidade/ [Last accessed: 12 April]

AN OVERVIEW OF THE TELECOM SECTOR AND INTERNATIONAL MOBILE ROAMING IN ANGOLA

5. The telecom sector is a key factor of competitiveness, as its performance can transversally contribute to others that can benefit from digital services and innovation to provide products and services at a better quality and even reach new markets (including those outside Angola).

6. In Angola, the market of services provision has significantly expanded after the liberalization started in 2001. In 2019, the Telecom sector was directly responsible for around 1.2% of the National Gross Domestic Product. Nevertheless, there remain signs of sub-optimal performance and room for progress.

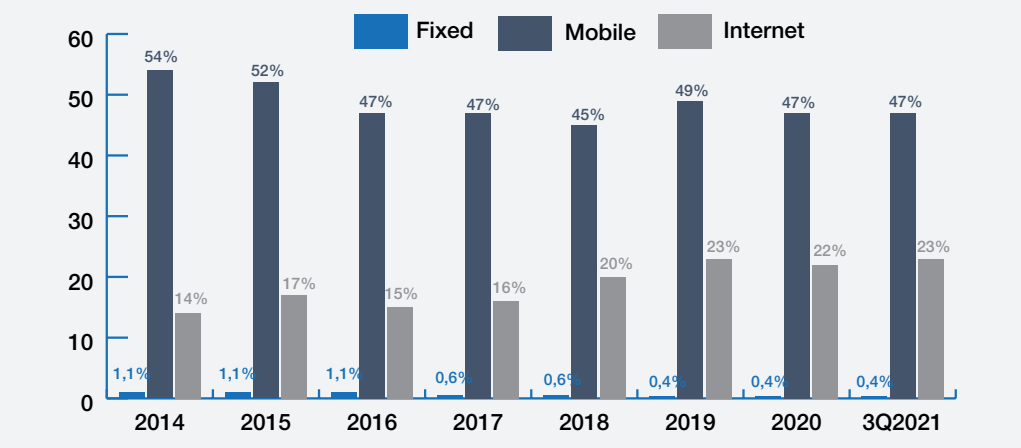
7. Poor infrastructure significantly hinders information and communications technology (ICT) access, though it is improving somewhat. The country's fractured electricity system serves 73.7 percent of the urban population as of 2018 and power outages tend to happen, forcing operators to invest in back-up generators.

8. The Angolan mobile services market is dominated by two first entrant companies, UNITEL and MOVICEL. UNITEL entered the market in 2001, joining state-owned incumbent (but later mostly privatized from another major player, ANGOLA TELECOM), MOVICEL. Together, both these mobile network operators (MNOs) represent the whole market, although a few licensed mobile virtual network operators (MVNOs) are yet to provide such services and provide a competitive balance the market.

9. Although mobile phone is the most used means of communications, only few Angolan households have access to a mobile device as the country only has a mobile penetration rate[2] of 46,51%. The number is even lower than a year before proving that increases in penetration rates have been lagging behind population growth trends.

2 INACOM (2021) Estatísticas de Móvel Celular em 2021. Available at: https://inacom.gov.ao/ao/mercado/estatistica/movel-celular/ [Last accessed: 1 February]

Figure 1: Telecom Penetration Rate, by Service



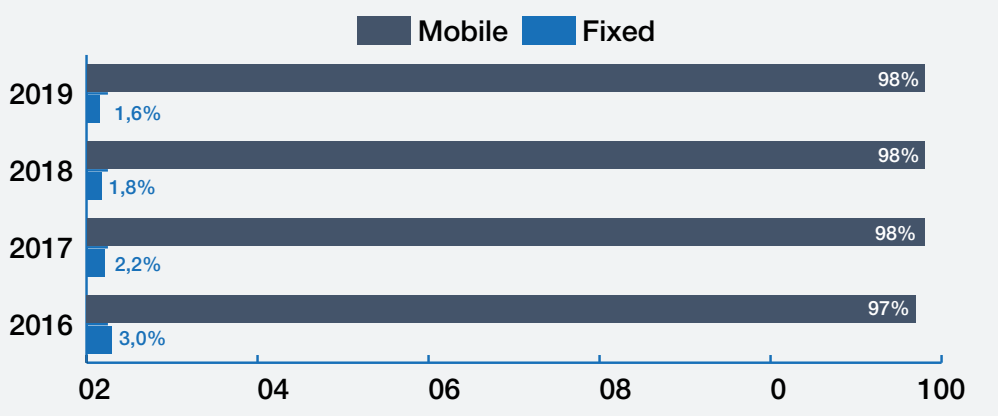
Source: INACOM

10. Mobile phone is not only used for voice communication. It is used to connect most households to the internet – with less than 3% being connected through fixed means.[3]

11. Angolan mobile users can pay for their service on a subscription basis (pre-paid) or contract basis (post-paid). However, post-paid accounts for less than 2% of total subscription with the majority of users preferring pre-paid.[4]

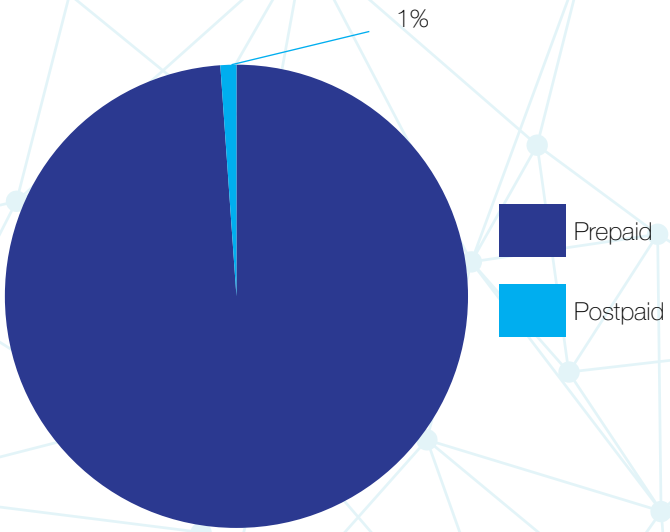
12. The COVID-19 pandemic has contributed to the accelerated shift from voice to data which now stands at 3G (85%) and 4G (13,8%) coverage in 2020.[5][6] There are also talks of 5G implementation in the near future.

Figure 2: Internet Connectivity: Fixed vs. Mobile



Source: INACOM
Notes: Data for the following years not readily available.

Figure 3: Pre-Paid and Post-Paid Numbers, 3Q2021



Source: INACOM

3 Ibid
4 INACOM (2021) Estatísticas de Móvel Celular em 2021. Available at: https://inacom.gov.ao/ao/mercado/estatistica/movel-celular/ [Last accessed: 1 February]
5 The United States Department of Justice (2020) Angola – Freedom on the Net. [Last accessed: 1 February]
6 Groupe Speciale Mobile Association (2017) The Mobile Connectivity Index. Available at: https://www.gsma.com/mobilefordevelopment/resources/mobile-connectivity-index/

13. The Ministry of Telecommunication and Information Technology oversees the policy in the sector, while the Angolan National Institute of Telecommunications (INACOM) is responsible for regulation. In terms of legislation, the mobile sector is governed by the following:

    13.1 Telecommunications Act;
    13.2 Ministry of Posts and Telecommunications Statutes;
    13.3 Rules for access to and provision of public telecommunications services;
    13.4 The Strategic Plan on licensing of electronic communications operators (PERL);
    13.5 The new General Regulation for Electronic Communications (RGCE);
    13.6 The Strategic Plan for Radio Spectrum and Numbering (PEERNUM).
    13.7 Other government policies in the sector include: (i) the National Development Plan (PDN 2018-2022) and (ii) the Telecommunications White Paper.

STUDY OBJECTIVES

14. The main objectives of the present study are:

    14.1 To understand the market structure, bargaining dynamics, state involvement and the regulatory setting of the telecommunications industry in ACF member countries, with a particular focus on the determination of roaming charges that impact on continental trade and tourism.

    14.2 To get an understanding of the type of competition concerns that exist in regard to roaming charges in the different ACF member countries; and

    14.3 To provide a platform for identifying regional and continental priorities in respect of the telecommunications industry.

METHODOLOGY AND SCOPE

15. The methodology applied in the current study follows ACF's guidelines. Thus, the scope of the present study is limited to the provision of international roaming voice and data services over SIM-supported mobile telecommunications devices to consumers in the respective participating countries when travelling abroad to major trade partners and/or member states of regional customs and monetary unions.

16. The study does not consider fixed line telecommunications services and does not consider the provision of SMS over SIM-supported mobile devices.

17. International roaming markets are assessed on the basis of mobile network operator ("MNO") pairs within country-to-country pairs. Thus, the study will consider voice and data services offered between all MNO pairs for each home country-visited country pair, where the home countries are restricted to the countries participating in this study and the visited countries are restricted to the major trade partners and members of regional trade groups.

18. The roaming charges that will be assessed are those rates that prevailed during December 2021. To further ensure consistency between the country chapters, the roaming price data used in each country chapter will be procured collectively from the same source(s).

19. However, it is recognised that it may be necessary to supplement this data with desktop research if the data has any issues or if the dataset is incomplete.

20. Additionally, data collected from previous interactions with the Angolan National Institute of Telecommunications (INACOM) was also consulted for a better understanding of the sector's policies and market structure in regard to the mobile roaming network. However, only intel that was greenlit or publicly made available by the Regulator was used while conducting the study at hand.

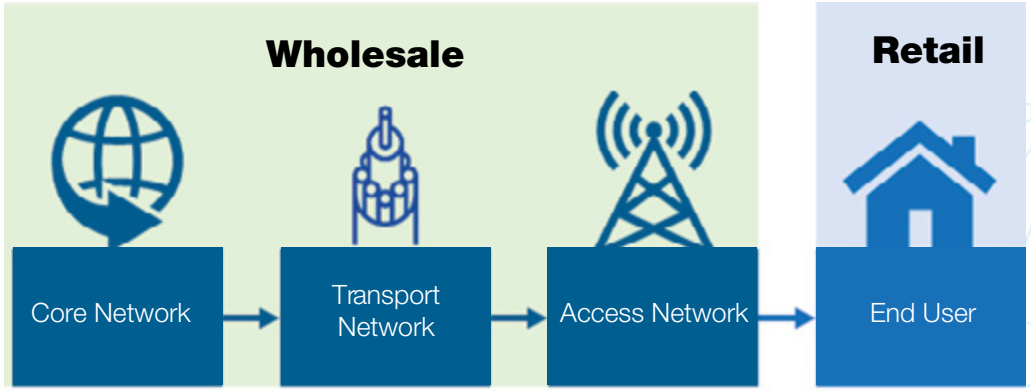
VALUE CHAIN

21. Understanding how the mobile network services operates is key to understanding mobile roaming. The mobile roaming telecommunication sector is essentially split into: (i) wholesale roaming services market and (ii) retail roaming services market[7]. In this specific sector, MNOs tend to be vertically integrated while operating at both levels of the value chain.

22. Wholesale roaming services are services that a mobile network operator of a specific country ("visited operator") offers to a mobile operator licensed in another country ("home operator"), that enables a subscriber of the latter to use the network of the former[8]. At this level, MNOs tend to operate by building radio access physical infrastructure network across a given country. to enable connection across subscribers and network operators through all networks in the supply chain (core[9], transport[10] and access[11]).

7 In this specific case, a "market" is defined by the place where buyers and sellers gather to facilitate the exchange of goods and services.
8 Wholesale roaming services include the provision of access to voice, data, and SMS services in the visited network, to the roaming subscribers.
9 The core network is core of the telecommunication, enabling various services to customers that are interconnected in the access network.
10 The transport network connects the core network to the access network. Such transport can be fiber network, microwave network or even VSAT network.
11 The access network is the radio communication network enabling subscribers to directly connect to their provider.

Figure 4: Mobile Network Value Chain



Source: Recreated by ARC

Figure 5: International Roaming operations

Source: Recreated by ARC

23. At the wholesale level, competition take place in terms of the coverage, quality of signal and technology used directly affecting the quality of services offered in the retail market. In that sense, the absence of coverage in a specific location may limit mobile service usage. The same can be said for quality at signal strength of technology available (for example, 2G, 3G, or 4G) is determinant for the type of experience a subscriber will have when requesting for a service.

24. On the other hand, retail roaming services market includes the services an MNO offers its subscribers, by allowing them to use their subscription in visited countries, while using the network of mobile operators licensed in such countries. In order to provide the best service to their customers, home MNOs will maximise coverage by concluding international roaming agreements with a maximum number of (i) mobile network operators and (ii) of countries where such services exist and are sold to virtually increase coverage.

25. At retail level, competition takes place through the pricing of the retail services and the promotions that each MNO makes to attract customers[12].

26. In simple terms, international mobile roaming[13] can be understood as a service that allows users to use their mobile devices while visiting another country[14].

12 Promotions in the mobile network services market are normally for prepaid plans, not locking in customers into long term contracts and allowing for flexibility between MNOs.
13 According to the Telecommunications Regulation Handbook, roaming is a term used to describe the situation when a subscriber of one mobile operator's service travels outside that service area and obtains connectivity and service from another operator. World Bank (2011), pg. 138. Telecommunications Regulation Handbook. Available at: https://openknowledge.worldbank.org/bitstream/handle/10986/13277/74543.pdf?sequence=1
14 GSMA (2022). International roaming explained. Available at: https://www.gsma.com/latinamerica/wp-content/uploads/2012/08/GSMA-Mobile-roam-

27. The most common international roaming service include, but are not limited to, the following[15]:

    27.1 Voice services: making and receiving calls to or from home country, visited country, while abroad;

    27.2 SMS: sending and receiving text messages to or from home country, visited country, while abroad;

    27.3 Data services: the use of mobile devices to access the internet to download and upload data, while abroad.

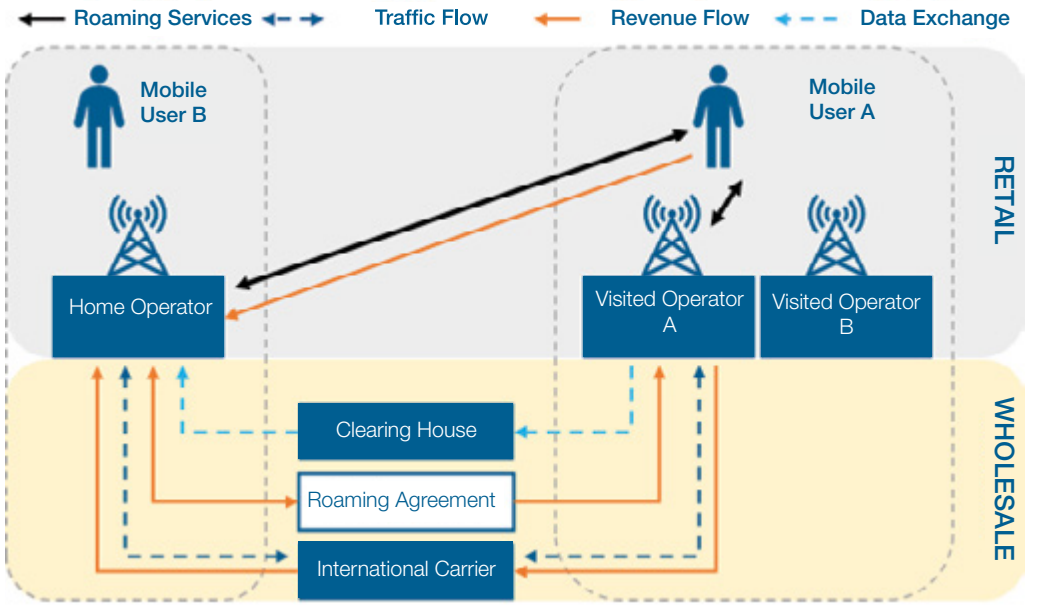
28. In other words, roaming extends home operator's retail voice services' coverage, allowing the mobile user to continue using their home operator phone number and data services within another country. Such coverage extension is enabled by a roaming agreement at the wholesale level between a mobile user's home operator and the visited mobile operator network that addresses the technical and commercial components required to enable the service[16].

29. Whenever a subscriber travels, his device attempts to communicate with the visited country's mobile network. Should the subscriber's Home Network have an agreement with one of the visited networks' MNO, that call is then routed by the visited network towards an international transit network. It is then, the international transit network carrier's responsibility to connect the call.

30. The visited network takes the same opportunity to request intel from the home MNO on the subscriber and creates a temporary record for the authorized device. In turn, the home MNO updates its user's list on the device's location to allow for the appropriate routing of the call made.

ing-web-English.pdf [Last accessed: 29 April]
15 Ibid.
16 Ibid.

Figure 6: Commercial links for International Mobile Roaming[1]



Source: Recreated by ARC

1 For roaming to be possible, Mobile User A's handset must be compatible with the host network. Should different technologies be employed, higher expenses and technical complications may arise for roaming to be accomplished. However, even if network technologies are compatible, roaming can only occur until both operators have a "roaming agreement" in place, in order to establish the technical and commercial basis for roaming implementation. World Bank (2011), pg. 138. Telecommunications Regulation Handbook. Available at: https://openknowledge.worldbank.org/bitstream/handle/10986/13277/74543.pdf?sequence=1

31. The figure best explains the process[17]: a subscriber (Mobile User A) in Angola has an international roaming service with its home operator (Home Operator) and is automatically connected to a visited network (Visited Operator A) in the visiting country while roaming through the roaming agreement. Mobile User A is automatically granted access to Visited Operator A's network when he arrives the visited country by an exchange of data between Home Operator and Visited Operator A, where Visited Operator A confirms Mobile User A is a roaming customer with Home Operator. As such, the wholesale roaming agreement between Visited Operator A and Home Operator determines the data provision to the visited operator.

17 Ibid.

32. Home Operator normally has wholesale roaming agreements with more than one MNO in the visited country, which in this case is Visited Operator A and Visited Operator B, another operator in the same country. As a result, Mobile User A can call home using either visited operator networks, since both use international transit services to carry back to the Mobile User A's home country.

33. In concept, roaming is similar to a call forwarding arrangement: (i) callers use their habitual phone number, (ii) the home network hands the call over to the host network, and (iii) the host network passes the call to the customer's mobile phone.[18]

34. Commercial-wise, roaming charges are normally much higher than termination rates within the home operator's area. Subscribers normally pay a fee that is made up of roam plus usage charge.[19]

GENERAL STATE OF COMPETITION IN THE SECTOR

35. This section discusses the state of the competition in the Angolan mobile services market regarding market structure, market shares, and barriers to entry.

MARKET STRUCTURE

36. The Angolan mobile services market is made up by two operators licensed by the regulator, INACOM: they are UNITEL S.A. and MOVICEL Telecomunicações S.A. Both operators are the oldest MNOs in Angola having both entered the market in 2001. Although some existing operators hold MVNOs services licenses[20], they have yet to execute such licenses as they prefer to offer other services.

37. Both MNOs either own or control all elements needed to deliver the services to the end user: radio spectrum, infrastructure, billing, and customer care services.

38. For international connectivity, the Angolan network, which operates by fibre optics submarine cables, uses the following routes that also provide redundancy:

    38.1 the West Africa Cable System (WACS) consortium - connecting South Africa to Europe;

    38.2 the South Atlantic 3 (SAT3/WASC) – also connecting South Africa to Europe; and

    38.3 the South Atlantic Cable System (SACS) – connecting Angola to Brazil. Both UNITEL and MOVICEL are shareholders of Angola Cables, the main fibre optic telecommunication system operator (on WACS and SACS).

UNITEL S.A.

39. UNITEL is a private Angolan mobile phone which entered the market as a joint-stock company in 2001 and is the major provider of mobile services (voice, data, and SMS) with nationwide coverage. Contracts are available as post-paid and pre-paid and company also provides mobile roaming services to incoming and outgoing travellers through various roaming agreements, with the most accessible in Africa being to Mozambique, South Africa, and Nigeria[21].

40. UNITEL is mostly owned by Angolan state-owned oil company Sonangol, which holds 75% of its shares having bought it from private companies in recent years. The company owns and controls all elements needed to deliver the services to the end user: radio spectrum, infrastructure, billing, and customer care services. As of 2021, UNITEL had around 13 million mobile services customers.

18 Ibid.
19 Ibid.
20 Source: INACOM.

21 UNITEL (2022). Tarifários de Roaming. Available at:https://unitel.ao/particulares/roaming/estatistica/movel-celular/ [Last accessed: 25 April]

MOVICEL TELECOMUNICAÇÕES S.A.

41. MOVICEL, the smaller of the two Angolan mobile phone companies, was originally funded in 2003 as a subsidiary of the state-owned ANGOLA TELECOM. Just as its competitor, the company is the second major provider of mobile services (voice, data, and SMS). Contracts are also available as post-paid and pre-paid and the MOVICEL also provides mobile roaming services travellers through various roaming agreements, with the most accessible in Africa being to Namibia and South Africa[22].

42. While the company's shares have been mostly sold to various private companies, around 20% remain as state-owned. Just as its competitor, MOVICEL owns all elements needed to deliver the services to the end user: radio spectrum, infrastructure, billing, and customer care services. As of 2021, MOVICEL had around 1,4 million mobile services customers, a sharp decrease from its earlier numbers.

MARKET SHARES

43. The Angolan mobile network services market is led by UNITEL, which holds 90% of the market with 13 million subscribers, in the market's duopoly. The remaining 10% is held by MOVICEL 1.4 million subscribers.

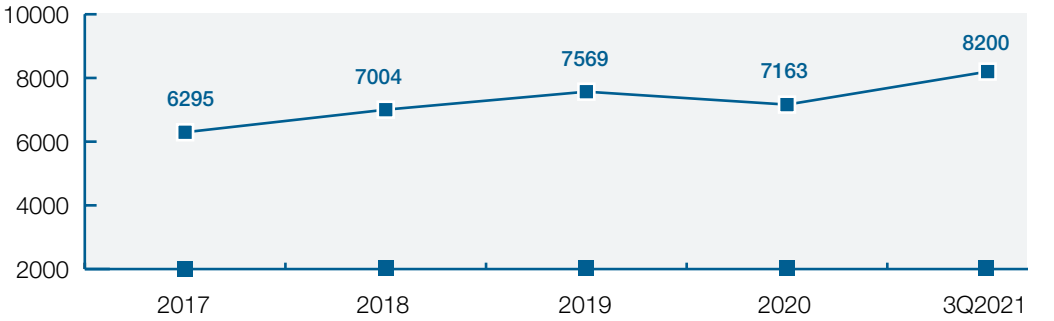
44. From 2017 to 2021 UNITEL's market share increased from 75% to 90%, whereas MOVICEL's market share declined from 25% to 10%.[23] Table 1 shows the market share of the two mobile network operators in terms of mobile subscribers in 2021.

Table 1: Market shares of MNOs in Angola

	2017	2018	2019	2020	2020
MOVICEL (market share %)	25%	25%	18%	14%	17%
UNITEL (market share %)	75%	75%	82%	86%	83%
Total Subscribers (Millions)	13.32	13.32	13.28	14.83	14.64

Source: INACOM (HHI calculated by ARC)

Figure 7: MNO's Herfindahl-Hirschman Index



45. During the same period (2017 – 2020), the industry's Herfindahl-Hirschman Index[24] (HHI) increased from 6295 to 8200, well-above the 2500 mark considered by authorities, indicating a highly concentrated market.

46. The retail market structure in the Angolan telecom market is closely related to the dynamics concerning investments in and access to infrastructure by MNOs.

47. As first entrants in the market, for example, UNITEL and MOVICEL (through its shareholder, Angola Telecom) were able to build networks with national coverage. This results in an advantage that could force future entrants either use the incumbents' infrastructure or invest on new ones to provide their services. Either choice would result in an increase in initial higher costs and prices and a resulting difficulty to compete with incumbents, who already own infrastructure with coverage and a stable quality.

BARRIERS TO ENTRY

48. As analysed above, the almost non-existence of new entries (MNOs and MVNOs) in the Angolan mobile market suggest that, the following barriers may have contributed to the observed levels of high concentration:

22 MOVICEL (2022). Roaming. Available at: https://movicel.co.ao/roaming/ [Last accessed: 25 April]
23 INACOM (2021) Quotas de Subscrição. Available at: https://inacom.gov.ao/ao/mercado/estatistica/quotas-de-subscricao/ [Last accessed: 3 February]

24 Markets in which the HHI is between 1,500 - 2,500 points are considered to be moderately concentrated. Those markets with an excess of 2,500 points are considered to be highly concentrated. Available at: https://www.justice.gov/atr/herfindahl-hirschman-index

48.1 Cost of entry: Entrance in the market is expensive as the CAPEX needed to build a robust enough network to compete is enough to deter challenger MNOs. Adding to the equation, is the matter of guaranteeing investment payback and still being able to compete in price and volume with incumbents that benefit of historic access to consumers and eventual network effects (which would, in itself, limit costumer switching)

48.2 Spectrum: Transmission from the base station or tower to the customer's device requires spectrum. Since MNOs use different bands of spectrum to offer services such as 3G and 4G, new entrants can be kept out of the market. The regulator, INACOM, plans to begin the spectrum auctions, but this has been delayed.

48.3 Incumbents' strategic response: The incumbent MNOs tend to have the financial and technical resources and customer relationships to ward against challengers. The more vertically integrated they are, the harder it is to compete against mechanism that might include advertising, increase of switching costs and even promotions not easily replicated by challenger MNOs.

48.4 Regulatory and policy barriers: The lack of effective regulatory enforcement is a concern in the Angolan mobile market. Specifically, non-enforcement of infrastructure sharing can be limiting to challenger MNO's reach and growth. Where access is possible, due to the low penetration rates of the market, it tends to not be financially viable in the short run, to compensate for the high costs.

REGULATORY AND LEGISLATIVE FRAMEWORK

49. In Angola, the national regulator for the electronic communication industry, INACOM, was established in 1999 as an independent institution under the Ministry of Telecommunications. In addition to regulating and monitoring telecommunications, it is responsible for the allocation, management, and taxation of bandwidth.

50. There are two types of authorization for public services provision:

50.1 Concession: which is awarded through a tender or directly to a specific entity. Concessions can be awarded as a global unified title (Título Global Unificado, TGU), allowing its holder to provide any electronic communications service – including fixed, mobile, cable television, etc. - for a period of 15 renewable[25] years; and

50.2 License: issued by the regulator, upon request of an interested party. Licenses must be technologically neutral and can be a multiservice nature[26] (Licença Multisserviços, LMS), being issued solely for the provision of the services identified by the applying entity, for a period of 10 renewable[27] years.

51. While there are many licenses issued (for various types of services), some of which inactive, they do not allow for the provision of mobile roaming. In order to provide mobile roaming services, an operator requires a global unified title – at the moment granted to the three major market players: ANGOLA TELECOM, MOVICEL and UNITEL - which allows for access to scarce resources: such as number and spectrum. Access to both is not simple and is regulated by INACOM.

52. In terms of legislation, the mobile sector is governed by the following:

DECREE Nº. 3/04, JANUARY 9 – TELECOMMUNICATIONS PUBLIC SERVICES PRICING REGULATION

53. This document establishes the pricing regime to be adopted by public operators, their agents, and intermediators, both at the service provision and at the public network interconnection level.

25 Sub-concessioning is allowed the 3rd year after the signing of the contract. In case of the use scarce resources (spectrum or numbering), such sub-concession is subject to the regulator's evaluation and green light. Vieira de Almeida (2016) New Regulatory Framework for Electronic Communications in Angola. Available at: https://www.vda.pt/xms/files/v1/Newsletters/en/2016/Flash_VdAtlas_-_New_Regulatory_Framework_for_Electronic_Communications_in_Angola_-_PERL_and_RGCE.pdf [Last accessed on 19 January 2021]

26 Ibid.

27 Can be transferred at any time, with regulator's prior authorisation. Vieira de Almeida (2016) New Regulatory Framework for Electronic Communications in Angola. Available at: https://www.vda.pt/xms/files/v1/Newsletters/en/2016/Flash_VdAtlas_-_New_Regulatory_Framework_for_Electronic_Communications_in_Angola_-_PERL_and_RGCE.pdf [Last accessed on 19 January 2021]

54. The Decree also stablishes a Telecommunication Tariff Unit (UTT)[28], a common tariff unit used by telecommunication companies in Angola to quote the charges.

55. The Telecommunications Public Services Pricing Regulation also institutes the Telecommunications' Pricing Committee (CPT), that acts as a consultant to the regulator in matters of pricing definition and adjustments; and establishes prices caps and price premiums applicable to interconnections. In accordance with the Decree pricing regulation is and should be applicable to segments with no effective competition (considering service cost structure of each operator's fair margin)

LAW Nº. 23/11, JUNE 20 - ELECTRONIC COMMUNICATIONS AND INFORMATION SOCIETY SERVICES LAW

56. Approved by the Angolan State with aim of promoting ICT development in a harmonious, coordinate, and sustainable manner. The document also aims to ensure that Angolan ICT play a fundamental goal in guaranteeing citizen's access to information with transparency in the public sector.[29]

57. The Electronic Communications and Information Society Services Law also set broader goals of competitiveness in the sector and revokes Law nº. 8/01 of May 1 – Basic Law of Telecommunication.

PRESIDENTIAL DECREE Nº. 166/14, JULY 10 – INFRASTRUCTURE SHARING REGULATION

58. Approved to establish clear cut, precise and standardized procedures for infrastructure sharing with national application with the aim of:

    58.1 Promoting investment rationalization and avoid unnecessary redundancies;

    58.2 Incentivizing synergies amongst operators and owners of infrastructure capable of network storage;

    58.3 Increasing network coverage to rural areas;

    58.4 Increasing efficiency that would result in better quality from network sharing;

    58.5 Ensuring a better price to quality ratio for the end-consumer;

    58.6 Promoting better use of essential facilities with the aim of more social integration and economic development as a result.

59. This regulation applies to passive infrastructure sharing and ensures a general principal of free negotiation between Parties. It does, however, allow for INACOM's intervention: (i) in unreasonable sharing refusal, (ii) for sharing imposition, or (iii) to act as mediator in dispute cases. It also establishes an independent body, INFRACOM (Comité Coordenador de Infraestruturas de Comunicações Electrónicas) to control and enforce regulation.

PRESIDENTIAL DECREE Nº. 95/16, MAY 10 – THE STRATEGIC PLAN FOR RADIO SPECTRUM AND NUMBERING (PEERNUM)

60. This document takes a deeper look into the importance of radio spectrum and numbering as scarce resources in the quality improvement of mobile and fixed services based on the integrated and economic development of the country; taking into account development stage of the telecommunications sector that is based on liberalization and competition promotion.

61. PERNUUM is then established with the main goal of harmonizing scarce resources usage based on a management that allows for the sustainability of all sectors' activities (security services, defence, transportation, meteorology, oil sector and others) that depend on such resources.

28 In October 2016, the UTT was raised to 10 Kwanzas from the existing rate of 7.2 Kwanzas – a level that stayed fixed since 2005. Such tariff readjustment was attributed to the increase of inflation rates in Angola.

29 Assembleia Nacional (n.a.). Lei das Comunicações Electrónicas e dos Serviços da Sociedade da Informação (Lei nº. 23/11). Available at: https://web.archive.org/web/20190112025516/https://www.mtti.gov.ao/download.aspx?id=457&tipo=legislacao [Last accessed: April 15]

PRESIDENTIAL DECREE Nº. 108/16, MAY 25 – THE NEW GENERAL REGULATION FOR ELECTRONIC COMMUNICATIONS (RGCE)

62. This document revokes the Presidential Decree N. º 225/11 of August 15, and aims for:

    62.1 The promotion of competition at the telecommunications at the network and services supply level;

    62.2 The protection of subscribers' economic and social interests;

    62.3 The assurance of the existence, availability of network quality and services in all areas of the country;

    62.4 The protection of user's privacy and personal data;

    62.5 The assurance of availability and quality of international connections.

PRESIDENTIAL DECREE Nº. 122/16, JUNE 9 – THE STRATEGIC PLAN ON LICENCING OF ELECTRONIC COMMUNICATIONS OPERATOR (PERL)

63. The document aims at promoting a unique licencing regime to operators willing to access the market. Therefore, operators can simultaneously become information society services providers and television channel distributors.

64. The document also provides more information on the approval of a Rural Telecommunications National Plan, which would promote an increase in coverage to rural areas.

PRESIDENTIAL DECREE Nº. 181/19, MAY 28 – NATIONAL NUMBERING PLAN (PNN)

65. The PNN was established to respond to the necessity of establishing clear cut objectives to ensure efficient use and management of numbering as a scarce resource, due to its growing strategic importance.

66. The document is essentially an update on the older PNN that takes mobile and internet subscription growth and the advent of newer technologies into account. Thus, the Decree aims to make sure transparency, efficiency and equity are values that are taken into consideration in the act of number allocation.

67. Some other key government policies in sector include: (i) the National Development Plan (PDN 2018-2022) and (ii) the Telecommunications White Paper.

COST OF ROAMING

68. This section discusses the cost of roaming for each of the Angolan MNO, by assessing costs for voice, SMS, and data. The dataset used in the analysis was collected by Tarifica, a global provider of telecom pricing, plan, and device data. For all 54 African countries, Tarifica's procured publicly available data for December 2021, taking into account both pre-paid and post-paid customers.

69. All prices were collected in local currencies and converted to Angolan Kwanzas using the average exchange rate prevailing in December 2021[30]. In the absence of historical dataset, pricing trends could not be assessed.

COST OF VOICE

70. MNO customers tend to use mobile services when travelling to communicate either back home or at the visiting country. Since there are different calling options available with varying implications on costs supported by the MNO, for the purpose of the analysis, the cost of roaming for voice services is broken down into:

    70.1 Calls made from the roaming destination back to the home country;

    70.2 Calls made within the roaming destination; and

    70.3 Incoming calls in the destination.

30 Sources include the National Bank of Angola (BNA) with online currency converter such as OANDA serving for additional support.

71. Home country in the analysis is Angola and the visited countries include both operators' most attractive African nations[31] (Mozambique, Namibia, Nigeria, and South Africa)[32], the SADC region and Rest of Africa.

CALLS TO ANGOLA

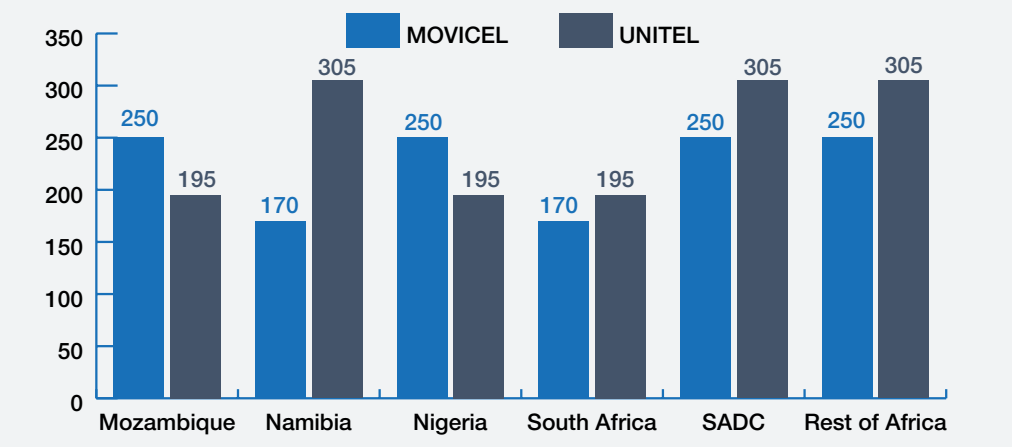
72. The graph below shows the rates of calling to Angola (home country) when roaming for the selected list of countries in 2021.

73. As reflected in the graph above, with the exception of South Africa, the average prices of calls to Angola range from 170 Kwanzas to 305 for preferential nations, and from 250 Kwanzas to 305 Kwanzas in other nations in Africa.

74. UNITEL presents the highest prices in all cases with 305 Kwanzas per minute for all countries, with the exception of Mozambique, Nigeria, and South Africa where it costs around 195 Kwanzas per minute to call. It should also be noted although UNITEL calls are more expensive, out of the two MNOs, they are cheapest for calls placed in Mozambique and Nigeria.

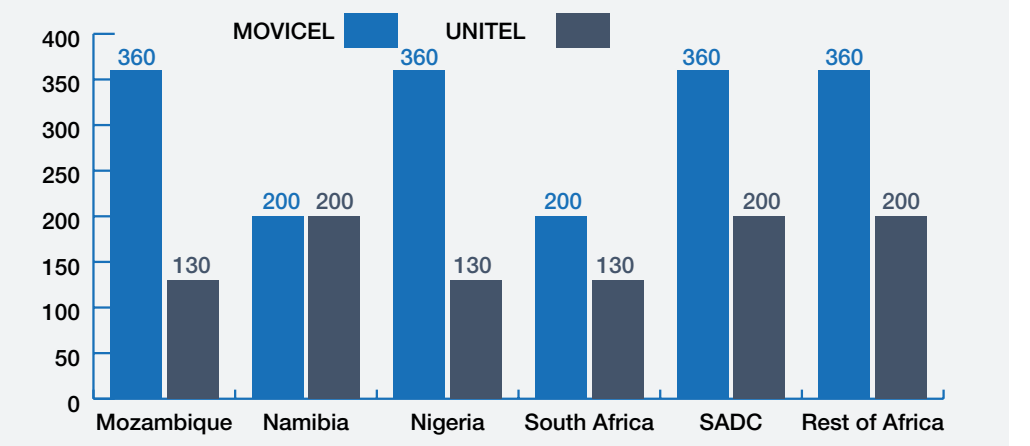
75. On the other hand, MOVICEL presents the cheapest prices for calls placed in all African countries, costing around 250 Kwanzas per minute, with the exception of Mozambique and Nigeria. Aside from Namibia and South Africa, where MOVICEL provides the most attractive prices with 170 Kwanzas per minute, MOVICEL's prices are fixed at the same rate for all other countries.

Figure 8: Calling Rate from a selection of African Countries to Home Country (KZ/Min.)



Source: Tarifica, MOVICEL & UNITEL

Figure 9: Calling Rate within a selection of African Countries (KZ/Min.)



Source: Tarifica, MOVICEL & UNITEL

31 Preferred nations tend to result from agreements between local and foreign operators. Such agreement's reason could vary from traffic, demand, or strategic positioning from MNOs.

32 In its roaming services, Movicel lists Namibia and South Africa as its most attractive African destinations, rates-wise. On the other hand, UNITEL highlights Mozambique, Nigeria, and South Africa as its most attractive set of destinations in Africa.

CALLS WITHIN ROAMING COUNTRY

76. The graph below shows the rates of placing calls within the roaming country when roaming for the selected list of countries in 2021.

77. As reflected in the graph above, with the exception of Mozambique and Nigeria for UNITEL, Namibia for MOVICEL, and South Africa for both, the average prices of calls placed within the selected African countries do not vary for both networks. They do, however, follow an opposite pattern from prices of calls back to the home country.

78. MOVICEL presents the highest prices in all cases with 360 Kwanzas per minute for all countries, except for Namibia and South Africa where it costs around 200 Kwanzas per minute to call.

79. On the other hand, UNITEL offers the cheapest prices for calls placed within all the African countries, costing around 200 Kwanzas per minute, with the exception of Mozambique, Nigeria, and South Africa where it is even cheaper to make a call with costs around 130 Kwanzas per minute.

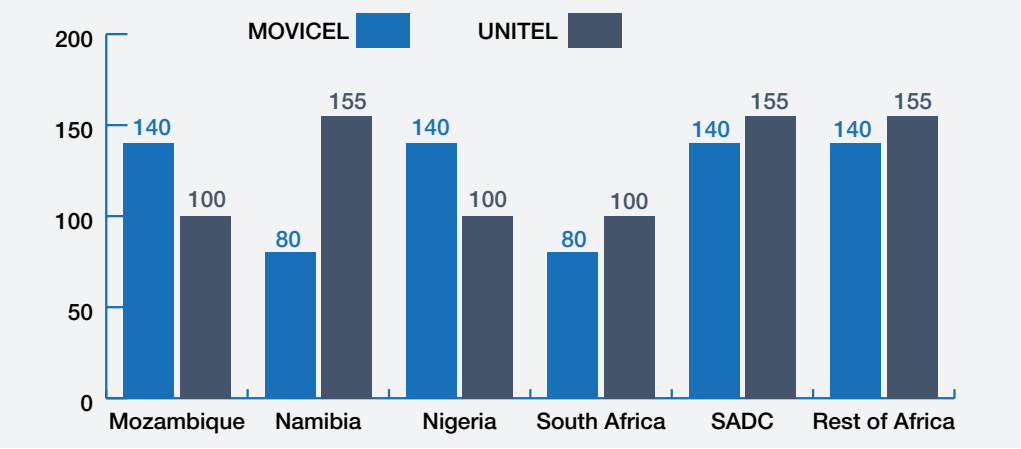
80. Finally, it should also be noted that although MOVICEL's calls placed within the visited African countries are more expensive in all cases, both MNOs price such calls at the same price range (200 Kwanzas) in Namibia.

INCOMING CALLING RATE

81. The graph below shows the rates of receiving calls when roaming for the selected list of countries in 2021.

82. As displayed in the graph above, just as with the other calling options, the trend continues as prices for both MNOs are fixed in African countries, with the exception their Mozambique, Namibia, Nigeria, and South Africa, where incoming calling rates are far more attractive.

Figure 10: Incoming calling rate from selected African Countries (KZ/Min.)



Source: Tarifica, MOVICEL & UNITEL

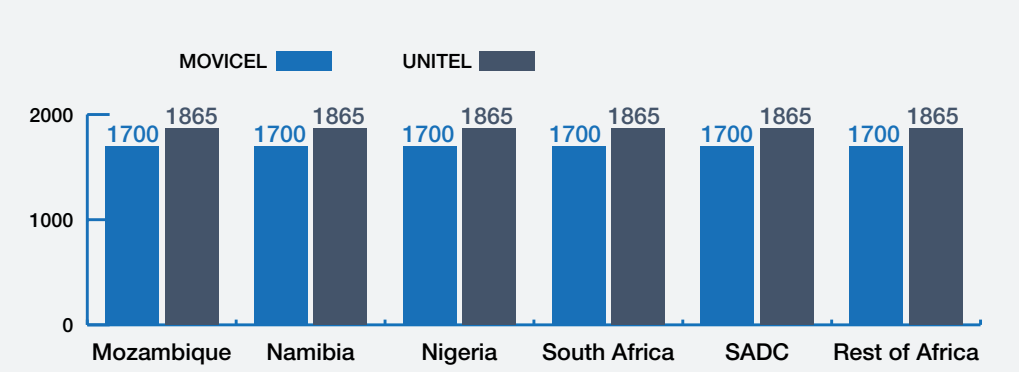
83. UNITEL's customers pay the highest prices in all cases with 155 Kwanzas per minute for all countries, with the exception of Mozambique and Nigeria where it costs around 100 Kwanzas per minute for incoming calls. It should also be noted although UNITEL calls are more expensive, out of the two MNOs, they are cheapest for calls placed in Nigeria, with incoming call costing around 100 Kwanzas in comparison to MOVICEL's 140 Kwanzas per minute of call.

84. On the other hand, MOVICEL offers the cheapest prices for incoming calls most African countries, costing around 140 Kwanzas per minute. In South Africa, costs are even cheaper with incoming calls costing around 80 Kwanzas per minute.

COST OF DATA

85. With the advent of social media and over-the-top (OTT) applications, data is of an increasingly importance and mobile phones (especially feature phones and smartphones) are the fastest way of accessing such services, especially in the absence of fixed means.

Figure 11: Average price of Data Roaming across the selected African Countries (KZ/MB)



Source: Tarifica, MOVICEL & UNITEL

86. Since data services are normally measured in kilobytes (KB) or megabytes (MB), in reference to the volume of data that is transmitted, the roaming data rates in this specific analysis are compared by MB.

87. In line with methodology, the roaming data rates compare both operators' rates in their most attractive African nations (Mozambique, Namibia, Nigeria, and South Africa), the SADC region and the Rest of Africa.[33]

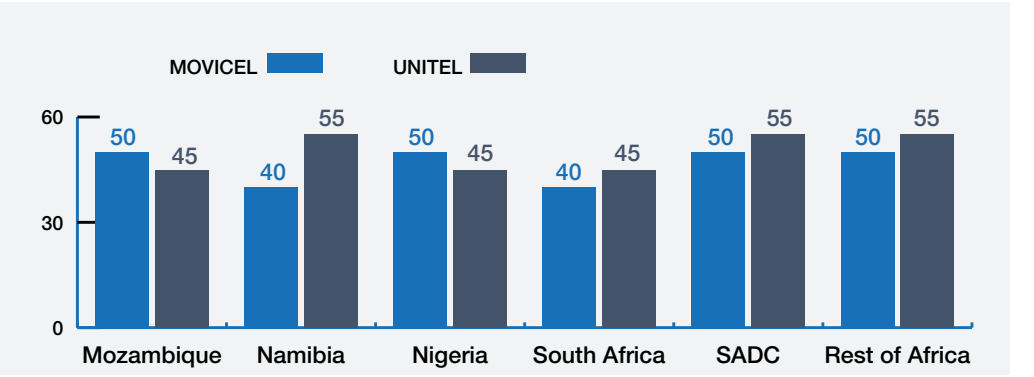
88. The graph below compares the rates of data roaming across the selected list of countries in 2021 for both networks.

89. The graph above describes the average price per MB charged by the Angolan MNOs across the selected list of countries.

90. Data rates are fixed in both MNOs, so Angolans travelling abroad will pay the same amount charged by their MNO when data roaming, regardless of their destination in Africa. Of the two operators, UNITEL charges the highest for data at 1865 Kwanzas per MB and MOVICEL the lowest at 1700 Kwanzas per MB, both rates priced closely at an average of 1783 Kwanzas per MB.

33 As explained in the notes included in Chapter 7.1.

Figure 12: Roaming SMS prices across the selected African Countries (KZ per SMS)



Source: Tarifica, MOVICEL & UNITEL

COST OF SHORT MESSAGE SERVICES (SMS)

91. As stated above, the rise of social media OTTs present a declining interest to SMS, which in turn also implies a smaller competitive edge for MNOs. However, instances may require the use of SMS for communication, such as when in areas with low data penetration rates or high rates for the internet usage.

92. This section analyses roaming prices for SMSs across a selection of African countries for each network. In accordance with the methodology, the roaming SMS rates compare both operators' rates in their most attractive African nations, the SADC region, and the Rest of Africa.[34]

93. The graph below compares the rates of data roaming across the selected list of countries in 2021 for both networks.

94. The graph above presents the average price for an SMS as charged by the Angolan MNOs when roaming in one of the selected list of destinations. UNITEL has the highest SMS prices charged by an Angolan MNO at 55 Kwanzas per message followed by MOVICEL with at 50 Kwanzas per message. In all cases, there are no additional charges per SMS received.

34 As explained in the notes included in Chapter 7.1.

95. Aside from Mozambique, Namibia, Nigeria, and South Africa, both MNOs have uniform prices across all African countries. In Mozambique, Nigeria, and South Africa, UNITEL charges its cheapest prices at 45 Kwanzas per message.

96. On the other hand, MOVICEL offers its best prices in Namibia and South Africa, charging around at 40 Kwanzas per SMS.

COMPETITION CONCERNS IN THE MARKET

97. According to the analysis of the market structure, regulatory framework and the cost assessment made in the sections above, the following competition concerns have been identified:

97.1 Roaming prices within visiting country vs. calls back home: Angolan travellers will experience a difference set of charges when placing calls, depending on which operator they use. For MOVICEL users, roaming charges will be more expensive for calls made within visiting countries than for made back to the home country. On the other hand, UNITEL users will experience higher prices for calls made back home than for calls made within visiting countries.

97.2 Highest prices by incumbent: UNITEL is the biggest company in the market, with a nationwide coverage and an increasing share of subscribers, at 90%. However, UNITEL presents the highest prices for all services with the exception voice calls made within visiting countries, despite having a big local presence/ coverage and the possibility of closing better deals for its customers travelling abroad (and others coming in).

97.3 Data prices: when compared to the other services in the analysis, data prices are around 4 times more expensive than the most expensive rate of voice call, with no spread in terms of cost, regardless of the visiting country. In the era of data driven demand, voice communication shifts to over-the-top applications and the advent of e-commerce, the present data roaming rates could be prohibiting.

97.4 Pricing as a result of market features: in the analysis, pricing for most regions were fixed with little exceptions. Since entry in the market depends on a concession license, such pricing rigidity could result from the following market characteristics: small number of suppliers/carriers (wholesale level), the existence of only two operators (retail level) that leads to an increasing concentration level, structural and regulatory barriers-to-entry that do not drive competition.

97.5 Transparency: since mobile devices automatically select and log into the first network available, customers are not aware of eventual roaming agreements between their MNOs, thus conducting to high and unpredictable charges as MNOs do not have the tendency of publishing their own list of partners at given locations.

CONCENTRATION

98. As mentioned previously, the mobile segment is highly concentrated. The existing duopoly consisting of MOVICEL and UNITEL are the only operators in the market, ever since its liberalization back in 2001.

99. In particular, UNITEL's market share has risen from 75% in 2019 to 90% in 2021, according to recent Regulator's data. During this same period, the industry's HHI has continually been on the rise, increasing from 6295 to 8200, always above the 2500 mark, as indication of a highly concentrated market and an ongoing decrease in competition.

100. Thus, although a mobile segment's characteristic, the existence of few players in the market could also signal a competition concern, especially if compared to the degree of services' penetration rate (as exposed in earlier in the chapter. On one side it could represent a consequence of barriers to market access by potential competitors. On the other, it could lay the foundation for potential coordination between existing operators.

101. Whichever the case, such duopoly could compromise roaming services users as they would tend find fewer alternatives to their operators and the prices they'd set.

REGIONAL AND CONTINENTAL PRIORITIES

102. From the sections above, a number of conclusions can be made on regional and continental concerns and priorities.

103. Consumers travelling from Angola to various parts of Africa will experience higher costs, in comparison to those back home for the various services. On the minimum, calling prices per minute are 5 times more expensive than for calls at home since internal calls can cost less than 40 Kwanzas per minute while roaming charges can cost an average of 200 Kwanzas per minute. SMS prices are closer, costing around 2 to 3 times more than its prices at home – as SMS cost less than 14 Kwanzas locally and an average of 48 Kwanzas in roaming-mode. Data, on the other hand, is the most expensive, costing more than 100 times more, regardless of location or MNO with little to no variation in roaming charges – as local data usage will not cost more than 5 Kwanzas per MB, but data roaming in any African country will generally cost an average of 1783 Kwanzas per MB.

104. However, specific locations do tend to cost less than others as is the case of countries such as Mozambique, Namibia, Nigeria, and South Africa. These preferential roaming rates could reveal the impact resulting from roaming agreements and what effect the latter could have on businesses, travelling experiences and tourism.

105. This could also indicate for a potential gain from specific regional regulation on tariffs as to attract and bring countries closer, with agreements both at the wholesale level and retail. However, regulation must be coordinated as to avoid resulting in operational inefficiencies and MNOs not being incentivised to provide roaming services at prices below their ultimate costs and limit profitability.

106. Should efficiency be guaranteed at all levels of the value chain as to collectively offset roaming costs in the regions, consumer benefits resulting from regional regulation would include local rates for outgoing calls, free incoming call rates, and the ability to recharge / top-up credit with local cards at local currency (pre-paid).

107. However, uniform regulation and policy measures might fail to address competition concerns as they cannot consider market conditions at the local levels. As such, it is important to address such market conditions at the local level in order to avoid increasing market failure or introducing newer concerns.

RECOMMENDATIONS TO ADDRESS COMPETITION CONCERNS

108. Taking into account the importance of allowing for regional connectivity, the present study aimed at analysing the telecommunication industry in Angola in regards to: (i) market structure, state involvement, and regulatory framework, first; (ii) to interpret how roaming charges vary in comparison to other African countries, second, (iii) to better comprehend the type of competition concerns that exists regarding the charges, third; and (iv) of providing a platform for identifying regional and continental priorities in respect of the telecommunications industry, fourth.

109. The Angolan telecommunication industry follows the global trend of greater demand for voice and data services through wireless means, with a decrease of fixed means in terms of voice calls. The recent liberalization did allow for an increase in investment on a sector with infrastructural challenges.

110. Two MNOs, licensed by INACOM, operate in the industry: MOVICEL and UNITEL. While a third license is held Angola Telecom, it is inactive in a concentrated duopoly where one of the players holds an increasing market share of 90% of the mobile subscriptions.

111. Even though it is characteristic of mobile network markets, the prevalence of the concentration in the market could be due to the identified barriers to entry in the market itself, such as: cost of entry, spectrum as a scarce resource, incumbent MNOs

positioning and strategic as first movers, and regulatory / policy implementation barriers.

112. In terms of roaming costs, the analysis made for both MNOs' rates in the African region showed that MNOs do seem to be competing. However, such analysis would be better complemented with a deeper look into the backwards trends as to understand how prices shifted due to potential alliances or increase of concentration in the market.

113. In terms of the three types of calls analysed (call to Angola, call within visited country and incoming calls), the study found that both MNOs charge very approximate prices that vary according to the type. The study also found that both MNOs charge fixed prices for roaming services to all countries analysed with the exception of preferential countries such as Mozambique, Namibia, Nigeria, and South Africa.

114. Additionally, Angolan travellers will experience a difference set of charges when placing calls, depending on which operator they use. For MOVICEL users, roaming charges will be more expensive for calls made within visiting countries than for made back to the home country. On the other hand, UNITEL will experience higher prices for calls for calls made back home than for calls made within visiting countries.

115. In terms of data, the study found that prices are fixed for all countries in the study, with the exception of a set of preferential countries (Mozambique, Namibia, Nigeria, and South Africa). On the other hand, for SMS, the study came to find that neither MNO discriminates on prices as it charges the same prices for all countries studied. It also found out that UNITEL charges the highest for both data and SMS roaming services in all countries analysed in the study.

116. Even though regional regulation could contribute to better services and prices, it should be noted that, should they be uniform, regulation and policy measures might fail to address competition concerns should they not into account market conditions at the local levels. As such, it is important to address local concerns to avoid boosting market failure or introducing newer concerns while expanding them to other markets.

117. Thus, as a result of the analysis made and concerns identified, the following recommendations are worth mentioning as to address competition concerns and minimize their impact:

117.1 Promoting policies that enforce transparency: to ensure costumers are better informed about their choices and how tariffs vary, to better make decisions about their roaming usage and network selection with lower charges beforehand.

117.2 Reduce state intervention in the mobile segment: in order salvage competition that could drive better prices and at a better quality. By reducing State's presence as a major shareholder in both incumbents, either company will be better place to compete for its position and innovate independently as to gather as many clients as possible, while increasing its presence internally and externally by looking for more attractive deals and increasing its preferential list of countries to consumers.

117.3 Promoting investments in infrastructure: to increase focus on investments on basic infrastructure to increase telecommunications' reach to allow for the expansion of service and even attract incumbents (and potential competitors) to remote locations. Such increase of users may drive traffic and justify a revision of international roaming prices and set of preferential countries.

117.4 Enforce Infra-Structure Sharing: to increase maximize efficiency. By enforcing infrastructure sharing, in respect to the defined terms in the Presidential Decree Nº. 166/14, operators would: (a) share present and future investments costs, (b) minimize infrastructures' maintenance and operating costs, and (c) structurally, would contribute to the minimization of exclusion of potential entrants in the market. Such cost reduction would contribute to roaming services price reduction.

117.5 Conclude SADC's Roaming Project: to better harmonize roaming prices, increase transparency and to minimize bill shocks around the SADC roaming markets. To achieve this, all following Phases of the SADC Roaming Project

should be timely implemented:

117.6 Liberalization, Transparency, Information and Data Collection;

117.7 Roam Like at Home (RLAH);

117.8 Cost Based Roaming Price Regulation.

CHAPTER 2: BOTSWANA

BACKGROUND

1. Over the years, Botswana has experienced significant growth in the Information and Communications Technology (ICT) sector, particularly, the mobile telephony industry which has seen significant increase in subscription in the recent years. The growth has been spurred by a boom in access to mobile broadband. From 2016 to 2020, mobile broadband subscriptions grew by sixty-seven percent (67%), while fixed telephone line subscriptions dropped by thirteen percent (13%). The mobile penetration rate as at 2021 was 160%, showing a steady growth from the penetration rate of 143% in 2016.

2. The increase in the number of mobile cellular subscriptions is attributable to the liberalisation of the telecommunications sector through the abolishment of a state monopoly which for decades had controlled the sector. The sector was liberalised, among other objectives, to allow mobile operators to invest in infrastructure and mobile service; internet service providers to offer voice over internet protocol; and the national and international voice gateway to be opened to competition. The development resulted in an entry of two mobile operators in the telecommunications sector in 1998, namely, Mascom Wireless (Pty) Ltd and Vista [which was later acquired by Orange Botswana (Pty) Ltd]. The two are directly competing with Botswana Telecommunications Corporation Limited (BTCL) at the downstream level (retail). The BTCL is fifty-one percent (51%) owned by the Government.

3. The important role played by the telecommunications sector in facilitating trade and tourism cannot be over emphasised. This will be instrumental in the implementation of the African Continental Free Trade Agreement adopted in 2018, with the aim to facilitate intra-trade and the creation of a single market. According to the Tourism Statistics Report,[1] the SADC member states made up 90.6 % of tourists within the region in 2020. The majority of visitors came from South Africa and Zimbabwe, with the two countries contributing 39.3 percent and 31.3 percent respectively, of the total visitors during the year. In terms of mercantile trade, according to the International Merchandise Trade Statistics (IMTS) Monthly Digest – December 2021[2], Botswana receives 69.0% of its total imports from within the SADC region. The international roaming facilities offered by the sector is therefore a critical enabler as it will enhance trade and tourism.

4. The ICT sector in Botswana is regulated. The Communications Regulatory Authority Act, 2012 establishes the Botswana Communications Regulatory Authority (BOCRA), and gives it power to oversee competition in the ICT sector, among other functions. Its functions include the regulation of the communications sector in Botswana, comprising telecommunications, internet and information and communication technologies, radio communications, broadcasting, postal services, and related matters; and for matters connected or incidental thereto. The Authority has the power to monitor the performance of the sectors in regard to competition, pricing, and costs of services, among other functions. It also has the power to issue licences and settle disputes by suppliers, as well as to resolve consumer complaints. Further, the Authority has the regulatory oversight over roaming pricing both at retail and wholesale level.

5. This discussion paper is a contribution to the African Competition Forum's cross-country research on the cost of roaming charges in Africa, with respect to voice calls and data. The study was triggered by the concerns regarding the high roaming charges in Africa. Participating countries are Angola, Botswana, COMESA, Mauritius, South Africa, Zambia, and Zimbabwe.

6. The paper analyses the general status of competition in the Mobile Network Operators market in Botswana by discussing the structure, market shares and entry barriers. It then flags out the retail prices and termination rates between mobile operators in Botswana and how these affects their competitiveness. The international roaming charges in Botswana are established and compared with those of other African countries to gauge the variance in the cost of roaming in Botswana. The paper further discusses the factors determining the cost of roaming and concludes by flagging out the possible competition concerns before providing recommendations.

1 https://www.statsbots.org.bw/sites/default/files/publications/Tourism%20Statistics%20Annual%20Report%202020.pdf

2 https://www.statsbots.org.bw/sites/default/files/publications/IMTS%20December%202021_0.pdf

OBJECTIVES

7. To understand the market structure, state involvement and the regulatory setting of the telecommunications industry in ACF member countries, with a particular focus on the determination of roaming charges that impact on continental trade and tourism;

8. To get an understanding of the type of competition concerns that exist in regard to roaming charges in Botswana; and

9. To provide a platform for identifying regional and continental priorities in respect of the telecommunications industry.

METHODOLOGY AND SCOPE

SCOPE AND COVERAGE

10. The scope of the study is limited to the provision of inbound and outbound roaming voice and data services over SIM-supported mobile telecommunications devices to consumers in prioritized ACF member countries. The study does not consider fixed line telecommunications services and does not consider the provision of SMS over SIM-supported mobile devices.

11. International roaming markets are assessed across the SADC region and the findings are compared with other African regions to establish the extent to which roaming charges vary across the continent. The study also considers voice and data services offered by MNOs for the respective countries. Roaming pricing data utilised in the study was for the period of December 2021.

THE MARKET

12. The study will look at the Mobile Network Operators in some African countries and make comparisons of market structures, prices, legislative environment, and factors that influence competition and roaming charges in these countries with a view to understanding factors that lead to high roaming charges in Africa. The study utilized roaming prices up to December 2021.

METHOD OF DATA COLLECTION

13. The tariff statistics were sourced from Tarifica and converted to US dollar for comparison purposes. Some information was collected from the regulatory authority (BOCRA) and mobile operators through interviews. Desktop research was conducted on the websites of the mobile network operators to appreciate the local charges and general services offered. The study also drew from published reports on ICT and mobile network operator's markets including those of the World Bank, Communication Regulator of Southern Africa and GSMA.

GENERAL STATE OF COMPETITION IN THE MOBILE NETWORK OPERATORS MARKET

14. The mobile network operator's industry in Botswana is concentrated with only three companies participating in the industry. The small-sized market of Botswana might mean that the structure is optimal looking at the nature of the network markets, where the first mover always has a competitive edge due to economies of scale. Due to high switching costs in that small rivals would often have unfavourable terms than the leading player, entry is less likely. Entry could however be feasible through innovation and introduction of value-added services. This section discusses factors that influence the structure and nature of competition in Botswana.

SUPPLY VALUE CHAIN, STRUCTURE AND MARKET SHARES

15. The supply value chain for the telecommunication sector in Botswana is comprised of both upstream and downstream levels. At the upstream level, The Botswana Fibre Networks (BoFiNet), which is a government-owned enterprise under the Ministry of Transport and Communications, is the only wholesale provider of national and international telecommunication infrastructure. At the downstream level, three mobile operators compete in the retailing of fixed and mobile telephony services. Only one company provides both fixed and mobile telephony services, whilst the other two companies provide mobile telephony services only (including internet).

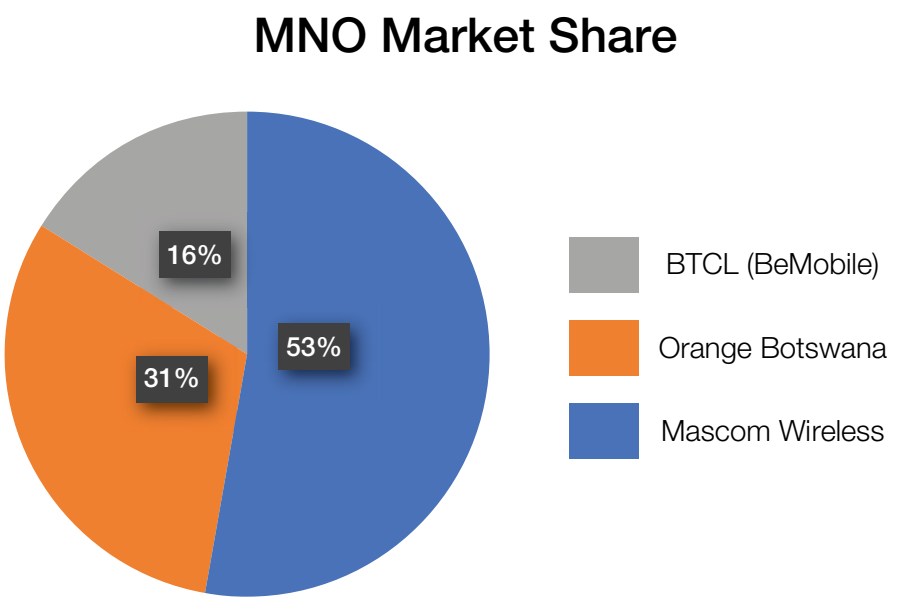
16. The Mobile Operators Market in Botswana consists of three operators, namely, Botswana Telecommunications Corporation Limited (BTCL); Mascom Wireless Pty Ltd; and Orange Botswana Pty Ltd. Mascom Wireless dominates the local market with a market share of fifty-three percent (53%), while Orange has thirty-one percent (31%) and BTCL sixteen percent (16%). As at March 2021, Botswana had a total of 3 876 773 mobile subscribers across all the three mobile operators, which translate to 160% of the population. Although BTCL is the smallest operator, it covers a wider geographic area than the other operators, however, it has a lower market share because it is concentrated in remote areas which are not densely populated.

17. The South African telecoms MTN Group Ltd has a controlling stake of 53% in Mascom wireless, while Orange Middle East and Africa, a company based in Paris, owns a 73% stake in Orange Botswana. Botswana Telecommunications Cooperation Limited (BTCL) is a 51% Government owned company.

18. The two (2) firm concentration ratio (C2) shows a highly concentrated market. The small sized market of Botswana however depicts this as an optimal structure with no unforeseeable entry. This is in lieu of the fact that the structure already services over 160% of the population.

19. The market shares for the three mobile operators have not changed significantly at least for the past 7 years. The market shares in 2012 were 53%, 34% and 13% for

Figure 13: Mobile Operator Market share



Source: Data collected from Botswana Communications Regulatory Authority (BOCRA)

Mascom, Orange and BTCL respectively[3]. This shows a 3% growth by the smallest operator and a loss of 3% by Orange as indicated by the current market shares shown in Figure 13. The leading player has not changed its market share since entry, perhaps because of its lower prices and favourable package offers[4]. The factors that influenced changes in market shares of competing small operators are yet to be established, but the outcomes show that Orange lost 3% of its subscribers to the smallest operator.

3 Study on the Regulatory Impact Assessment of National Roaming in Botswana, 2013 by BOCRA
4 https://www.mascom.bw/mascom-data-roaming/#2

BARRIERS TO ENTRY AND EXPANSION

SMALL MARKET SIZE

20. The small-sized market of Botswana with a projected population of 2,422,555 million[5], displays a natural barrier to entry and expansion of the mobile network operators' industry. Following the introduction of competition in the telecommunications sector through the abolishment of a state-owned monopoly, Mascom Pty (Ltd.) and Orange Botswana entered the market in 1998. The third entrant (BTCL- Be-Mobile) only came in 10 years later in 2008. The entry was made possible by a roll-out of Government's programme on the provision of infrastructure to connect rural areas through a tender awarded to Mascom and Be-Mobile. These three mobile operators have since attained coverage that is higher than 95% of the entire country. The remaining area that constitutes less than 5% covers remote areas and cattle posts and is not economically viable for new investors. The existing structure is thus optimal, although comprised of only three mobile operators. The market shares have also remained stagnant, and the slight changes are only as a result of switching by subscribers between service providers and not due to growth by new subscribers[6].

ECONOMIES OF SCALE BY FIRST MOVERS

21. The network markets by their nature poses natural barriers to entry. First movers normally attain economies of scale quickly and their low prices, discounts and promotions raise costs for prospective entrants. Mascom and Orange as first movers in the market had a total market share of 87% before the 3% loss by Orange to the new entrant. Although the new entrant (BTCL) came in to service the remaining small proportion of the market (13%), the company is struggling to increase its markets share as it faces lower pricing and diverse add-on package options that are offered by the first movers in the market. In addition, this is compounded by the fact that most of BTCL clientele is mainly in the rural areas where the population is less concentrated, the call traffic is low, and the usage of data in less demand.

STRATEGIC BARRIERS

22. The stagnant market shares of the mobile network industry in Botswana shows ineffective competition mainly due to barriers such as the small market size and the need for economies of scale associated with the network markets. Besides these natural barriers, this study established indications of anti-competitive conducts in the contractual offers to the Mobile Virtual Network Operators (MVNO's) by the incumbent Mobile Network Operators. Due ineffective competition in the market, BOCRA enhanced competition in the industry by introducing another layer of service provision called the Mobile virtual network operators – whereby, the MVNOs could enter the market by using existing MNO's infrastructure and having indirect access to these in order to provide their services. The regulatory authority (BOCRA) issued an order for MNOs to file wholesale offers to MVNO's for approval to the Authority by June 2017 and to have published these by September 20171. Despite such an intervention, no MVNO has entered the market to date.

23. A thorough assessment of these offers revealed a couple of anti–competitive clauses that have the potential to prevent entry into the market, which might be the reason why no MVNO has entered the market to date. Such anti-competitive practices are discussed in chapter 6.

REGULATORY BARRIERS

24. The telecommunications sector in Botswana is regulated by the Communications Act (CRA) Act, 2012. The Act provides for the licensing of mobile services, the regulation of retail tariffs and mobile termination rates, among other functions. The conditions in licensing package include interconnectivity requirements to promote access, competition, and protection of consumer interest as part of the policy objectives. One may regard these interventions as threats to competition, particularly tariffs and mobile termination rates controls, but with a closer look, they are pro-competitive in view of the characteristics of network markets in a small economy. Leaving the market that is already concentrated purely in the hands of players could create a market failure and an incentive for the dominant player to raise prices significantly

5https://www.statsbots.org.bw/sites/default/files/publications/population_projection.pdf
6 BOCRA: Regulatory Impact Assessment on National Roaming in Botswana Revised Interim Report

above costs. Although the Act requires interconnectivity as a condition for obtaining a license, mobile operators are allowed to negotiate contractual agreements between themselves and agree on charges necessary for their profitability. Without the intervention of the regulatory authority in approving such agreements, opportunist behaviour may arise as the smaller companies do not have the bargaining power.

HIGH ENTRY COSTS

25. Entry into the telecommunications sector requires heavy investment in infrastructure. As pointed out by the World Bank Report, 2014, the key to the success of the ICT ecosystem has been the presence of sufficient competition in the provision of ICT network infrastructure and services[7]. The high costs of erecting infrastructure particularly in a small market such as Botswana, serves as an entry barrier for any potential mobile operator. Access to spectrum is critical for a player to enter the MNO market. The allocation of spectrum rights in Botswana is usually carried out through auction. Due to the bidding process, the amounts ultimately paid for these rights are often very high and may raise concerns about the process raising entry barriers. The current players in the market have attained vast network coverage (through infrastructure), and the remaining un-serviced population is insignificant, making it not commercially viable for investment in infrastructure.

MOBILE TERMINATION RATES AND THEIR EFFECTS ON COMPETITION

26. Over the past years, termination rates in Botswana have been considered among the highest in Africa. The regulatory impact assessment on national roaming in Botswana conducted by BOCRA in 2013 showed that, the average termination rates for the nine sampled countries was USD 0.038 whilst Botswana's rate was USD 0.0417235[8]. Botswana's rates however were slightly lower than South Africa which was at USD 0.042904. Namibia had the lowest (USD 0.031875) rates as compared to Botswana and South Africa.

27. As of June 2017, the Botswana Communications Regulatory Authority reduced the termination rates by mobile operators by a further 41%. The rates were dropped from BWP 0.295 (USD 0.026) to BWP 0.220 (USD 0.019) in June 2007, and further dropped to BWP 0.130 (USD 0.010) in June 2018. The mobile operators were further ordered to remove the off-net premium rates. This move by BOCRA was challenged at the Courts by Mascom Wireless, albeit without success.

28. This intervention lowered voice call charges to consumers (as it will be shown later). The off-net premium and mobile termination rates are the major components of the costs that mobile operators charge each other for voice calls across networks. As at the first year of the two-step reduction (June 2017), Mascom's peak retail charge fell from P1.50 per minute to P1.40 (USD 0.12) per minute. The peak off-net retail tariffs are the highest voice charge in the market[9].

MOBILE RETAIL CHARGES

29. Stock (2012) has argued that the cost-based mobile termination rates (MTR) encourage more competition and more affordable prices. Table 2 compares the prevailing mobile voice call charges following an order by the Regulatory Authority for the MTR's to be reduced by 41% by June 2018. The table shows that off-net (national roaming) and on-net charges are the same for all the three mobile operators, showing the effect of an order by the Authority for all operators to remove premiums on off-net calls. The table also shows that the average charge for a voice call per minute in Botswana is P1.30 (USD 0.10) as compared to P1.52 (USD 0.12) before the reduction requirement.

7 World Bank –Botswana, 2014: Reimbursable Advisory Services Project on Economic Diversification and competitiveness-2014
8 The nine sampled countries were: Botswana, Namibia, Kenya, South Africa, Mozambique, Tanzania, Cameroon, Nigeria and Ghana
9 BOCRA-REGULATORY DIRECTIVE NO. 1 OF 2017 issued on 24 March 2017

Table 2: Comparison of tariff rates for three Mobile Network Operators in Botswana

Prepaid tariffs	On-net			Off-net		
	Peak	Off peak	Off-off peak	Peak	Off peak	Off-off peak
Mascom	1.20	0.60	0.45	1.20	0.60	0.45
Orange	1.37	0.89	N/A	1.37	0.89	N/A
BTCL	1.34	0.61	N/A	1.34	0.61	N/A

Source: operator websites

30. Mascom maintains a price competitive edge due to economies of scale, whilst Orange - the second largest company, charges higher prices than even the smallest player. This perhaps explains the reason why Orange lost the 3% market share to BTCL. As at 2012, BTCL held a market share of 13 %, while Orange held 34%. The latest statistics published by BOCRA shows a 3% increase in market share by BTCL from 13% to 16%, while Orange fell by 3% from 34% to 31%. Mascom's share remains the same at 53%. These outcomes, particularly the stagnant market share by the dominant company, shows ineffective competition.

31. Orange seems to be losing the market share to BCTL, probably because it has minimal presence in the rural areas as it did not participate in the Government's Nteletsa Project[10]. The initiative was a government programme that promoted the provision of telecommunications infrastructure and mobile services to approximately 150 small villages and settlements through a tender. Only Mascom and BTCL participated in the tender and were both awarded by splitting the areas.

32. Orange visitors to the Nteletsa areas which are dominated by BTCL might be switching to BTCL. The interconnectivity licence requirements provide an incentive for such subscribers to have access to larger geographic coverage by roaming on Mascom and Orange infrastructures outside Nteletsa areas. The 2018 removal of off-net premium charges has resulted in the smaller player, (BTCL), increasing its market share by 3%.

10A Rural Infrastructure Development Programme aimed at undertaken by BTC in partnership with the Botswana Government to bring services to previously under-served areas beginning in 1999.

COMPARISON OF TARIFF RATES FOR THREE MOBILE NETWORK OPERATORS IN BOTSWANA

33. Table 3 compares data charges by the three mobile operators. It reveals that BTCL is slightly expensive compared to Orange and Mascom in some data services. This could be attributable to the fact both Mascom and Orange enjoy a high traffic of subscribers as their coverage is mainly in urban areas which are densely populated. The demand for data will also be higher in urban areas than rural areas.

Table 3: Comparison of Data charges for three MNOs in Botswana

Validity	Volume	Mascom	Orange	BTCL
		Prices (BWP)	Prices (BWP)	Prices (BWP)
1 day	25mb	2.00	2.00	2.00
	100mb	5.00	5.00	5.00
	500mb	10.00	10.00	10.00
7 days	1gb	35.00		60.00
	1.5gb		39.00	
30 days	3gb		89.00	90.00
	5gb			110.00
	6gb		199.00	
	10gb			220.00
	15gb			300.00
	17gb	279.00		
	18gb		299.00	
	32gb		499.00	
	35gb	525.00		

Source: operator websites

Notes: for ease of comparison, only data bundles which are not restricted to a certain access were used

34. In 2021 there was a substantial increase in demand for data. Post-paid mobile broadband traffic increased from 1.4 billion Megabytes in June 2017 to 3.5 billion Megabytes in June 2021, which translates into a 143% increase in traffic. This because Mobile operators introduced innovative offers such as diverse add-on

package options to meet the needs of different customers[11]. It is expected that mobile broadband traffic will continue to grow substantially as customers build affinity with mobile solutions because of their convenience. The increase in demand for data prompted BOCRA to engage MNOs to negotiate for a reduction in data prices. The outcome of the engagement saw a substantial reduction in prices for data bundles by average of 35% and a substantial increase in data traffic by an average of 40%.

35. Discounts and Promotions might also have a bearing on competition in the mobile operators' industry. Although the off-net premium charges have been removed to encourage fair competition and non-exploitation of consumers, Mascom as a dominant company with over 53% market share can still maintain a high market share and high level of profitability through on-net discounts and promotions. Such facilities and promotions have the potential adversely affect the competitiveness of the industry. Weak competition will inevitably affect the costs of roaming, particularly in an unregulated market.

INTERNATIONAL ROAMING

36. International roaming is a service that allows a customer of a mobile operator in one country to obtain service (voice, SMS, or data) from an operator in another country using the same handset, the same telephone number, and SIM card from their home country, facilitated by a common technology and a wholesale inter-operator contract[12]. Roaming services are traded at two levels, the wholesale and retail level. At wholesale level, services or products are offered by a mobile operator to another operator for purposes of resale or own use i.e. a local MNO offers access to its network to another foreign MNO in order to enable the foreign MNO's subscribers to make and receive calls abroad. At the retail level, the foreign MNO will then charge its own subscribers international roaming charges for the usage of their own phone abroad[13]. This service is facilitated by the arrangements between mobile operators across the countries which makes it possible for them to service each other's roaming customers. Such services in some other countries like Botswana are regulated, while in other countries they are not.

37. This section assesses the status of international roaming in Botswana and other countries in the SADC region with a view to determine the effect of roaming costs on retail prices, and consequently on trade and tourism in the region. It will first assess the cost of roaming in Botswana by comparing the prices charged to customers who roam through the respective three mobile operators in Botswana. The general factors influencing the costs of roaming and retail prices will then be discussed. The section will also compare the average roaming charges between Botswana and its major trading partners as well as comparison of the status in the entire region, to establish the extent to which Botswana's environment is friendly to trade and tourism. It will conclude by comparing the retail roaming prices in regulated markets with those in liberalised markets with the aim of gauging the best policy option to enhance effective competition and lower roaming retail prices.

VOICE ROAMING CHARGES IN BOTSWANA

Botswana is one of the countries with highest voice roaming charges in the SADC region.

38. Table 4 shows that it costs an average charge of USD 1.93 per minute to make a call back home while roaming in the SADC countries.

39. The average roaming charge per minute for countries to call back home in the SADC region is USD 2.27, implying that Botswana's rates are on average 17% lower than the regional average. Nevertheless, there is room for rates to be lowered even further considering that roaming tariffs in Botswana have not changed since 2015.

40. When making local calls while roaming within the SADC region the average local roaming charges per minute is USD 1.51, this is a relatively high charge by Botswana when compared to other SADC countries. Botswana is the third (3rd) most expensive country for calls made within a roaming country in the SADC region at an average of

11 https://www.bocra.org.bw/sites/default/files/documents/Broadband-Facts-and-Figures-2021-FINAL-DRAFT-21-Dec-21.pdf
12 https://www.oecd-ilibrary.org/docserver/5k4559fzbn5l-en.pdf?expires=1649406210&id=id&accname=guest&checksum=B806451D-13816B290A68F22EF3547DBE
13 https://www.bocra.org.bw/sites/default/files/documents/Regulatory_Directive_No_1_FINAL_2011.pdf

USD 1.51, only Lesotho, and Namibia have prices that are higher at 1.55 and 1.61 respectively.

41. The high price in the region has the potential to thwart the growth of the telecommunication industry and consequently act as a disincentive for innovation in the mobile network industry. Some literature argues that the main costs of international roaming are the inter operator charges and international gateway charges, and that these costs are lowest for larger mobile operators in the region[14]. There is need to investigate the factors influencing gateway charges with the view to understand why inter operator tariffs are high. This study has however established that in the SADC region, CRASA is at an advanced stage of completing a study that addresses similar concerns, amongst others. Collaboration with respective communication regulators in SADC region is necessary to avoid duplication of efforts in light of this development[15]

42. The SADC regulation of 2015, introduced the Roam Like at Home (RLAH) initiative, which proposed a 33% reduction on roaming prices every year to bring down prices to roam like at home in the region. Accordingly, Botswana, Zambia, Namibia, and Zimbabwe reduced their prices by over 30%. An interview with BOCRA has however revealed that there has never been any reduction in roaming charges since 2015. This was due to the fact that the initiative to reduce prices by 33% annually (up until achieving RLAH charges) collapsed as other SADC countries were not complying with the SADC regulation. It was imperative for all member states comply with this initiative as failure to do so would result in one member state unfairly subsidising the other.

43. Premised on the RLAH initiative, the rates for the local MNO were used as a benchmark to gauge the cost of roaming. It was discovered that the difference between domestic calling prices in Botswana and roaming in the SADC region is on an average 1964%. The average local rates for making a call through Mascom, Orange and BTCL is USD 0.11, whereas the average SADC calling rates (to home country) is USD 2.27 which translates into a difference of 1964%[16]. This clearly shows that roaming prices are many times higher than comparative domestic charges.

Table 4: Comparison of Botswana's roaming charges with average roaming charges in the SADC region

Home Country	Calling Price Per Minute (to home country)	Calling Price Per Minute (within roaming country)	Calling Price Per Minute (incoming calling rate)	Price per MB
Angola	0.57	0.58	0.30	207.02
Botswana	1.93	1.51	0.57	5.54
DRC	2.77	0.87	0.79	0.0042
Eswatini	0.14	0.10	0.10	1.27
Lesotho	4.03	1.55	1.04	9.57
Madagascar	2.78	1.11	0.75	11.91
Malawi	0.97	0.49	0.49	2.25
Mauritius	1.35	0.70	0.57	0.71
Mozambique	3.03	0.69	0.45	5.57
Namibia	8.39	1.61		69.74
Seychelles	1.67	0.48	0.54	4.02
South Africa	1.79	0.73	0.52	3.95
Tanzania	2.16	1.50	1.04	7.42
Zambia	2.36	0.74	0.70	6.74
Zimbabwe	0.10	0.04	0.03	0.09
Botswana's rank	8.00	3.00	6.00	8.00
Maximum regional tariff (SADC)	8.39	1.61	1.04	207.02
Minimum regional tariff (SADC)	0.10	0.04	0.03	0.0042

Source: Tarifica, Competition and Consumer Authority of Botswana calculations

44. Similarly, Table 5 further shows comparisons of domestic prices in Botswana and roaming in other African regions [EAC and ECOWAS]. Although the roaming charges

14 The Regulation of interconnection and regulatory alignment in the Southern African Development Community- Working Paper 2021/126: Grace Nsomba , 2021
15 Consultations with BOCRA
*16 used the percentage increase formula ((N2-N1)/N1)*100 = PI*

are still relatively high in EAC and ECOWAS, the disparity between the domestic and roaming rates are much less than in SADC, with EAC being 1800% higher and ECOWAS 1527% higher. This further confirms that the SADC region has much higher tariffs than other regions in the continent. Perhaps the characteristics of these regions in terms of factors surrounding them, degree of regulatory interventions, and the infrastructural development needs to be explored for purposes of benchmarking and advocacy efforts.

Table 5: Comparison between Botswana Local Operators prices and Average Regional International roam price (Africa)

Average SADC	2.27	Average EAC	2.09	Average ECOWAS	1.79
Average Botswana local rates	0.1133	Average Botswana local rates	0.1133	Average Botswana local rates	0.1133
% Difference	1964	% Difference	1800	% Difference	1527

Source: Tarifica, Competition and Consumer Authority of Botswana calculations and local MNO operator websites

DATA ROAMING

45. Access to data services is crucial when roaming as it enables customers to access numerous platforms and applications such as maps, emails, banking, Voice over internet Protocol (VOIP), and other services. Moreover, it enhances travel, communication, and ease of doing business. Although mobile markets are concentrated in Botswana, competition in terms of data continues to increase through providers such as data only providers, and other internet service providers offering fixed wireless and fibre services. For purposes of this study, however, focus is limited to companies which provides data through SIM card mode. In Botswana, only two companies offer wholesale fibre infrastructure to mobile operators – a state owned enterprise (BoFinet) and one other private company.

DATA ROAMING CHARGES IN BOTSWANA AND SADC REGION

46. Data roaming in Botswana is relatively moderate when compared to other countries in the SADC region. Charges for roaming through data is charged at an average of USD 5.53 per megabyte, placing the country in the eighth (8th) position when ranked with other SADC countries. This is a mid-level position that is significantly lower (300 percent lower) than the regional average of USD 22.39 per megabyte. Nevertheless, there is room for prices to be reduced when benchmarked against DRC which has the lowest data charges in the region, at an average of USD 0.0042 per megabyte. Regionally, the country with the highest data roaming charges is Angola with an average of USD 207.2 per megabyte.

47. There is still an outcry in the country that data roaming charges are high. However, local MNOs compete by offering add-on packages options, which are much cheaper than the normal charges. For example when roaming with Mascom there are packages such as ''One World Roaming" that offer standard roaming charges across states that have affiliate MNO's[17]. These packages are only offered to customers who roam on affiliate networks, and not customers roaming on rival networks.[18] This practice has the potential to lessen competition as it has a lock-in and exclusionary effects.

COMPARISON OF DATA ROAMING CHARGES IN BOTSWANA WITH OTHER AFRICAN COUNTRIES

48. Across Africa,[19] Botswana ranks the fifteenth (15th) highest in terms of average data roaming charges per megabyte out of thirty-three (33) countries. The average data roaming charge across the thirty-three (33) countries compared is USD 19.59 per megabyte, whilst Botswana's average data roaming charge is USD 5.53 per megabyte. Despite Botswana's data roaming charges being 254 % less than the average African data roaming charge, the charges are still relatively high, looking at the fact that Botswana charges higher than fourteen countries of the thirty- three (33) compared.

17 Applicable only when roaming on MTN South Africa, MTN Uganda, MTN Rwanda, MTN Swaziland and MTN Zambia networks.
18 Analysis of Tarifica data on roaming add - on packages offered by local MNO's, Competition and Consumer Authority of Botswana calculations
19 A comparison between EAC, ECOWAS and SADC countries

Table 6: Data Roaming Charges across Africa

SADC		ECOWAS		EAC	
Home Country	Price per MB	Home Country	Price per MB	Home Country	Price per MB
Angola	207.02	Benin	1.86	Burundi	18.35
Botswana	5.54	Cabo Verde	2.91	Kenya	6.94
DRC	0.0042	Côte d'Ivoire	21.42	Rwanda	0.04
Eswatini	1.27	Ghana	0.04	Tanzania	7.42
Lesotho	9.57	Guinea	0.01	Uganda	7.35
Madagascar	11.91	Guinea-Bissau	208.08		
Malawi	2.25	Liberia	0.02		
Mauritius	0.71	Mali	2.25		
Mozambique	5.57	Niger	0.34		
Namibia	69.74	Nigeria	10.69		
Seychelles	4.02	Senegal	3.26		
South Africa	3.95	Sierra Leone	0.09		
Tanzania	7.42				
Zambia	6.74				
Zimbabwe	0.0903				
Region Statistics	Region Statistics	Region Statistics			
Mean	22.39	Mean	20.91	Mean	8.02
Median	5.54	Median	2.06	Median	7.35
Min	0.0042	Min	0.01	Min	0.04
Max	207.02	Max	208.08	Max	18.35

Sourced by ACF from Tarifica

49. The statistics also shows that data roaming in the SADC region is more expensive than in other African regions. Table 6 shows a comparison of data roaming charges between the SADC, East African Community (EAC) and Economic Community of West African States (ECOWAS)[20]. The comparison shows that the SADC region on average has the highest data charge of USD 22.39 compared to ECOWAS (USD 20.91) and EAC (USD 8.02). The lower charges by the EAC might be attributable to the effectiveness of the regional instruments in place such as the EAC Roaming Framework that aims to harmonise mobile and data roaming charges across the region. The lesson learned from this regional disparity is that economic regulation is perhaps a necessary intervention in determining competitive outcomes in the telecommunications sector.

20 Excludes member states that data was not available

FACTORS THAT INFLUENCE COST OF INTERNATIONAL ROAMING

50. Despite the concerted efforts and studies undertaken in the SADC region to determine the causes of high roaming charges, it remains unclear what the actual costs faced by mobile network operators in providing roaming services are. However, there seems to be some light in uncovering these, as an inquiry with the BOCRA revealed that the CRASA has just completed a similar exercise towards the implementation of Phase 3 of the regional initiative to reduce roaming charges. It is understood that the purpose of the exercise was to develop a cost model to establish the costs incurred by operators in the provision of roaming services with a view to determine reasonable wholesale and retail roaming prices within the SADC region. The report is expected to inform appropriate regulatory measures to be implemented to benefit both the industry and consumers.

51. This section therefore is limited in discussing the actual costs incurred by mobile operators in Botswana and by extension, the SADC region, on the basis of the background provided. Unfortunately, the report could not be shared as it largely contains sensitive information on the costs of respective mobile operators in the region. The available literature however shows that, there are a number of components that determine the cost of roaming, and that the high roaming prices are largely the function of inter operator charges and international gateway charges. This section will therefore flag out these factors, some of which are common to all MNO's.

52. Roaming overheads are the administrative costs required to provide roaming services to customers. These may include accounting costs; payment overheads (such as currency exchange losses); revenue assurance; fraud prevention costs; dedicated staff costs; and software and system costs. In addition, there are a variety of setup

costs such as negotiation of roaming agreements, testing roaming connections and (data and financial) clearing costs.

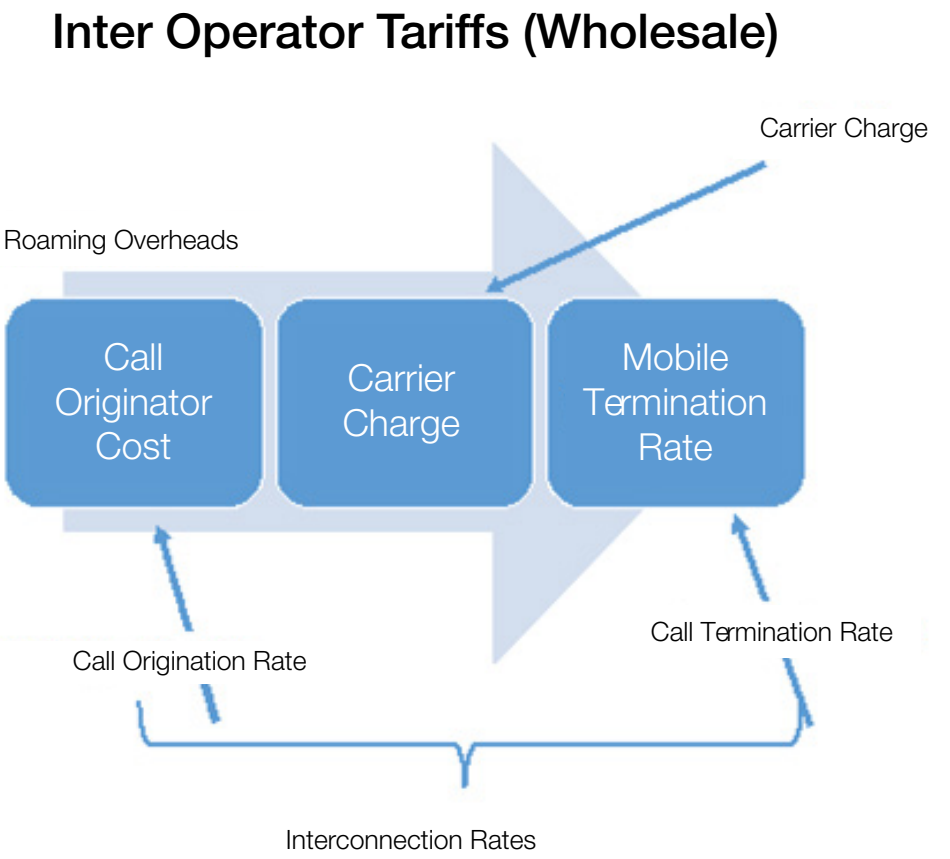
53. While it is difficult to ascertain all the roaming overheads of each MNO, it is perhaps safe to mention that due to economies of scale, an MNO with a larger subscription base most probably has lower roaming overheads, which should translate into lower roaming charges. In the case of Botswana, Mascom wireless has 53 percent market share, followed by its close competitor Orange Botswana with 31 percent, and BTCL 16 percent. Such a market power by Mascom is reflected by its lower roaming charges which are 6 percent lower than its competitors.

54. Interconnection rates (MTR) are rates charged for connecting a call between two subscribers on different networks, and these calls and are often referred to as mobile termination rates (MTR's). Termination rates are reported to be crucial determinants of retail roaming charges. An increase or reduction of termination rates will have an effect on the retail roaming charges offered by MNO's. Although the MTRs have a direct impact on mobile retail prices, consumers are often not aware of them when making subscription decisions. Therefore, each network is a de facto monopoly for termination of calls, which can be a source of collusion. The regulatory authorities generally recognize this fact and intervene by regulating MTRs.

55. In Botswana MTR's are regulated and every roaming agreement between local MNO's and roaming partner country is vetted for approval by the regulatory authority (BOCRA) in order to ensure fair terms of trade and reasonable cost outlays.

56. International Gateways or Carriers charges are payments made to an international transit carrier to convey calls from one country to the other. According to a study by GSMA, the international gateways markets are generally monopolistic in nature. The same report reveals that international call prices in countries with partially liberalised gateways, fell by at least 31 percent, and as high as 90 percent in the years immediately following full liberalisation. Prices for other international services,

Figure 14: The Main Cost Components That Constitute Wholesale Roaming Charges



such as international leased lines, also fell. This shows that International Gateways or Carriers charges have an undeniable impact on roaming charges.

57. Up until 2006, the Botswana Telecommunications Authority (BTC) possessed a monopolistic position in providing international gateway services. This status quo changed after 2006 when the gateways were liberalised by introducing a new licensing system that allowed other companies to have their own gateway routes. The opening up of the market to allow access to gateway services, however, did not exhibit any effect on roaming charges. The only notable reduction in roaming charges was in 2015 when BOCRA reduced the local tariffs following an implementation of the

SADC ICT policy on the reduction of regional tariffs. The exercise reduced roaming tariffs for Botswana by up to 30 percent.

OTHER DETERMINANTS OF ROAMING COST

58. Besides the cost components, there are other operational mechanisms that have a bearing on the international roaming cost. Operational determinants of roaming costs, namely: roaming agreements, operational alliances, and economies of scale, all have a bearing on how much a consumer pays for international roaming.

59. Roaming Agreements: Roaming enables a mobile subscriber to automatically make and receive voice calls, send and receive data, or access other services when travelling outside the geographical coverage area of their home network, by means of using a visited network[21]. In order ensure that consumers receive service outside their MNO's coverage area, their MNO has to have agreements for such with other MNO's. The complexities of bargain powers come into play at this point. The larger and more established MNO's normally have the comparative advantage and would usually negotiate for better terms (including cost). Smaller or unaligned operators are wholesale price takers because they lack the bargaining power of larger or aligned networks[22].

60. Operational alliances: The level of corporate and ownership operational alliances in the international roaming market has an impact in roaming charges. For example, the data shows that MTN customer to MTN customer roaming charges across territories in which it has presence, are much less than when MTN customers roam on other MNO networks. Wider network coverage provides this amenity to customers and therefore bolsters an MNO's competitiveness.

61. MTN Group has a footprint in most African countries including Benin, Botswana, Cameroon, Côte d'Ivoire, Cyprus, Ghana, Guinea Bissau, the Republic of Guinea, Liberia, Nigeria, the Republic of Congo (Congo-Brazzaville), Rwanda, South Africa, Sudan, South Sudan, Swaziland, Uganda and Zambia. This coverage avails the MNO (MTN) vast economies of scale, a network service continuity and lower prices.

62. Furthermore, Orange Middle East and Africa Company which has a stake in Orange Botswana also has a substantial footprint in Africa. This also allows special pricing across affiliate countries.

63. Economic conditions: the local market and economic conditions, which vary considerably within the African region plays a pivotal role in the inflation of roaming charges. Factors such as labour costs, inflation rates, and economies of scale affect local roaming rates[23]. Studies have also revealed that retail prices for roaming in the region were high relative to the costs faced by operators. Furthermore, within regions there is a heterogeneity among national mobile telecommunications markets as a result of differences in travel patterns, labour costs, exchange rates, inflation rates, technology platforms, economies of scale, target customer segments and tax regimes which contribute to high and inconsistent roaming rates across regions[24].

COMPETITION CONCERNS

64. The high roaming charges in the SADC region, as demonstrated above has the potential to thwart the growth of the telecommunication industry and consequently act as a disincentive for innovation in the mobile network industry. International gateways are generally monopolised and have been cited as one of the key factors that lead to high roaming charges. There is need for concerted efforts by African countries to investigate the dynamics around international gateway access with a view to advocate for the liberalisation of such markets and/or enforcement of competition law.

65. Mobile Network Operator markets are characterised by concentrated structures due high barriers entry barriers. As a result of their network effects, there is need for regulatory intervention to facilitate entry in order to promote competition in these markets. Lack of entry could lead to the absence of innovation and high tariffs due

21 https://www.gsma.com/aboutus/gsm-technology/roaming
22 https://www.oecd-ilibrary.org/docserver/5k4559fzbn5l- en.pdf?expires=1647854963&id=id&accname=guest&checksum=D5450BC878446D02980FF-CEB89343788

23 https://www.gsma.com/publicpolicy/wp-content/uploads/2012/09/Africa-International-roaming-explained-English.pdf
24 https://www.wider.unu.edu/sites/default/files/Publications/Working-paper/PDF/wp2021-126-regulation-interconnection-regulatory-alignment-SADC.pdf

to the absence of competitive pressure. It therefore, remains empirical to facilitate entry MVNO's as this could be the appropriate solution in this case. This is because empirical evidence shows that entry by MVNO's could increase consumer choices by providing a range of services including roaming services that are tailor made for specific customers[25]. The provision of international roaming services by MVNO's, could exert competitive pressure on local MNO's, resulting in a general reduction roaming charges. In order to address this competition concern, Botswana adopted a directive in 2017 that facilitated entry of MVNO's in the local market[26]. The directive cited the following as primary concerns, amongst others:

65.1 pricing of wholesale and retail services;

65.2 pricing of mobile broadband;

65.3 uncompetitive behaviour and opportunity for abuse of market power; and

65.4 lack of transparency on provision of wholesale services and opportunity for undue discrimination wholesale providers.

66. This study has also established that incumbent MNO's have a tendency of offering contractual agreements that foreclose potential competitors from entering the market (MVNOs). This is another area that warrants an investigation to assess the competitive status of such arrangements. For example, in Botswana an assessment of the Contractual Offers by incumbent MNOs to Prospective MNVOs revealed anti-competitive clauses. Table 7 shows the identified clauses and their implications on entry and competition. The table shows that the dominant firm in particular offers contractual terms that deter entry and limits access to certain services, especially international roaming.

Table 7: Wholesale Reference Offers for hosting MVNOs by MNOs in Botswana

MNO Reference Offer	Barrier to entry and growth	Effect on competition
Mascom	Para B8: MVNOs are not allowed to provide the following services The provision of all or part of the core network infrastructure such as interconnection between Mascom and requesting party Transit or routing services International roaming services	This provision limits the ability of MVNO to compete and grow by limiting the number of services they can provide. The MVNO need to compete in a range of services and it also need economies of scale for it to grow and compete. The clause limit innovation and choices to consumers and will result in less desirable contract terms for consumer. Competition in the international roaming services is crucial to reduce the high cost of roaming associated with The provision has the effect of leading MVNO's to be out competed in the market and keeping the existent oligopoly structure intact. The current market structure is prone to high prices, price fixing, market allocation and collusion, particularly that BOCRA has allowed for
	Para B10: Mascom will not allow more than 2 MVNOs on the Mascom Network at any time. In addition, The MVNO that will have contractual agreements with Mascom will not allowed to have another contractual agreement with any mobile operator.	Limiting the number of suppliers forecloses competition and gives the incumbent suppliers market power. In addition, Mascom has limited the number of product services it could offer, which means an MVNO who wants to gain the competitive edge by diversifying its services could not be able to do so. One would have thought limiting the number is about capacity, but the MVNO takes the responsibility for any extra costs of infrastructure associated with it services.

25 https://www.cwta.ca/wp-content/uploads/2020/07/Understanding-the-impacts-of-MVNOs-in-Canada-Part-2.pdf
26 BOCRA-REGULATORY DIRECTIVE NO. 1 OF 2017 issued on 24 March 2017

	Para F23: Mascom shall monitor and conduct internal analysis of MVNO's customers for the purpose of network quality assurance.	The clause reduces the incentive for the MVNO to compete and act as a vigorous rival. It strict competition by creating an opportunity for the monitoring of market shares and price information. It also reduces the ability of customers to switch between suppliers. It suffices for the MNO to know the volume of traffic for quality assurance purposes as provided for in other paragraphs.
	Para 49: MASCOM shall have a right to terminate the MVNO Agreement if The MVNO holds spectrum frequency licence(s) with respect to which it has achieved outdoor coverage exceeding 10% of the Botswana population; or The MVNO holds spectrum frequency licence(s) which contain outdoor coverage obligations exceeding 10% of the Botswana population.	The provision effectively limit competition as it doesn't allow MVNO's grow by increasing its clientele. and this will have the effect of reducing MVNO's ability to compete effectively in the market ultimately leading to MVNO's exiting the market. The clause is a barrier to entry The growth of clientele for the MVNOs benefits both the MNO and MVNO and it should in the interest of the MNO operator to permit the MVNO to increase its clientele as it charges calls and the volume of traffic flow.
Orange Botswana	Para 5.1: MVNOs are only allowed to purchase all its SIM cards through Orange Botswana authorised Sim card manufacturers. Orange may impose any other reasonable requirements on the purchase of SIM cards.	This provision grants exclusive rights to Orange to effectively limit the MVNOs from sourcing SIM cards form potential suppliers who could provide cheaper rates. The provision can ultimately lead to increased costs for MVNO and serves as a barrier to entry in the market.
BTCL	Para 8: of the offer grants BTC exclusive rights to be the exclusive provider of SIM cards for the MVNO.	The provision has the same implication as the one above for Orange Botswana wholesale agreement.

67. In summary, the above contractual offers would adversely affect the growth of the sector as a result of the following restrictions: barring/limiting the prospective MVNOs to provide some services- including roaming services; limiting MVNO's inter-connectivity with other MNO's or MVNO's; limiting the number of MVNOs to access the network facilities despite the available capacity; limiting the number of subscribers an MVNO can house; barring MVNOs to have contractual agreements with competing mobile operators; requiring MVNOs to source SIM cards only from the contracting partner; and Mobile operators having access to sensitive information of MVNOs.

REGIONAL AND CONTINENTAL PRIORITIES

68. The average local rates for making a call through Mascom, Orange and BTCL is USD 0.11, whereas, the average SADC calling rates (to call Botswana) is USD 2.27 which translates into a difference of 1964%. The difference between the two rates shows cost of roaming or at least the average increment that roaming imposes on Batswana when travelling across the SADC region. Further, comparison of data show that there is a high variation in roaming charges between SADC member states (58.8). This means that, SADC member states have a greater challenge to harmonise their roaming charges in order to achieve their regional integration objectives.

69. The analysis of data also shows that, the SADC region depicts the highest roaming charges as compared to the ECOWAS and the EAC region which have the average roaming charges of USD 1.80 and USD 2.09, respectively. The analysis further shows that, the variance in roaming charges between member states in the EAC (2.84) and ECOWAS (3.62) regions are closer to convergence as compared to SADC. This implies that subscribers of the two regions generally enjoy lower roaming charges. The comparison of the roaming initiatives across the three regions show that the EAC has made the most progress in reducing and harmonising roaming charges

within the region. This was made possible largely by the adoption and successful implementation of the One Network Area (ONA) roaming initiative.

70. On the same principle, in 2016, the SADC region adopted the SADC regulations aimed at enhancing affordable roaming charges for Voice, SMS and Data services. The adoption and implementation of this initiative by all member states, could perhaps produce outcomes that are similar to those of the EAC and ECOWAS regions.

CONCLUSION

71. Botswana is one of the countries with the highest voice roaming charges in Africa. The difference between the charge for the average local call and average rates for roaming in the SADC region is 1964%, reflecting exorbitant roaming charges. In contrast, the ECOWAS and EAC regions have much lower voice roaming charges that are more convergent and closer to harmonisation than the SADC region. These lower rates were as result of the adoption and implementation of regional initiatives aimed at reducing and harmonising roaming charges.

72. As for data roaming, Botswana is relatively moderate when compared to other countries in the SADC region as it charges an average of USD 5.53 per megabyte, as compared to an average of USD 22.39 per megabyte in the SADC Region, placing the country in the eighth (8th) position when ranked with other SADC countries. The Demographic Republic Congo offers the lowest data charges in the region at an average of USD 0. 0042 per megabyte. It would be beneficial for SADC member states to consider the factors that enabled the DRC to achieve such low rates.

73. Across Africa, Botswana ranks the fifteenth (15th) highest in terms of average data roaming charges per megabyte out of thirty-three (33) countries. Despite Botswana's data roaming charges being 254 % less than the average African data roaming charge, the charges are still relatively high-implying that Botswana has room to further reduce data roaming charges. The analysis also shows that data roaming charges in the SADC region are more expensive than in other African regions.

74. The need to identify and address the factors that make the cost of roaming charges high remains imperative. The telecommunications authorities in the region, including Botswana, continue to make efforts to reduce tariffs and roaming charges through regulation. The ongoing efforts to try to induce cost based pricing models across the SADC region is highly commendable.

75. The study also established that, incumbent MNOs have contractual offers that contain anti-competitive clauses that have the potential to deter entry. Such clauses are some of the factors that thwart efforts to promote competition in the sector.

RECOMMENDATIONS

76. There is need for concerted efforts by African countries to investigate the dynamics around international gateway access, with a view to advocate for the liberalisation of such markets and/or enforcement of competition law. International gateways are reported to be one of the major drivers of roaming charges.

77. Strengthen the efforts to facilitate entry of MVNOs to stimulate effective competition in the market by reviewing the contracts between MVNOs and mobile network operators. The intervention could introduce value added services in the sector, including international roaming services, which could put pressure on incumbent MNO's to reduce roaming charges. Facilitating entry of MVNOs could ultimately yield policy desirable outcomes such as lower local and international roaming charges, wider choices of service to consumers and favourable terms and conditions in the market.

78. Implement the SADC Roaming Project to induce cost-based tariffs and roaming charges. Similar models worked well in reducing roaming charges in other African regions such as ECOWAS and the EAC.

79. Adopt regional capacity building programmes/training to empower communication regulators with competition assessment skills. Such tools will assist the sector

regulator to detect and deter conducts that impede entry and effective competition in the Mobile network industry; and

80. Strengthen the collaboration between the communications regulatory authorities and competition authorities, with the aim to promote effective competition in the ICT sector.

CHAPTER 3: COMESA

INTRODUCTION AND BACKGROUND

1. The Common Market for Eastern and Southern Africa (COMESA) is a regional economic community which commenced in 1994 following the signing of the Treaty. COMESA comprises of twenty-one (21) Member States; Burundi, Comoros, Djibouti, Democratic Republic of Congo (DRC), Eritrea, Egypt, Ethiopia, Eswatini, Kenya, Libya, Madagascar, Mauritius, Malawi. Rwanda, Sudan, Somalia, Seychelles, Tunisia, Uganda, Zambia, and Zimbabwe, all of which have a combined population of over 583 million people[1].

2. In the Common Market, telecommunication is considered as one of the important ingredients to facilitate economic integration in the region. It has been noted that the tariffs charged by telecommunication service providers may not be competitive[2]. This is the case not only in the Common Market but in other regions as well. A study that was done on the role of communication in Africa's regional integration indicated that communication is a necessary condition for trade and the region's economic and social development. This is because it provides the physical links between various countries and forms a major component of the costs of trade, the global competitiveness of every country and thus its development prospects[3]. International mobile roaming is required for greater economic integration, or cohesiveness. This has been the case in the European Union and the Arab Regulators Network (AREGNET)[4].

3. The mobile telecommunications services market comprising of voice, data and Short Message System (SMS) in COMESA is dominated by MTN, Orange, Airtel and Vodafone which cover thirteen (13) out of the 21 Member States namely; Democratic Republic of Congo, Eswatini, Egypt, Kenya, Madagascar, Malawi, Mauritius, Uganda, Rwanda, Sudan, Seychelles, Tunisia and Zambia representing coverage of 75.7%[5] of the population of the Common Market.

4. MTN operates in six (6) of the Member States of the Common Market namely: Eswatini, Uganda, Rwanda, Sudan, and Zambia. During the financial year of 2020, MTN generated a total revenue of USD 1,044,181,818 in mobile services in these countries representing 11.4%[6] of the revenue the company generates in Africa. Figure 15 shows the revenue generated by MTN in each of the Member States:

5. The market share of MTN in the same period in the Member States are as shown in Figure 16.

6. Orange operates in five (5) of the Member States namely: Democratic Republic of Congo (DRC), Egypt, Tunisia, Madagascar and Mauritius and generated a total revenue of USD 1,586,088,940 as at the end of the 2020 financial year representing 25.9% of the total revenue generated in Africa in the mobile services market. Figure 17 shows the revenue generated in the Member States.

7. The Market share of Orange in the Member States in the same period is as follows:

8. Vodafone operates in three (3) of the Member States namely; DRC, Egypt and Kenya and generated revenue of about USD 3,867,658,155 in the financial year 2020 representing 51.4% of the total revenue generated in Africa in the mobile services market. The revenue for each Member States is shown in Figure 19.

9. The market share of Vodafone in the Member States over the same period are as shown below:

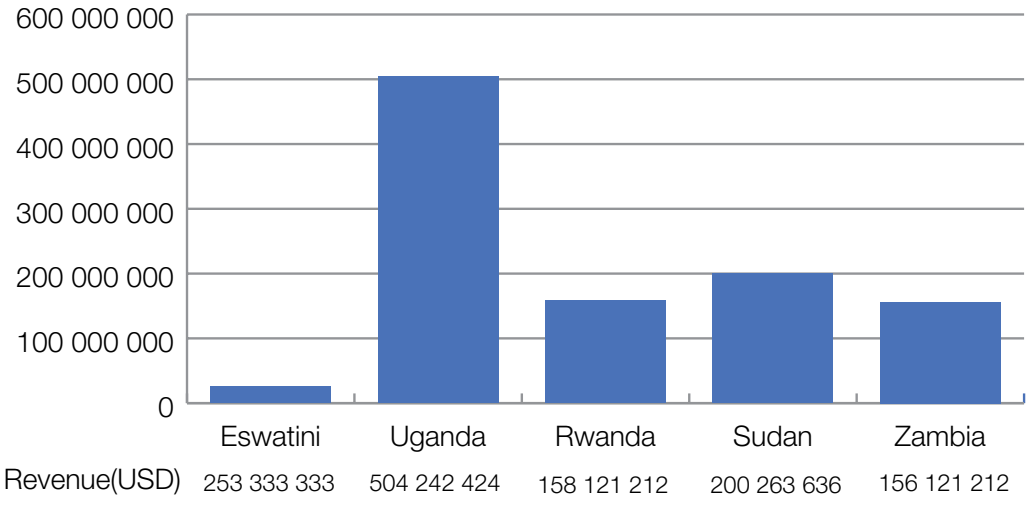
10. Airtel operates in eight (8) Member States of the Common Market namely: DRC, Kenya, Uganda, Malawi, Madagascar, Seychelles, Rwanda and Zambia and as at the end of the 2020 financial year generated revenue of about USD 1,493,160,987 representing 38.3% of the revenue derived from Africa. The figure shows the revenue generated in each of the Member States.

11. The market share of Airtel in the Member States in the same period are as shown in Figure 22.

1 www.comesa.int
2 COMESA in brief, 2018
3 The Role of Communication in Africa's Regional Integration: A Case Study of the African Union. Paul Mugambi Makunyi
4 https://www.itu.int/dms_pub/itu-d/opb/pref/D-PREF-EF.IMR02-2013-PDF-E.pdf accessed on 8th March, 2022
5 Calculated based on information obtained from www.comesa.int and https://www.worlddata.info/trade-agreements/comesa.php

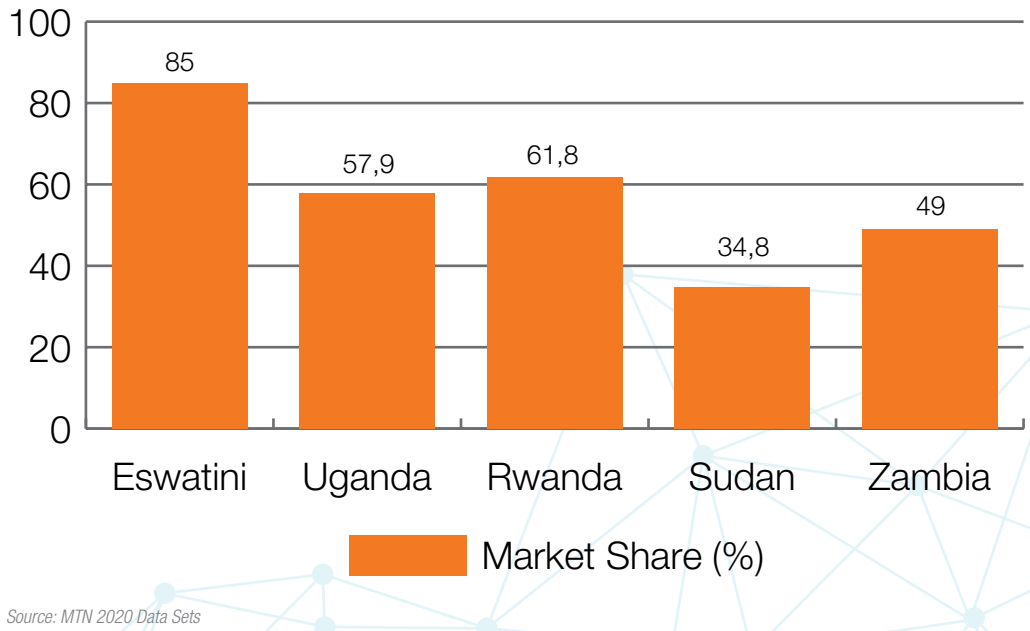
6 Calculated based on information obtained from MTN 2020 Data sets

Figure 15: Revenue Generated by MTN in the Member States



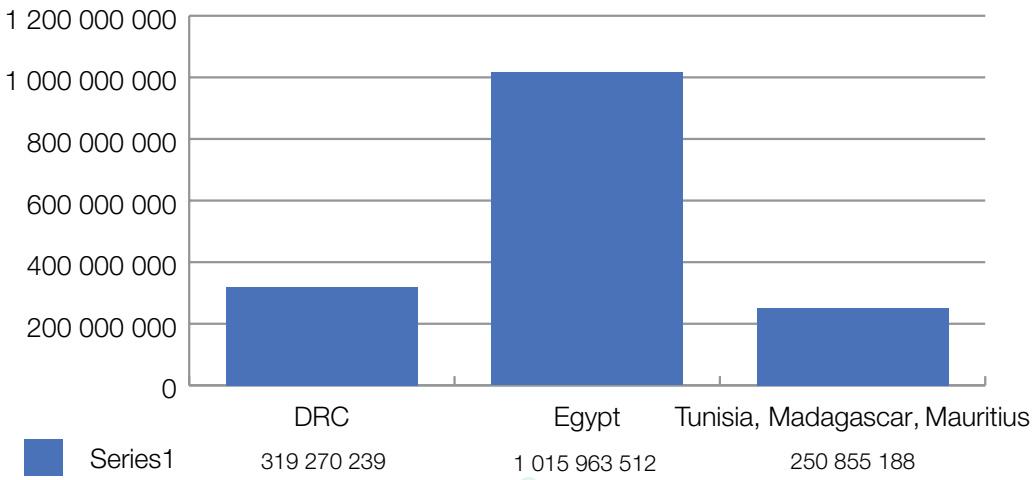
Source: MTN 2020 data Sets

Figure 16: Market Shares of MTN in the Member States



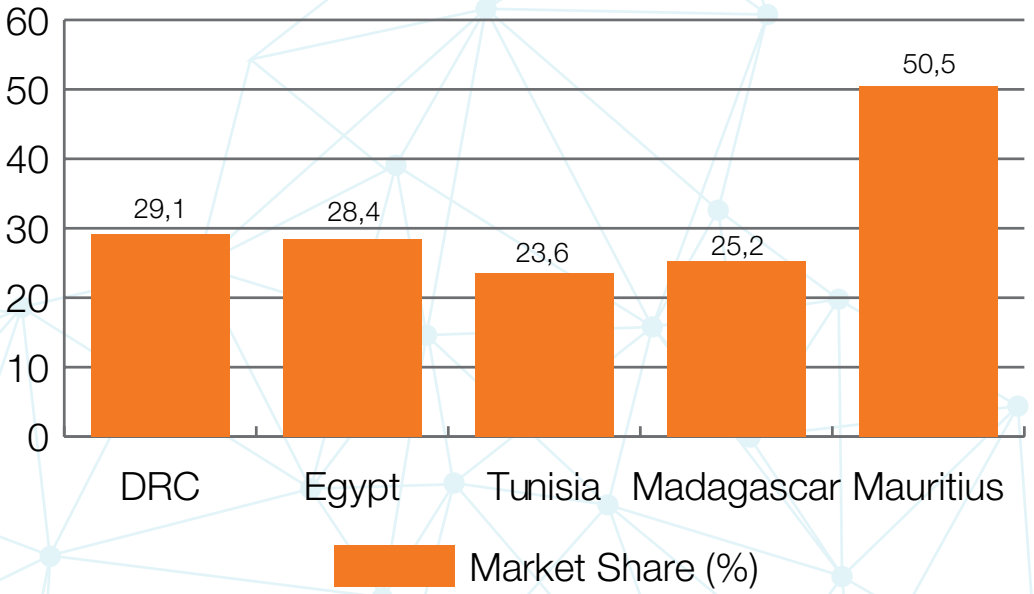
Source: MTN 2020 Data Sets

Figure 17: Orange's revenue generated in the Member States



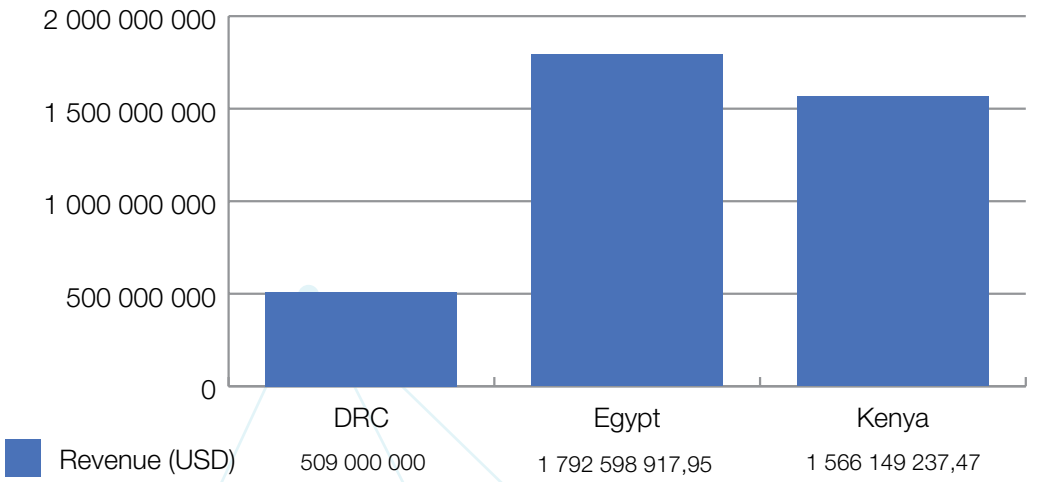
Source: 3Q Databook on KPs and the 2020 Audited Financial Statements

Figure 18: Market Share of Orange in the Member States



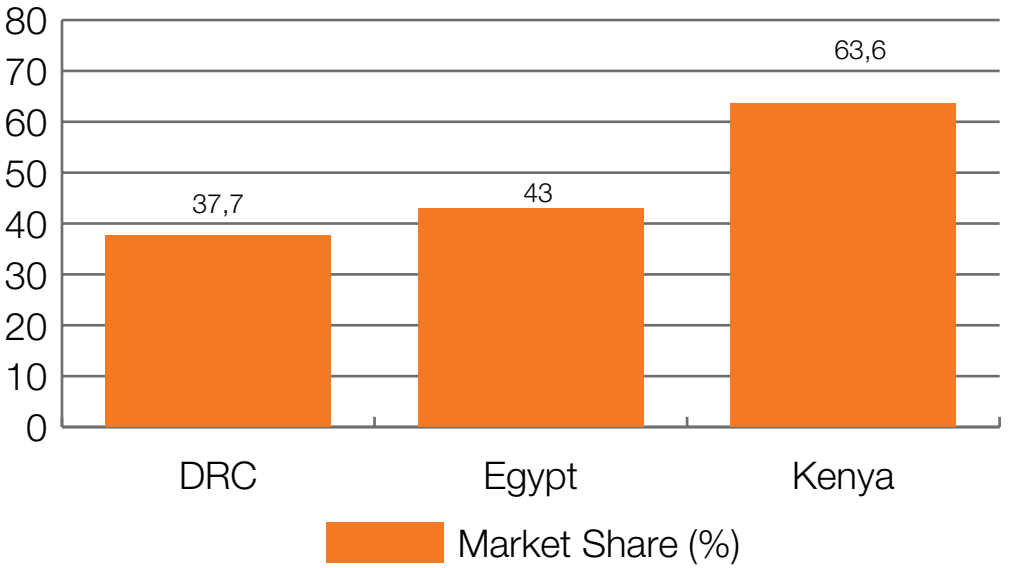
Source: 3Q Databook on KPs and the 2020 Audited Financial Statements

Figure 19: Vodafone Revenue from the Member States



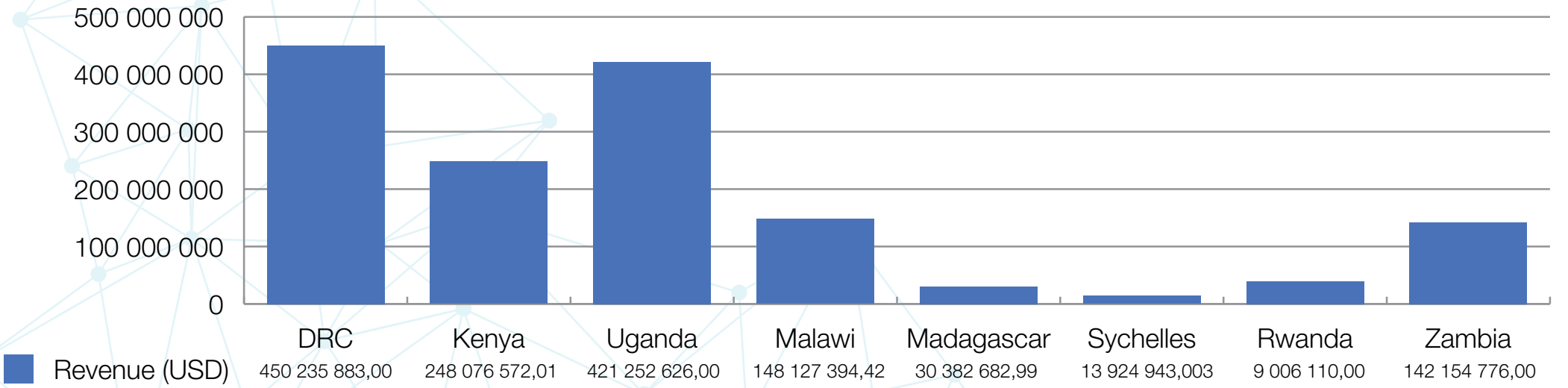
Source: Vodafone 2020 Annual Report and website

Figure 20: Market Share of Vodafone in the Member States



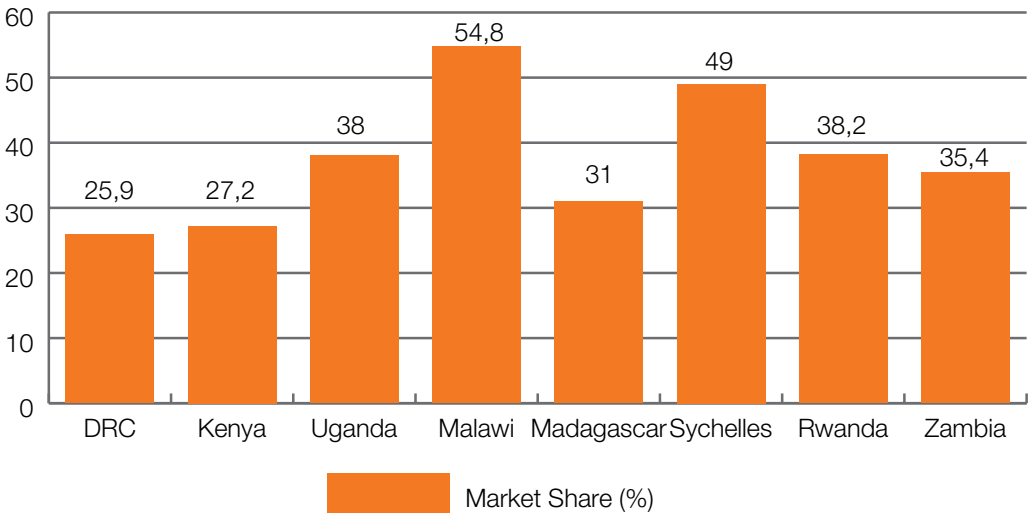
Source: Vodafone 2020 Annual Report and website

Figure 21: Airtel Revenue generated in each Member State at the end of the 2020 financial year



Source; 2020 Financial statements of Each Airtel Subsidiary in the Member States

Figure 22: Airtel Market Share at the end of the 2020 financial year



Source: Vodafone 2020 Annual Report and website

12. It is worth noting that while there are other mobile service providers in the Common market, MTN, Orange, Vodafone and Airtel dominate the provision of mobile telecommunications services, specifically in voice, SMS, and data by MNOs in the Common Market.

13. Whilst the above information gives a snapshot of the major players in the provision of mobile telecommunications services in the Common Market, the study will focus on five of the Member States to assess the cost of roaming charges. These are: DRC, Egypt, Kenya, Uganda, and Zambia. The five countries have been picked due the sizes of their economy as well as the subscriber base covered by the telecommunication companies which may likely have an appreciable effect on trade in the Common Market.

14. The Mobile services market in DRC has four (4) players namely: Airtel, Vodafone, Orange and Africell which account for about 40,798,396 mobile subscribers and a penetration rate of 46.2%. In 2020, the 4 operators generated a total revenue of USD 1,383,775,709, from voice calls, SMS, roaming, and data. The revenue specifically relating to roaming was about USD 5,240,435[7]. In Egypt, the mobile services market has 4 main players namely: Vodafone, Orange, Etisalat and Telecom Egypt which accounted for a subscriber base of 103,045,000 in 2020 and a penetration rate of 100.7%[8]. In Kenya, the mobile services market is dominated by Safaricom[9], Airtel, Telkom and Equitel with a subscriber base of 61,408.906 and a penetration rate of 129.1%[10]. In Uganda, the mobile services market is dominated by Airtel and MTN, other service providers include UTL, the mobile service providers have a subscriber base of 27, 688, 987 and a penetration rate of 66.78% as at December 2022. In Zambia, the mobile services market is dominated by MTN. Airtel and Zamtel which account for a subscriber base of 19,100,000 and a penetration rate of 106.8%[11]. All the four countries operate the 2G, 3G and 4G networks.

STUDY OBJECTIVES

15. The objectives of the study are to:

    15.1 Understand the market structure, state involvement and the regulatory setting of the telecommunications industry in the Common market focusing on DRC, Egypt, Kenya, Uganda and Zambia, with a particular focus on the determination of roaming charges that impact on continental trade and tourism.

    15.2 To determine the competition concerns that may be alive in the sector regarding roaming charges in the Common Market with particular focus on DRC, Egypt, Kenya, Uganda and Zambia.

7 Sector Regulators (ARPTC) market reports for 2020
8 Compiled based on the subscriber base obtained from the websites of the operators in Egypt and the population of Egypt obtained from https://www.worlddata.info/trade-agreements/comesa.php
9 Vodafone has about 38% market share in Safaricom
10 Sector Regulator (CAK) annual report for the financial year ending March 2021
11 Sector Regulator (ZICTA) market report for 2020

15.3 To provide a platform for identifying regional and continental priorities in respect of the telecommunications industry; and.

15.4 To identify policy recommendations aimed at promoting competition in the telecommunications sector.

METHODOLOGY AND SCOPE

16. The scope of the study is limited to the provision of international roaming voice and data services over SIM-supported mobile telecommunications devices to consumers in the respective participating countries when travelling abroad to major trade partners and/or member states of regional customs and monetary unions. The study does not consider fixed line telecommunications services and does not consider the provision of SMS over SIM-supported mobile devices.

17. International roaming markets are assessed on the basis of mobile network operator ("MNO") pairs within country-to-country pairs. Thus, the study will consider voice and data services offered between all MNO pairs for each home country-visited country pair, where the home countries are restricted to the countries participating in this study and include, South Africa, Zambia, Zimbabwe, Kenya, DRC and Egypt and the visited countries are restricted to the major trade partners and members of regional trade groups.

18. The roaming charges assessed are those rates that prevailed as of February 2022. To further ensure consistency between the country chapters, the roaming price data used in each country chapter will be procured collectively from the same source(s). However, it is recognised that it may be necessary to supplement this data with desktop research if the data has any issues or if the dataset is incomplete.

GENERAL STATE OF COMPETITION IN THE SECTOR

MARKET STRUCTURE

DRC

19. In the DRC, the mobile telecommunication services market is dominated by Vodafone which has in the past 2 years held a market share of above 30% followed by Orange and Airtel. This market is considered highly concentrated with the Herfindahl-Hirschman Index (HHI) above 2,500 as it moved from 2834 in 2019 to 2851 in 2020 above the threshold of 2,500 for highly concentrated markets. The table below shows the positions of the market players in the sector.

Table 8: Market Shares of MNOs in DRC, 2019 and 2020

Company	Subscriptions, 2019	Market share 2019 (%)	Subscription 2020	Market Share 2020(%)
Vodacom	13,402,194	36.1	14,818,133	36.3
Orange	10,398,435	28	11,197,168	27.5
Airtel	9,300,570	25.1	10,583,837	25.9
Africell	4,022,009	10.8	4,199,258	10.3
Total	37,123,208	100	40,798,396	100
HHI	2834	2851		

Source: calculated using information from the ARPTC market reports for 2019 and 2020

EGYPT

20. The mobile telecommunication services market in Egypt is dominated by Vodafone which held market share of above 40% in both 2019 and 2020. The market is highly concentrated with HHI above 2,500 even though there was a drop in the HHI from 3,145 in 2019 to 3,064 in 2020. The table below shows the market shares of the market players in the sector.

Table 9: Market Shares of MNOs in Egypt, 2019 and 2020

Company	Subscriptions, 2019	Market share 2019 (%)	Subscription 2020	Market Share 2020 (%)
Vodafone	40,244,000	40.4	41,702,000	40.5
Orange	28,098,000	28.1	27,501,000	26.7
Etisalat	26,400,000	26.4	26,500,000	25.7
Telecom	5,129,000	5.1	7,342,000	7.1
Total	99,871,000	100	103,045,000	100
HHI	3145	3064		

Source: calculated using information from the annual reports of the respective companies and their websites

KENYA

21. The mobile services market in Kenya is dominated by Safaricom which has had a market share of above 63% in both 2019 and 2020 followed by Airtel Networks. The market is highly concentrated with HHI above 2,500. The HHI dropped from 4,918 in 2019 to 4,145 in 2020. This was partly due to the entry of a fifth player in the market, Jamii Telecommunications Limited which acquired a market share of 0.3% in 2020. The table below shows the market share of each operator in 2019 and 2020.

Table 10: Market Share of MNOs in Kenya in 2019 and 2020

Company	Subscriptions, 2019	Market share 2019	Subscription 2020	Market Share 2020
Safaricom	35,335,107	64.8	39,069,342	63.6
Airtel Networks	14,118,569	25.9	16,677,057	27.2
Telkom Kenya	3,391,946	6.2	3,823,457	6.2
Equitel	1,709,875	3.1	1,678,127	2.7
Jamii Telecommunications	0	0	160,921	0.3
Total	54,555,497	100	61,408,904	100
HHI		4918		4145

Source: Sector Regulators (CAK) market reports for 2019 and 2020

UGANDA

22. The mobile services market in Uganda is dominated by MTN with a market share of 52.9%, Airtel with market share of 35.2% as at December, 2020. The rest of the market share was shared by Africell, Lycamobile and UTL. However, Africell exited the market in Uganda in October, 2021 leaving the four market players with MTN and Airtel still dominating the market[12].

ZAMBIA

23. The mobile services market in Zambia is dominated by MTN Zambia which held a market share of above 43% in 2019 and 2020. The market is highly concentrated with HHI above 2,500. The HHI increased from 3,561 in 2019 to 3,681 in 2020. The table below shows the market share of each operator in 2019 and 2020.

Table 11: Market Shares of MNOs in Zambia in 2019 and 2020

Company	Subscriptions, 2019	Market share 2019	Subscription 2020	Market Share 2020
MTN Zambia	7,519,397	43.7	8,656,154	45.3
Airtel Networks	5,836,926	33.9	6,771,906	35.5
Zamtel	2,555,909	22.4	3,676,148	19.2
Total	15,912,232	100	19,104,208	100
HHI	3561	3681		

Source: 2020 market report by the sector regulator (ZICTA)

BARRIERS TO ENTRY

24. According to the Global Management Consulting Firm[13], legal and technical developments are required to remove double taxation, combat fraud, and liberalise international gateways. Combating these barriers is vital prior to any implementation of roaming regulation, as they artificially inflate roaming charges in individual countries.

12 Market performance Report Q1 of 2021

13 https://www.gsma.com/publicpolicy/wp-content/uploads/2012/09/Africa-International-roaming-explained-English.pdf

TECHNICAL BARRIERS

25. The industry continues to heavily invest in meeting the technical challenges of international roaming. The technical challenges include:

    25.1 Prepaid roaming where operators have had to invest heavily to enable customers on prepaid to roam. The specific investments required are technical implementation costs, including system upgrades and expansion of prepaid roaming which may burden smaller operators.

    25.2 Interoperability that is the use of Global System for Mobile Communications (GSM) could prevent many low cost handsets from roaming. The required investment includes enforcement and monitoring costs, which disproportionately burden least developed countries. Further investments are required by operators to provide consistent quality of service across roaming networks.

    25.3 Coverage that is network coverage to include the latest technologies such as 3G and 4G remains underdeveloped as operators continue to roll out and upgrade networks. The investment that may be required includes consumer communication and marketing costs which need to be increased to promote roaming and ensure transparency.

26. The explained level of investment is in addition to the mobile broadband roll outs across the region[14].

STRUCTURAL BARRIERS

27. In addition to technical barriers, there are structural barriers which include double taxation, fraud and access to the international gateway. Addressing these barriers is important in the lowering the cost of roaming in individual countries[15].

FRAUD

28. Fraud remains a major financial concern for operators despite increased efforts and requires further investment in technology and negotiation of roaming agreements for minimisation.

INTERNATIONAL GATEWAYS

29. International gateways are the facilities through which international calls are sent and received. Where international gateways are not liberalised, their costs make up a significant proportion of the total roaming costs. Even with volume growth, there is no bargaining power for operators working across monopolised gateways. This means inter-operator tariffs are likely to continue to be high. International long distance termination charges are another cost that inflates end-user prices. Although there has been much improvement in the level of competition, international gateway monopolies remain in at least 20 per cent of African countries. International roaming call prices between liberalised gateways are typically 25 per cent lower than between those with gateway monopolies.

DOUBLE TAXATION

30. This inflates retail prices, which affects the industry and mobile users, as well as government revenue. In sub-Saharan Africa VAT rates vary which can complicate the task of roaming pricing for operators. In addition, many countries levy other local taxes, such as withholding taxes and local and state taxes, which further inflate prices.

14 Africa Roaming Tariff Market Size, Share & Trends Analysis Report By Type (National, International), By Distribution Channel (Retail Roaming, Wholesale Roaming), By Service (Voice, SMS, Data), And Segment Forecasts, 2020 - 2027 - GII (giiresearch.com)
15 International Roaming Explained, Africa, GSMA, 2012

REGULATORY AND LEGISLATIVE FRAMEWORK

KENYA

31. The mobile telecommunications services market is regulated by the Communications Authority of Kenya (CAK) which enforces the Kenya Information and Communications Act, 1998 as amended in 2013. The Act is implemented through a set of Regulations, guidelines and policies. The mobile and mobile internet penetrations as of 2020 were at 129.1% and 79.7% respectively and all the operators in the market had 4G licences[16]. In 2020, Safaricom announced that it has started testing the 5G technology which it planned to roll out in selected parts of the country[17].

32. Tariffs charged by the MNOs are regulated under the Kenya information and Communications Tariff Regulations of 2010[18]. All tariffs that are charged by MNOs are required to be approved by the CAK. Further, CAK issues Spectrum to mobile service providers and in some cases CAK may require operators to share their frequency.[19] Some studies have shown that Kenya has assigned one of the highest amounts of coverage spectrum per operator in Africa and this has contributed to a high mobile broadband penetration rates close to 90%. The average spectrum assigned for each operator in Kenya is over 40 MHz[20]. In addition, mobile operators in Kenya including Airtel, Safaricom, Telkom and Jamii all have licences for the international gateway while Telkom also has Submarine cable landing rights. Holding the international gateway licences is important for MNOs as it assists them in lowering their cost of operations and can better provide services such as roaming to consumers at better prices.

33. Kenya being a member of the East Africa Community (EAC) is one of the countries in which consumers benefit from the implementation of the One Network Africa (ONA). ONA is an initiative under EAC whose objective was to reduce the cost of roaming for consumers in EAC. This started in May 2014 when the Northern Corridor Integration Projects Summit concluded that the high cost of intra-regional roaming was detrimental to the EAC integration agenda. The Member States of EAC including South Sudan therefore agreed on a concept for roamers to only pay the local domestic tariffs of the visited network and the elimination of all charges and surcharges for calls received while roaming.

34. In order to implement ONA, the EAC Multi-Sectoral Coordination Committee adopted recommendations from the EAC Sectoral Council that; Wholesale (inter-operator) tariffs should be capped at USD 7 cents per minute for traffic originating and terminating within EAC, the retail tariff cap should be USD 10 cents per minute including taxes, for the traffic originating and terminating within EAC, charges on receiving calls while roaming were removed within EAC, existing inter-operator agreements were to be amended by January, 2015, systems were to be set up to prevent traffic re-filling, fraud and illegal termination of traffic, partner states were to harmonise taxes on telecommunication traffic and remove international surcharges for traffic originating and terminating within EAC[21]. In this regard, the MNOs were required to renegotiate the wholesale prices for roaming with their partners.

35. Kenya, Uganda, Rwanda and South Sudan were the first to implement ONA IN 2014 with Tanzania joining in 2021[22]. For the ONA to be implemented in Kenya, surcharges on international incoming traffic from EAC countries were removed, there are no additional charges to subscribers on account of roaming within the region, there were no charges for subscribers within the ONA for receiving calls while roaming, CAK also set a cap on the Inter-Operator Tariffs (IOT) within ONA at USD 10 cents per minute for retail and USD 7cents per minute for wholesale customers. Subscribers who travel within ONA were charged as domestic subscribers in the visited country network[23]. These measures were in line with the recommendations of the EAC Multi-Sectoral Coordination Committee and were issued by way of a Gazette Notice which was in line with the relevant Act in telecommunications[24].

16 CAK Market Reports for 2020
17 ZICTA Market Report for 2020
18 https://www.ca.go.ke/wp-content/uploads/2018/02/Tariff-Regulations-2010.pdf
19 https://www.ca.go.ke/wp-content/uploads/2018/02/Radio-Communications-and-Frequency-Spectrum-Regulations-2010-1.pdf
20 Effective Spectrum Pricing in Africa, GSMA, November, 2020

21 A case study of ONA; East Africa One Network Area Foaming Initiative, 2016
22 https://www.cnbcafrica.com/media/6256927227001/
23 A case study of ONA; East Africa One Network Area Foaming Initiative, 2016
24 A case study of ONA; East Africa One Network Area Foaming Initiative, 2016

36. The implementation of ONA led to an increase in voice traffic volumes in the EAC. For example, traffic coming from South Sudan to Kenya grew by 370 percent while traffic from Kenya to South Sudan grew by 201 percent in 2015. Traffic from Kenya to Rwanda grew by 109 percent while traffic from Rwanda to Kenya grew by 85 percent in 2015[25]. The ONA is currently only limited to voice calls with the possibility of it being extended to data. However, negotiations for data roaming are still ongoing. CAK requires MNOs to report on international traffic on calls and this is separated for those within EAC and outside EAC. From the available data for the years ending 2018, 2019 and 2020 which are shown in the table below.

Table 12: Roaming Traffic in Kenya between EAC Countries and from other Countries

International Incoming Mobile Voice Minutes	Year Ending 2018	Year Ending 2019	Year Ending 2020
EAC	290,056,369	319,974,271	259,297,260
Others	262,601,723	247,363,520	212,291,309
International Outgoing Mobile Voice Minutes			
EAC	203,703,869	218,294,880	255,195,987
Others	220,100,663	237,613,149	252,260,068

Source: CAK Sector reports for the year ending 2019/2020 and 2020/2021

37. From the above table, it can be seen that international incoming mobile voice minutes are high within the EAC compared to other countries while the figures are varying for international outgoing voice minutes. It is important to note that out-bound and in-bound roaming traffic within is high with Uganda, Rwanda and South Sudan within EAC compared to countries like Tanzania and Burundi. This could be attributed to the ONA which has been in effect in Kenya, Rwanda, Uganda and South Sudan during the period of analysis. The table below shows the numbers.

25 Ibid

Table 13: Out-Bound and In-Bound Roaming Traffic within the EAC.

2020				
	Outbound		In-Bound	
	Incoming Minutes	Outgoing Minutes	Incoming Minutes	Outgoing Minutes
Uganda	88,941,132	3,357,582	26,321,795	4,522,658
Tanzania	359,943	8,041,453	74,937	7,953,549
Rwanda	5,540,963	1,191	7,740,061	1,077,250
Burundi	5,314	282,105	598	12,918
South Sudan	5,364,131	616,867	4,575,036	383,445

Source: CAK Sector Reports for the year ending 2020/21

Table 14: Out-Bound and In-Bound Roaming Traffic within the EAC.

2019				
	Outbound		In-Bound	
	Incoming Minutes	Outgoing Minutes	Incoming Minutes	Outgoing Minutes
Uganda	60,712,894	4,596,908	42,748,284	546,997
Tanzania	150,919	213,467	44,203	60,562
Rwanda	3,757,801	328,783	10,677,325	139,0555
Burundi	2,833	1,530	73	558
South Sudan	4,141,402	1,141,220	4,077,674	45,655

Source: CAK Sector Reports for the year ending 2019/20

UGANDA

38. The mobile telecommunication services market is regulated by the Uganda Communications Commission (UCC) which enforces the UCC Act of 2003.UCC is therefore responsible for regulating the communications sector which includes telecommunications, radio communication, infrastructure and data communication. In doing so, it enforces the primary law and has developed various guidelines in the telecommunications sector and is also responsible for issuing of licences[26]. Like other countries, it does not regulate the prices charges by MNOs for customers roaming. However, Uganda is a Member of the East Africa Community (EAC) and is among the countries that have implemented the ONA which allows consumers of mobile

26 https://www.ucc.co.ug/about-ucc/

telecommunication services to benefit from lower rates of calling when they travel to countries like Rwanda and Kenya.

ZAMBIA

39. The mobile telecommunication services market is regulated by the Zambia Information and Communications Technology Authority (ZICTA) which enforces the ICT (Universal Access) Regulations 2012, the Radiocommunication (Allocation of Frequencies) (Revocation) Order 2010 and other supporting regulations, guidelines and policies. All the MNOs have 4G licences. The mobile and internet penetration rates as of 2020 were at 106.1% and 57.1% respectively[27]. ZICTA regulates the tariffs used by MNOs who are required to submit the tariffs being charged to consumers. In 2018, ZICTA had undertaken a cost of service study in the sector that led to the reduction in the Mobile Termination Rates (MTRs) for voice and SMS from 2019 onwards. For example, the MTR reduced in 2020 from USD 1 cent per minute to USD 0.95 cents per minute, the reduction in the rates is expected to continue until 2022. [28].

40. Suffice to mention that while all the three MNOs have rolled out for 4G in Zambia, the largest number of telecommunication sites continue to be 2G accounting for 41.1% of the 10,574 sites in 2020, with 3G sites accounting for 32.9% and 4G/LTE sites accounting for 26%. However, the number of such sites continue to increase[29].

41. The traffic for international incoming calls has steadily been reducing as shown in the table below. This has been alluded to the new technologies such as whatsapp, facetime and messenger

Table 15: Traffic for International Incoming and Outgoing Calls for Zambia

	2018	2019	2020
International incoming calls	30,450,936	20,243,408	18,610,289
International outgoing calls	33,472,252	22,471,123	17,401,611

Source: Error! Hyperlink reference not valid. on 20th February, 2022

42. It is important to note that Zambia is a Member of the Southern Africa Development Community (SADC) as such, the MNOs will be expected to implement voice, sms and data roaming rates agreed on under Revised Roaming Regulations. In 2007, the SADC ICT Ministers convened a meeting of policy makers, National Regulatory Authorities (NRA) and MNOs to look into the reduction of retail roaming tariffs within the SADC region, this was after they noted that the jurisdictional challenges by NRAs in regulating International Roaming Services. Hence forth, the SADC Roaming project was established in three phases; phase I involved the liberalisation, transparency to roaming tariff, information and data collection, phase II involved wholesale and retail cap regulation (Roam Like At Home (RLAH)) and Phase III involves the use of cost-based price regulation. Phase I and II of the project were completed. In phase III, the wholesale and retail cost-based pricing proposals were computed and approved by the SADC ICT Ministers in September, 2019. MNOs are expected to renegotiate the wholesale prices within the timelines given in the project[30]. Zambia has completed both phase I and Phase II of the project just like nine other Member States namely, Botswana, Eswatini, Mauritius, Mozambique, Namibia, South Africa, Tanzania and Zimbabwe[31].

43. The SADC Roaming Project has calculated wholesale and retail based cost-based ceilings which have been determined as follows:

Table 16: Roaming Charges proposed under the SADC Roaming Project

USE CASE	IOT PROPOSITION	RETAIL PROPOSITION
Local Call	1+1+0.5+0.1+6*0.05=USD 2.9 cents per minute	RLAH
Home Call	1+ITC(VN->HC)+0.5+0.1+12*0.05=USD 2.2 cents per minute + ITC(VN->HC)	2.2*1.25+ITC(VN->HC)=USD2.8 cents per minute + ITC(VN->HC)
SADC Call	1 + ITC [VN->SADC]+ 0.5 + 0.1 +12*0.05 = USD 2.2 cents per minute + ITC [VN->SADC]	2.2*1.25 + ITC [VN->SADC]= USD 2.8 cents per minute + ITC [VN->SADC]

27 https://www.zicta.zm/acts?page=3
28 ZICTA Market Report 2020
29 ZICTA Market Report 2020

30 SADC 2020/21 Annual Report
31 SADC Regional Indicative Strategic Development Plan (RISDP) 2020-2030 published in October, 2020

Incoming call	0 cents per minute	2.2*1.25 + ITC [HN-> VN]= USD 2.8 cents per minute + ITC [HN-> VN]
SMS	Utilise existing IOTs while at the same time, MNOs should renegotiate the existing IOTs wherever the IOT is higher than the proposed retail price	USD 1cent per SMS + average ITC SMS Up to USD 6 cents per SMS
Data	Equivalent retail tariff of 1MB from a Prepaid 30-day 1GB in bundle offer of the VN+ 0.01+0.1+0.2*0.1+0.4*0.05 = Equivalent retail tariff of 1MB from a prepaid 30-Day 1GB in bundle offer + USD 0.14 cents per MB	RLAH

Where:
For home calls: ITC(VN-> HC) is the charge paid by the Visited Network to call the Home Country
For SADC calls: ITC [VN-> SADC] is the charge paid by the Visited Network to call SADC Countries (averaged on the area)
For Incoming calls: ITC [HN-> VN] is the charge by the Home Network to call the Visited Network
Meaning of terms used

ITC-International Incoming Charge
VN-Visited Network
HN-Home Network
HC-Home Country

Source: Regulations SADC/CM/2015/3B of SADC Ministers Responsible for Postal, Telecommunications and ICT services Meeting of 26th June, 2021 concerning the implementation of the regional directives on roaming services, revised in July, 2020

44. The above wholesale and retail cost-based price ceilings are expected to be implemented in two phases, with the first phase running from 2020 to 2022. In this phase, the specific International Incoming Revenue either voice or SMS (ITR) and ITCs are to be maintained but MNOs are encouraged to lower them through bilateral negotiations and these negotiations are expected to be done by 31st December, 2020. The responsible ministries, Communications Regulator's Association of Southern Africa Roaming Task Team and the national regulatory authorities are also expected to amend the regulations to allow harmonisation of ITRs and ITCs in preparation for phase 2. Phase 2 will run from 2023 to 2025 where it is expected that there will be harmonised ITRs and ITCs in a glide path manner, where by January, 2023 the ITR of USD 20.3 cents per minute would be used and by 2025, the country ITR should be equal to the country's MTR[32].

EGYPT

45. In Egypt, the mobile services market is regulated by the National Telecom Regulatory Authority (NTRA) that enforces the Telecom Regulation Law No.10 of 2003, Ministerial Decree No.258 of 2003, Ministerial Decree No.259 of 2003, Ministerial Decree No.128 of 2006, Ministerial Decree No.667 of 2017, Combating Cyber and Information Technologies, the Executive Regulations of Law No.175 of 2018 on Combating Cyber and Information Technology Crimes[33]. The mobile and internet penetration rates in Egypt as of 2020 was 100.7%[34] and 55.7%[35] respectively[36].

46. According to NTRA, they determine the general bases that telecom operators and service providers comply with, by issuing the regulatory frameworks and rules that ensure the provision of telecommunications services to users in full transparency, and without any discrimination, while guaranteeing free competition among telecom service providers[37]. NTRA provides the general framework for interconnection agreements between telecom operators and services providers. MNOs are expected to sign bilateral interconnection agreements which are approved by NTRA. NTRA also provides an outline of what the agreements should contain such as the regulatory, technical and economic aspects. The economic aspect, includes information on interconnection charges, terms of payment and the billing process. It is expected that

32 Regulations SADC/CM/2015/3B of SADC Ministers Responsible for Postal, Telecommunications and ICT services Meeting of 26th June, 2021 concerning the implementation of the regional directives on roaming services, revised in July, 2020
33 https://www.tra.gov.eg/en/regulations/laws-and-legislations/
34 Calculated based on information from audited financial statements of the companies operating in Egypt for 2020
35 Ministry of Communications and Information Technology ICT Indicators August, 2020, Monthly Issue
36 Ministry of Communications and Information Technology 2020 ICT Indicators in brief
37 https://www.tra.gov.eg/en/regulations/regulatory-framework/

the interconnection charges are cost-based with a reasonable profit margin, the cost models are approved by NTRA. The interconnection rate for mobile services is set as USD 0.7[38] cents per minute[39]. The four MNOS operating in Egypt have 4G licences. Orange, Vodafone and Etisalat all have spectrum of 40MHz and above while Telecom Egypt has Spectrum of 15 MHz.

47. Roaming rates are not regulated in Egypt and operators charge their own rates. MNOs operating in Egypt have developed special offers to their customers on roaming. For example, Vodafone has a roaming policy which includes Basics, Essentials, Red Extra or Red Entertainment Plans for voice and data. The prices for roaming in the plans range from USD 0 (zero) to USD 4.5 depending on where you are roaming from. Countries have been grouped into four different zones with Egypt being in Zone D where customers pay USD4.5 for roaming there while roaming in some European countries for Vodafone customers on some plans costs between USD0 and USD 1.5[40].

48. Etisalat currently has standard roaming rates, for prepaid customers, they can send or receive messages, receive incoming calls, make outgoing calls and subscriber to voice and data roaming packs when they travel out of their country. For pay as you go customers, the Gulf Corporation Community (GCC)[41] have special rates such that customers in those countries pay lower rates . For example; it costs USD 22 cents per minute to receive calls in the GCC on the Etisalat while it would cost USD 1.16 per minute to receive calls in Egypt on the same network when roaming. It would cost USD 23.4 per minute to make local calls when roaming in the GCC and USD 1.23 per minute when roaming in Egypt, it would cost USD 2.45 per minute to make outgoing calls in the GCC while it would cost USD 3.54 per minute when in Egypt on the same network[42]. It therefore appears that MNOS will charge roaming rates on data, voice calls and SMS to customers depending on where they are roaming from. This may partly be due to existing regulations and agreements they need to comply with in the countries where a customer is roaming from.

38 11 Piaster per Minute
39 https://www.tra.gov.eg/en/regulations/regulatory-framework/framework-of-interconnection/
40 List of Vodafone international roaming countries I FAQs 2020 (uswitch.com) accessed on 21st February, 2021
41 These countries are United Arab Emirates, Saudi Arabia, Qatar, Oman, Kuwait and Bahrain
42 https://www.etisalat.ae/en/c/mobile/standard-roaming-rates.jsp accessed on 21st February, 2022

DEMOCRATIC REPUBLIC OF CONGO

49. The mobile telecommunication services market is regulated by Autorite de Regulation de la Poste et des Telecommunications du CONGO (ARPTC) that uses Law No 013-2002 of October 16 on Telecommunications in the DRC. Suffice to mention that all the four mobile operators in DRC acquired 4G licences which they started deploying across the country by 2018. However, the mobile and internet penetration rates are low standing at 46.1% and 23.6% respectively in 2020[43]. Further, in 2020 MNOs derived USD 1,383,775,709 from voice calls, SMS, roaming and data. The revenue specifically relating to roaming was about USD 5,240,435.

50. ARPTC regulates the prices charged by MNOs on on-net and off-net calls by setting price floors. In 2020, the price floor for on-net and off-net calls domestically was at USD 6.1 cents. Based on the set price floor, the average cost of on-net calls within DRC was USD 10.3 per minute while off-net calls were at USD 11.4 per minute in 2020[44]. Roaming makes up a small proportion of voice traffic on all networks that is for both SMS and voice calls. For example, in 2020, roaming was only 0.04% of the total voice traffic and 0.07% of total SMS traffic[45]. There are no laws regulating roaming charges in DRC. However, it is important to note that DRC is a Member State of SADC and part of the SADC roaming project described above applies to it even if no significant strides have been made to implement the project in the country.

ROAMING UNDER THE COMESA BLOCK

51. Ministers and government representatives from 15 out 21 Member States of COMESA during their 10th Meeting held on 3rd and 4th October 2017, resolved to initiate action towards abolishing roaming charges levied on mobile calls. The

43 ARPTC 4th Quarter market observatory of December, 2020
44 ARPTC market reports for quarter 2 and 4
45 Calculated from ARPTC market reports for quarter 2 and 4

countries represented at the meeting included, DRC, Djibouti, Egypt, Ethiopia, Kenya, Madagascar, Mauritius, Rwanda, Sudan, Swaziland, Uganda, Zambia and Zimbabwe[46]. In this regard, COMESA Member States were urged to emulate other groupings in Africa and beyond such as the EAC and the European Union (EU). ICT Regulators were also advised to conduct studies to reduce interconnection rates and reduce or eliminate the roaming charges[47]. However, following the announcement, there has been no framework or regulations on how the elimination of the charges would be undertaken. In addition, in June 2021, the Ministers of Infrastructure dropped the project on the establishment of the COMESA Telecommunication company. The project started in the 1990s and was aimed at bridging the gap in access to essential communication and information services in the region. The project failed to take off due to lack of potential financiers and interest from stakeholders. The Ministers also noted that due to the passage of time, there has been improved connectivity within countries and between countries and this made the project unviable[48].

52. It is also important to note that other regional blocks such as the EU have made tremendous progress in the harmonisation of interconnection rates across the region. In 2018, the European Electronic Communications Code (EECC) was adopted to regulate electronic communications in the EU. This was aimed at having a single digital market in the EU covering the regulation of interconnection across the region. In the line with the EECC, there is now a delegated Act for voice and call termination which was enacted in December, 2020. The Act sets a single maximum EU-wide mobile voice termination rate and single maximum EU-wide Fixed termination trade that are applicable to any provider of fixed and mobile termination services across the EU. This means that there will be no differences between call termination rates charged between operators within or beyond national borders inside the EU and users of fixed and mobile voice services will face the same local rates irrespective of location within the EU[49].

COST OF ROAMING

53. The following chapter shows an analysis of the cost of roaming for consumers when they visit other countries assessed in this study. The focus is on the cost of roaming for prepaid customers. This is because most of the ordinary consumers in the countries under assessment use prepaid services as opposed to post-paid services that are used mainly by businesses. The data used in the analysis was obtained from Tarifica and the websites of the MNOs operating in the countries under assessment. All the roaming charges are in dollars converted using the respective Central Bank average prevailing rates for the month of February. In this regard, the chapter shows the cost of roaming for consumers originating from;

    53.1 DRC on the respective MNO networks when they visit Egypt, Kenya and Zambia.

    53.2 Egypt on the respective MNO networks when they visit DRC, Kenya and Zambia

    53.3 Kenya on the respective MNO networks when they visit DRC, Egypt and Zambia

    53.4 Zambia on the respective MNO networks when they visit DRC, Egypt and Kenya

    53.5 The study also shows the cost of roaming for consumers originating from Uganda and visiting those countries that are part of the EAC as well as when the same consumers visit other COMESA and some SADC Member States. This assessment has been done to draw a comparison on the differences in the costs of roaming under the ONA arrangement and in other regions where there is no existing agreement and as such consumers unable to benefit from lower rates of roaming.

46 http://www.daily-mail.co.zm/abolishing-roaming-charges-in-comesa-region-progressive/
47 https://www.tralac.org/news/article/12229-comesa-region-set-to-abolish-roaming-charges.html
48 https://www.comesa.int/comesa-telecoms-project-dropped-20-years-later/
49 Wider Working Paper 2021/126, the Regulation of Interconnection and Regulatory Alignment in the Souther Africa Development Community, Grace Nsomba; July, 2021

DRC CONSUMERS ROAMING ON THE RESPECTIVE MNO NETWORKS WHEN THEY VISIT EGYPT, KENYA AND ZAMBIA.

AIRTEL DRC

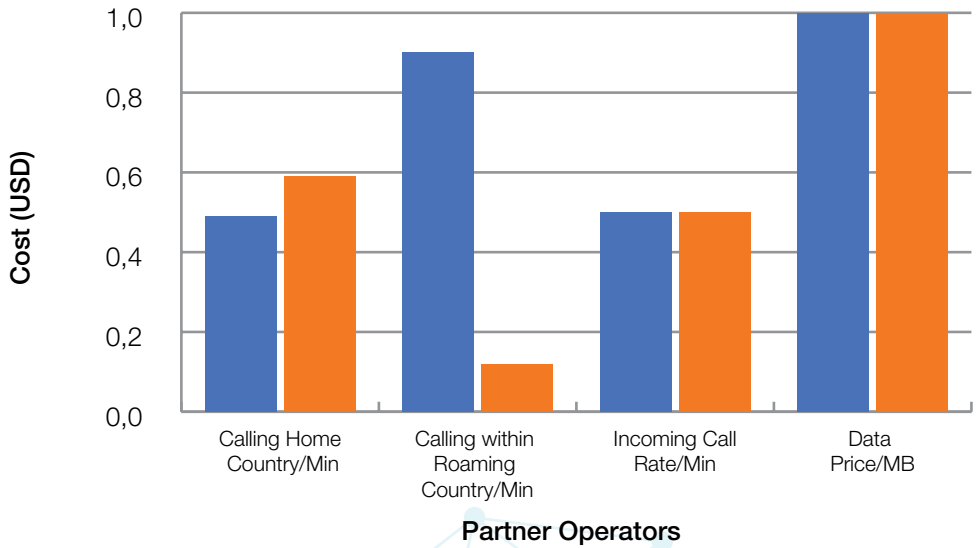
54. Figure 23 shows the cost of roaming for DRC consumers who are on Airtel Network when they visit Kenya and Zambia. Egypt has been excluded from this analysis because only post-paid prices of roaming were available.

55. From the figure, it can be seen that Airtel DRC subscribers visiting Kenya and Zambia have the same cost of data, USD 1 per Megabyte (MB) and that of receiving incoming calls, USD 0.5 per minute while it is cheaper to make calls to DRC while in Kenya (USD 0.49) than when in Zambia (USD 0.59). At the same time, calling within Zambia while roaming on Airtel DRC is cheaper than calling within Kenya while on Airtel DRC.

VODACOM DRC

56. Subscribers on Vodacom DRC can roam in Egypt, Kenya and Zambia on the partner networks shown in Figure 10. It can be seen in Figure 24 below that the cost of calling DRC when roaming in Egypt (Orange and Etisalat) is USD 8.74 per minute, Kenya (Airtel and Telkom) is USD 3.34 per minute and Zambia (Airtel and Zamtel) is USD5.04 per minute for subscribers who are on Vodacom DRC which is higher than for subscribers who are in the same countries but using Vodafone (Egypt), Safaricom (Kenya) and MTN (Zambia) whose cost is USD 0.5 per minute. The cost of data on the other hand ranges from USD 4.13 per MB on Airtel Zambia to USD32.71 per MB on Etisalat and Orange Egypt. The cost of on Airtel Kenya and Telkom is USD 14.08 per MB.

Figure 23: AIRTEL DRC roaming in Kenya and Zambia



Zambia Airtel	0,49	0,90	0,50	1
Kenya Airtel	0,59	0,12	0,50	1

Source: Calculation made using data obtained from Tarifica and the website for Airtel DRC

ORANGE DRC

57. For Orange DRC, Prepaid customers can roam in Egypt on Orange, in Kenya on Telkom and Airtel, in Zambia on MTN. However, as opposed to providing prices for voice, SMS or Data, there are available packages for customers to choose from which contain Voice, SMS and data. These packages are as follows[50]

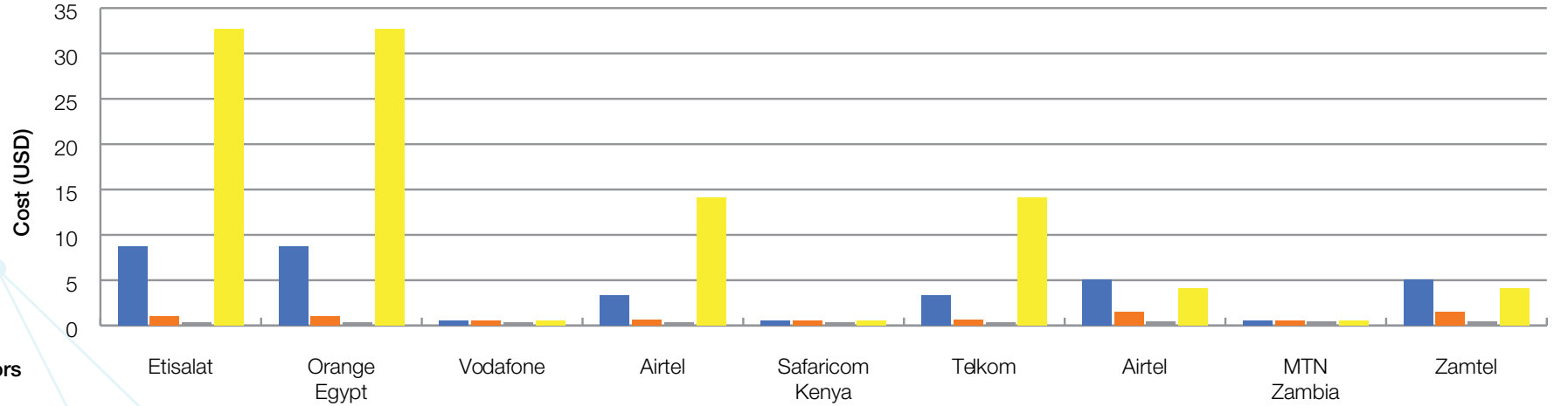
Table 17: Packages offered by Orange DRC for Roaming

Bundle Price/ Package	USD 2[51]	USD 10[52]	USD 50[53]
Outgoing voice (Minutes)	2	10	50
Incoming voice (Minutes)	2	10	50
Data (MB)	10	50	250
Validity (Days)	3	15	30

Source: Orange DRC Webiste

50 https://www.orange.cd/fr/roaming/forfaits-roaming-afrique-et-business-voix-sms-internet.html accessed on 5th March, 2022
51 This package also includes 5 SMS, this data has not been included as the study is focusing on voice and data prices
52 This package includes 20 SMS
53 This package includes 100 SMS

Figure 24: The Cost of Roaming on Vodacom DRC



Data Price/MB	8,74	8,74	0,5	3,34	0,5	3,34	5,04	0,5	5,04
Incoming Call Rate/Min	1,04	1,04	0,5	0,64	0,5	0,64	1,54	0,5	1,54
Calling within Roaming Country/Min	0,35	0,35	0,35	0,35	0,35	0,35	0,4	0,4	0,4
Calling Home Country/Min	32,71	32,71	0,5	14,08	0,5	14,08	4,13	0,5	4,13

Source: Calculated using data from Tarifica

AFRICELL DRC

58. Consumers on Africell DRC on prepaid and post paid can roam in Egypt and Kenya. however, the roaming rates to these countries are not provided

EGYPT CONSUMERS ROAMING ON THE RESPECTIVE MNO NETWORKS WHEN THEY VISIT DRC, KENYA AND ZAMBIA

VODAFONE EGYPT

59. Figure 25 shows the cost of roaming for subscribers on Vodafone Egypt when they visit DRC, Kenya and Zambia.

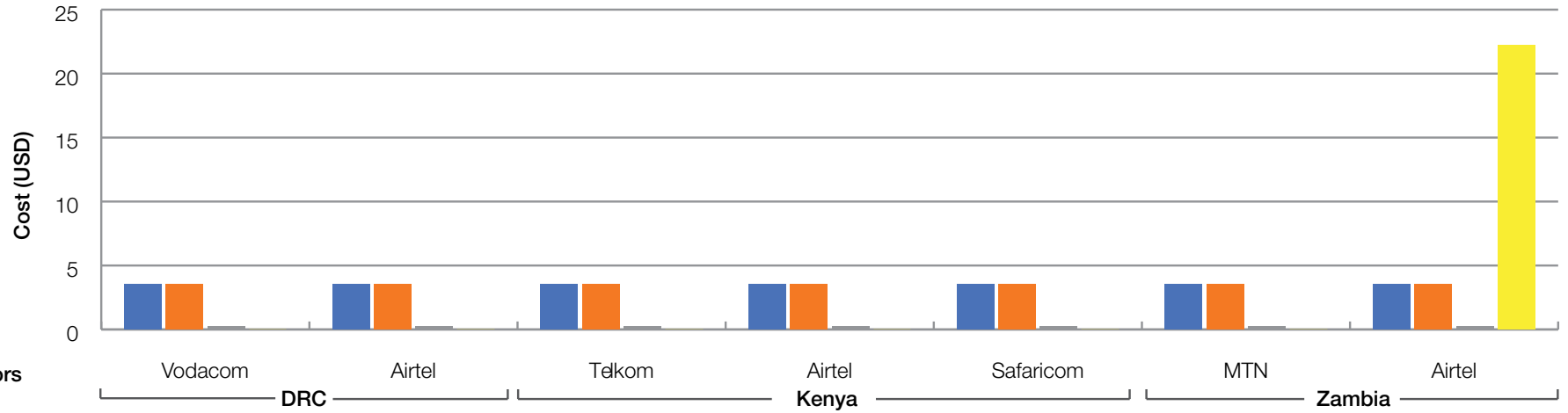
60. As can be seen from Figure 25, the cost of roaming for subscribers on Vodafone Egypt when in DRC, Kenya and Zambia is the same with rates for calling home back in DRC at USD 3.55 per minute, making local calls at USD 3.55 per minute, receiving calls at USD0.25 per minute and the price of data per MB at USD22.21 on Airtel Zambia. Data roaming information is only available for Airtel Zambia.

ORANGE EGYPT

61. The cost of roaming for subscribers of Orange Egypt when they visit DRC, Kenya and Zambia is as shown in Figure 26.

62. Figure 26 shows that the cost of roaming for subscribers on Orange Egypt when they visit DRC, Kenya and Zambia is the same for both data and voice. The cost for calling the home country from the visited network is USD2.28 across all the partner MNOs operators of Orange in the respective countries and that for data roaming is USD 6.03 per MB.

Figure 25: Cost of Roaming on Vodafone Egypt



Data Price/MB	3,55	3,55	3,55	3,55	3,55	3,55	3,55
Incoming Call Rate/Min	3,55	3,55	3,55	3,55	3,55	3,55	3,55
Calling within Roaming Country/Min	0,25	0,25	0,25	0,25	0,25	0,25	0,25
Calling Home Country/Min	0,00	0,00	0,00	0,00	0,00	0,00	22,21

Source: generated from data provided by Tarifica

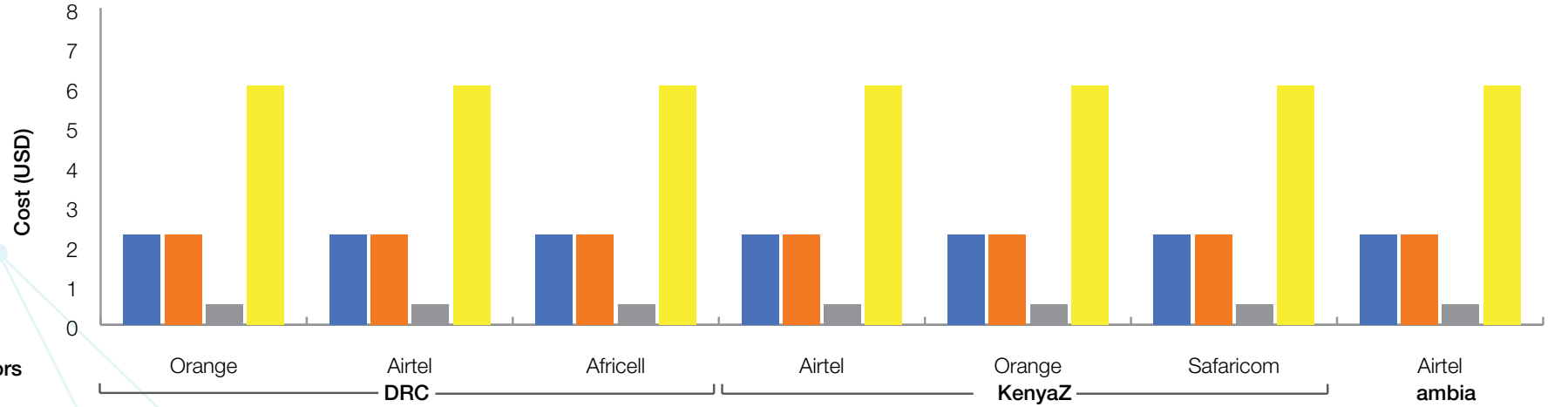
TELKOM EGYPT

63. Figure 27 shows the roaming rates for subscribers of Telecom Egypt visiting DRC, Kenya and Zambia. The figure shows that subscribers in DRC and Zambia are charged the same rates for making calls back to Egypt at USD 1.27 per minutes, making local calls at USD0.95 per minutes and data at USD 1.27 per MB. The rates are different for Kenya where consumers subscribers are charged USD 1.59 per minute for making calls back to Egypt, USD 1.27 per minute for making local calls while data per MB is charged at the same cost of USD 1.27 for all the three countries.

ETISALAT EGYPT

64. Figure 28 shows the cost of roaming on Etisalat Egypt. The figure shows that subscribers on Etisalat Egypt are charged the same prices for both voice and data roaming in DRC, Kenya and Zambia. Subscribers calling back home are charged USD 2.03 per minute, local calls are charged USD 0.73 per minute, incoming calls are charged USD 0.25 per minute while data is charged USD 4.67 per minute.

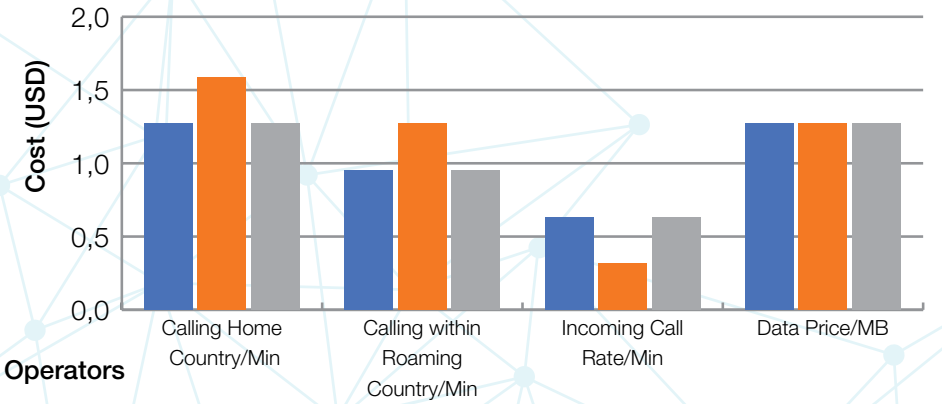
Figure 26: the cost of roaming on Orange Egypt, when in DRC, Kenya and Zambia



Data Price/MB	2,28	2,28	2,28	2,28	2,28	2,28	2,28
Incoming Call Rate/Min	2,28	2,28	2,28	2,28	2,28	2,28	2,28
Calling within Roaming Country/Min	0,51	0,51	0,51	0,51	0,51	0,51	0,51
Calling Home Country/Min	6,03	6,03	6,03	6,03	6,03	6,03	6,03

Source: Generated from data provided by Tarifica

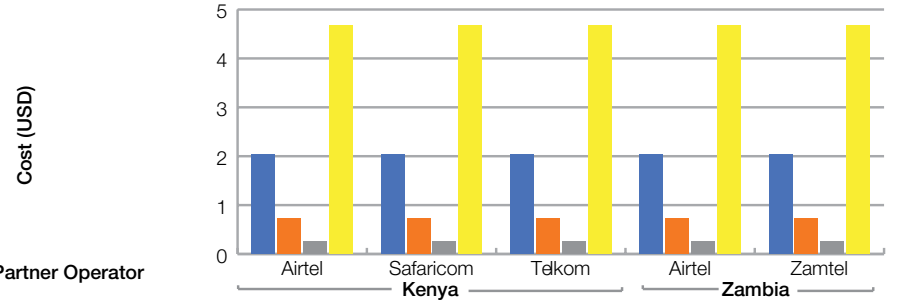
Figure 27: The Cost of Roaming on Telecom Egypt



DRC	1,27	0,95	0,63	1,27
Kenya	1,59	1,27	0,32	1,27
Zambia	1,27	0,95	0,63	1,27

Source: Generated from Data provided by Tarifica

Figure 28: The Cost of Roaming on Etisalat Egypt



Calling Home Country/Min	2,03	2,03	2,03	2,03	2,03
Calling within Roaming Country/Min	0,73	0,73	0,73	0,73	0,73
Incoming Call Rate.Min	0,25	0,25	0,25	0,25	0,25
Data Price/MB	4,67	4,67	4,67	4,67	4,67

Source: Generated from data obtained from Tarifica

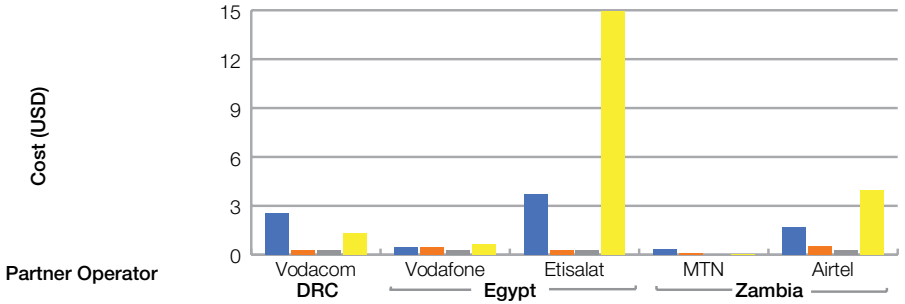
KENYA CONSUMERS ROAMING CHARGES ON THE RESPECTIVE MNO NETWORKS IN DRC, EGYPT AND ZAMBIA

SAFARICOM KENYA

65. Figure 29 shows the cost of roaming on Safaricom Kenya when in DRC, Egypt and Zambia.

66. From Figure 29, the cost of roaming on Safaricom Kenya in DRC on Vodacom is USD 2.55 per minute compared to USD 0.44 per minute when on Vodafone Egypt, USD 3.69 per minute when on Etisalat Egypt, USD 0.35 per minute when on MTN Zambia and USD 1.71 per minute when on Airtel Zambia. The cost of data per MB is USD 14.94 per MB on Etisalat Egypt compared to USD 0.04 when on MTN Zambia.

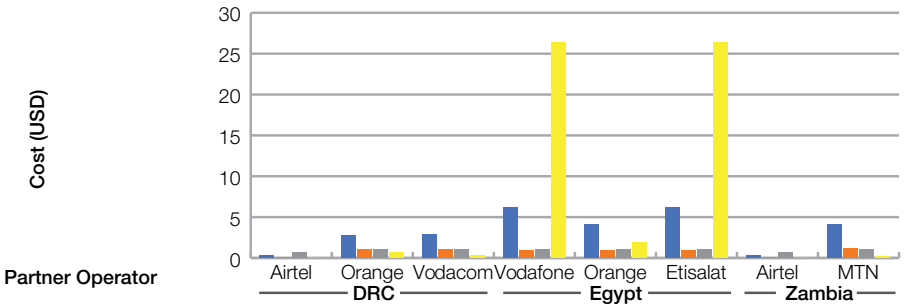
Figure 29: Cost of Roaming on Safaricom Kenya in DRC, Egypt and Zambia



Calling Home Country/Min	2,55	0,44	3,69	0,35	1,71
Calling within Roaming Country/Min	0,26	0,44	0,26	0,09	0,53
Incoming Call Rate.Min	0,26	0,26	0,26	0	0,26
Data Price/MB	1,32	0,66	14,94	0,04	3,96

Source: Generated from data provided by Tarifica

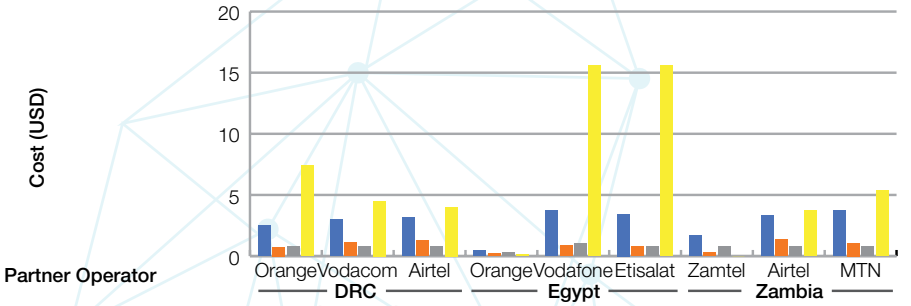
Figure 30: Cost of Roaming on Airtel Kenya in DRC, Egypt and Zambia



Calling Home Country/Min	0,32	2,78	2,85	6,16	4,11	6,16	0,32	4,12
Calling within Roaming Country/Min	0,06	1,04	1,07	0,88	0,94	0,88	0,06	1,17
Incoming Call Rate.Min	0,73	1,01	1,01	1,01	1,01	1,01	0,73	1,01
Data Price/MB	0	0,69	0,32	26,4	1,87	26,4	0	0,16

Source: Generated from data provided by Tarifica

Figure 31: Cost of Roaming on Telkom Kenya in DRC, Egypt and Zambia



Calling Home Country/Min	2,51	3,01	3,13	0,47	3,75	3,44	1,66	3,34	3,76
Calling within Roaming Country/Min	0,74	1,13	1,25	0,23	0,86	0,78	0,31	1,38	1,07
Incoming Call Rate.Min	0,75	0,75	0,75	0,26	1,04	0,76	0,75	0,75	0,75
Data Price/MB	7,4	4,51	4,01	0,11	15,62	15,62	0	3,76	5,39

Source: Generated from Data Provided by Tarifica

AIRTEL KENYA

67. Figure 30 shows the cost of roaming on Airtel Kenya in DRC, Egypt and Zambia.

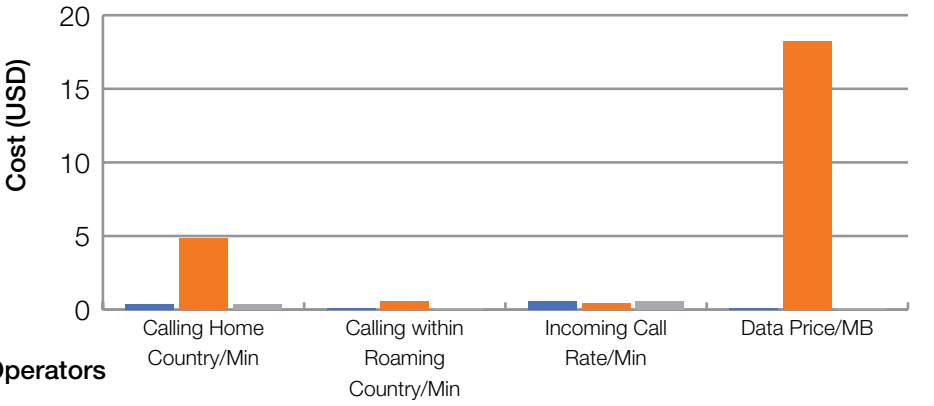
68. From Figure 30, it can be seen that the cost of roaming while on Airtel Kenya is the same for subscribers roaming on Airtel DRC and Airtel Zambia. This is because Airtel has what is called the One Network that comprises of Airtel operations in other countries where it is present. Subscribers with Airtel sim cards can roam at cheaper rates when they roam from another Airtel Network in the visited country. As such while Airtel subscribers can roam for USD 0.32 per minute when making calls from DRC and Zambia on the One Network, Airtel subscribers using Vodacom Egypt pay USD 2.78 per minute and those on Etisalat pay USD 6.16 for voice calls. While on the other hand, data costs USD 26.4 on Etisalat Egypt and USD 26.4 Vodafone Egypt.

TELKOM KENYA

69. Figure 31 shows the cost of roaming for Telkom Kenya subscribers when in DRC, Egypt and Zambia.

70. Figure 31 shows that subscribers on Telkom Egypt are charged USD 2.51 per minute when calling their home country from an Orange Network in DRC while at the same time they are charged USD 0.47 per minute when calling from Orange Network in Egypt. Those roaming from MTN Zambia are charged USD 3.76 per minutes for calls. Data charges ranged from USD 0.11 per MB on Orange Egypt to USD 15.62 per MB on Vodafone Egypt and Etisalat.

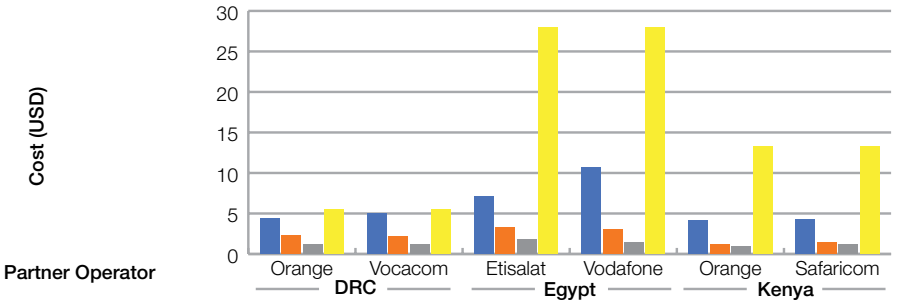
Figure 32: Cost of Roaming on Airtel Zambia in DRC, Egypt and Kenya



Partner Operators	Calling Home Country/Min	Calling within Roaming Country/Min	Incoming Call Rate/Min	Data Price/MB
DRC Airtel	0,39	0,11	0,55	0,11
Egypt	4,86	0,55	0,44	18,21
Kenya Airtel	0,39	0,11	0,55	0,11

Source: Generated using data from Tarifica

Figure 33: Cost of Roaming on Zamtel Zambia in DRC, Egypt and Kenya



Partner Operator	Orange	Vocacom	Etisalat	Vodafone	Orange	Safaricom
	DRC		Egypt		Kenya	
Data Price/MB	4,4	4,98	7,06	10,7	4,08	4,23
Incoming Call Rate.Min	2,32	2,2	3,22	3,03	1,22	1,37
Calling within Roaming Country/Min	1,21	1,21	1,79	1,36	0,92	1,17
Calling Home Country/Min	5,52	5,52	27,98	27,98	13,3	13,3

Source: Generated from data provided by Tarifica

ZAMBIA CONSUMERS ROAMING CHARGES ON THE RESPECTIVE MNO NETWORKS IN DRC, EGYPT AND KENYA

AIRTEL ZAMBIA

71. Figure 32 shows the cost of roaming for subscribers on Airtel Zambia when they visit DRC, Egypt and Kenya.

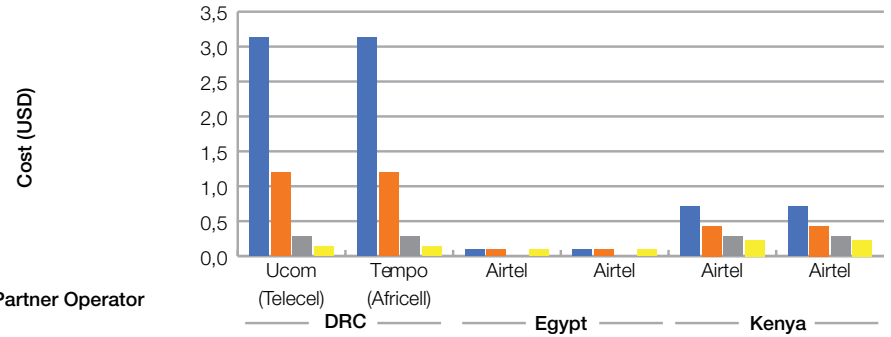
72. Figure 32 shows that the cost of calling from Airtel DRC and Airtel Kenya while roaming on Airtel Zambia is about USD 0.39 per minute for calling back home, USD 0.11 per minute for local calls and USD 0.55 per minute for receiving calls and data per MB is USD 0.11. On the hand, roaming on Airtel Zambia while in Egypt is about USD 4.86 per minute for calling back home, and data per MB costs about USD 18.21.

ZAMTEL ZAMBIA

73. Figure 33 shows the cost of roaming for subscribers of Zamtel Zambia when visiting DRC, Egypt and Kenya

74. The figure shows that Zamtel Zambia customers calling through Vodafone Egypt pay USD 10.7 per minute for calls back home, USD 3.03 per minute for local calls in Egypt and USD 1.36 per minute for receiving calls. In Kenya, Zamtel subscribers pay USD 4.23 per minute when roaming from a Safaricom network and USD 4.98 per minute when roaming from Vodacom network in DRC. Data per MB costs USD 27.98 in Egypt, USD 13.3 in Kenya and USD 5.52 in DRC.

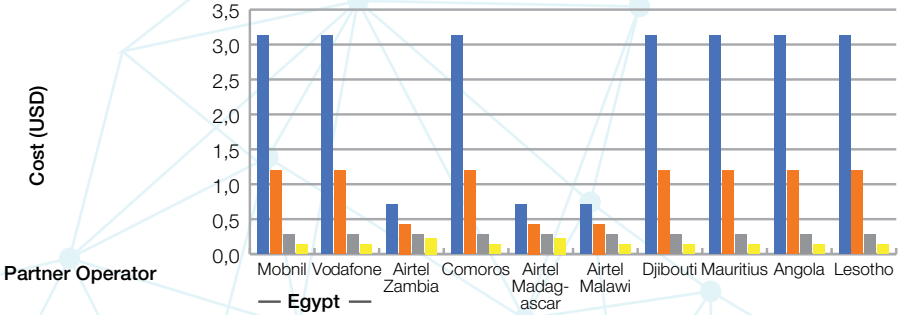
Figure 34: Cost of Roaming for Airtel Uganda Subscribers in countries that are part of the EAC.



	DRC		Egypt		Kenya	
Calling Home Country/Min	3,13	3,13	0,1	0,1	0,71	0,71
Calling within Roaming Country/Min	1,2	1,2	0,1	0,1	0,43	0,43
Incoming Call Rate.Min	0,28	0,28	-	-	0,28	0,28
Data Price/MB	0,14	0,14	0,1	0,1	0,23	0,23

Source: Generated using data from Tarifica and Airtel Uganda Website

Figure 35: Cost of Roaming on Airtel Uganda in other COMESA and SADC Member States



	Egypt									
Calling Home Country/Min	3,13	3,13	0,71	3,13	0,71	0,71	3,13	3,13	3,13	3,13
Calling within Roaming Country/Min	1,2	1,2	0,43	1,2	0,43	0,43	1,2	1,2	1,2	1,2
Incoming Call Rate.Min	0,28	0,28	0,28	0,28	0,28	0,28	0,28	0,28	0,28	0,28
Data Price/MB	0,14	0,14	0,23	0,14	0,23	0,14	0,14	0,14	0,14	0,14

Source: Generated using data from Tarifica

UGANDA CONSUMERS ROAMING CHARGES IN THE RESPECTIVE NETWORKS WHEN ROAMING IN THE ONA AS COMPARED TO ROAMING IN SADC AND COMESA

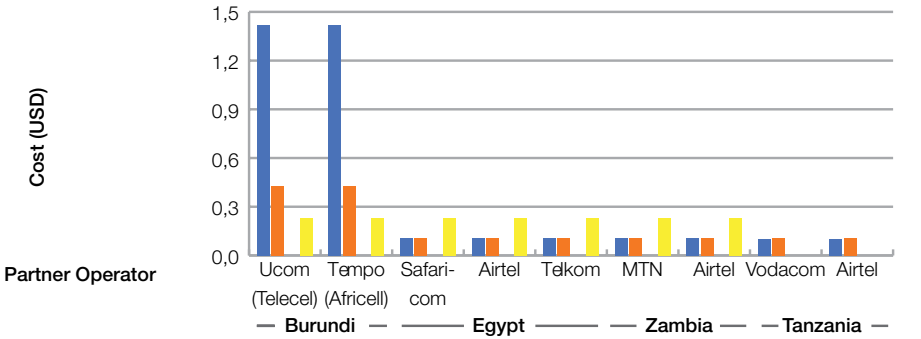
COST OF ROAMING FOR ON AIRTEL UGANDA IN THE COUNTRIES THAT ARE PART OF ONA

75. As can be seen from Figure 34, consumers in Uganda who visit Burundi are charged high prices for calling back their home (USD3.13), making calls within (USD 1.2) Burundi and for receiving calls. While these rates are high, they are lower than those charged to consumers when they visit Tanzania and DRC. Consumers who visit countries like Rwanda and Kenya benefit from the lowest rates due to the ONA arrangement. It should be noted that while all the countries in figure 20 are part of the EAC, Rwanda and Kenya form part of the ONA arrangement. Tanzania only recently joined the arrangement and in 2021 hence it appears that they are yet to start benefiting from the low rates of calling and zero rates for receiving calls on the Airtel Network while roaming. DRC on the other hand also recently joined the EAC and is not yet part of the ONA arrangement. However, the rates for Tanzania and DRC are lower compared to Burundi due to Airtel's One Network, which allows consumers on Airtel Uganda to benefit from lower rates of roaming when they visit a country where there is airtel and they roam on airtel using their airtel SIM card.

COST OF ROAMING ON AIRTEL UGANDA IN OTHER COMESA AND SADC MEMBER STATES

76. Figure 35 shows that it is most expensive to roam in countries such as Egypt, Comoros, Djibouti and Mauritius even though they are all COMESA Countries. These countries are not part of the ONA and Airtel's One Network. For countries such as Zambia, Madagascar and Malawi, the rates are lower as they are part of Airtel's One Network. On the other hand, the cost of calling SADC Countries, Angola and Lesotho is also very high for Airtel Uganda customers and is the same as that of calling COMESA countries not under the Airtel's one Network.

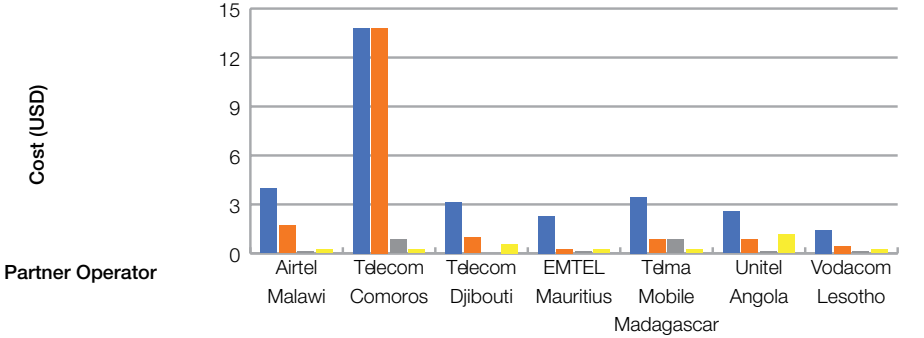
Figure 36: Cost of roaming for MTN Uganda Customers in EAC countries



Calling Home Country/Min	1,42	1,42	0,11	0,11	0,11	0,11	0,11	0,1	0,1
Calling within Roaming Country/Min	0,43	0,43	0,11	0,11	0,11	0,11	0,11	0,11	0,11
Incoming Call Rate.Min	-	-	-	-	-	-	-	-	-
Data Price/MB	0,23	0,23	0,23	0,23	0,23	0,23	0,23	-	-

Source: Generated using data from MTN Uganda website

Figure 37: Cost of Roaming for MTN Uganda Customers in COMESA and SADC Member States



Calling Home Country	3,98	13,8	3,13	2,28	3,47	2,56	1,42
Calling within Roaming Country	1,71	13,8	0,97	0,28	0,85	0,85	0,43
Incoming Call Rate	0,12	0,85		0,12	0,85	0,12	0,12
Data Price/MB	0,23	0,23	0,57	0,23	0,23	1,16	0,23

Source: Generated from data obtained from MTN Uganda Website

COST OF ROAMING ON MTN UGANDA IN EAC COUNTRIES

77. Figure 36 shows the cost of roaming for MTN Uganda customers in countries that are part of the EAC. It can be seen from the figure that it is cheaper to roam in Rwanda, Kenya and Tanzania as opposed to Burundi. Unlike Airtel customers who are charged high rates for roaming in Tanzania, MTN customers are charged lower rates in comparison to what is charged when the same customers visit Rwanda and Kenya. Burundi is not yet part of ONA and as such their roaming rates are higher.

COST OF ROAMING FOR MTN UGANDA CUSTOMERS IN OTHER COMESA AND SADC MEMBER STATES

78. Figure 37 above shows that the cost of roaming for MTN Uganda customers is highest in Comoros even though it is a COMESA Member state, followed by Malawi, Madagascar, Djibouti and Mauritius. It can be seen that the cost of roaming is even cheaper in some SADC countries such as Angola and Lesotho compared to that in the COMESA countries such as Comoros, Malawi, Madagascar and Djibouti.

COMPETITION CONCERNS IN THE MARKET

CONCENTRATION

79. The market for the provision of mobile services is highly concentrated in the Common Market and dominated by MTN, Orange, Airtel and Vodafone. MTN's market share ranges from 34.8% to 89% in the five countries where it operates. Orange's market share ranges from 23.6% to 50.5% in the five countries where it operates. Vodafone's market share ranges from 37.7% to 63.6% in the three countries where it operates while Airtel's market share ranges from 25.9% to 54.8% in the eight countries where it operates in the Common Market.

80. In the countries under assessment, and as indicated in Chaper 1 of this report, the markets for the provision of mobile services are highly concentrated. In the DRC, the HHI was above the threshold of 2,500 for highly concentrated markets. In 2019, the HHI was 2,834 and in 2020 it was 2,851 showing a slight increase from 2019 to 2020. There are only four players in the market with Vodacom dominating the market with market shares of 36.1% and 36.3% in 2019 and 2020 respectively.

81. The market for the provision of mobile services in Egypt comprised of four MNOs and is dominated by Vodafone with market shares of 40.4% in 2019 and 40.5% in 2020. The HHI was above the threshold of 2,500 for highly concentrated markets as it was 3,145 in 2019 and 3,064 in 2020 showing a slight reduction. The reduction was due to the gain in market share by the smaller player, Telecom Egypt.

82. The market for the provision of mobile services in Kenya comprised of four players in 2019 and five players in 2020 and is dominated by Safaricom. Safaricom had market shares of 64.8% in 2019 and 63.6% in 2020. It is important to note that Vodafone holds about 38% market share in Safaricom. The HHI was 4,918 in 2019 and 4,145 in 2020. There was a reduction in the HHI in 2020 compared to 2019 and this could be attributed to the entry of a new player in the market, Jamii Telecommunications.

83. On the other hand the market of the provision of mobile services in Uganda comprised of four players with MTN dominating having a market share of about 52.9%, Airtel with market share of about 35.2% while the 11.9% is shared between UTL and Lycamobile.

84. In Zambia, the market for mobile services is also highly concentrated with HHI of 3,561 in 2019 and 3,681 in 2020. This was a slight increase in the HHI in 2020 compared to 2019. The market is dominated by MTN with market shares of 43.7% in 2019 and 45.3% in 2020.

85. The assessment has therefore revealed that the market for the provision of mobile services tends to be highly concentrated as can be seen in the countries under assessment. This is because there are barriers to entry in the market which are both regulatory and structural. The regulatory barriers to entry include the restriction in the number of players that can be awarded licences for provision of mobile services by the telecommunications regulators in these countries. This is the case for Zambia where the market for a long time had three players until in 2018 when a licence for a

fourth mobile telecommunication company was issued. Even though the licence was issued to the 4th mobile operator, they failed to set up operations and the licence has since been given to another company in 2021.

86. Other regulatory barriers include the existing complex and unfriendly tax laws which make the cost of doing business high in countries such as the DRC as well the access to sufficient spectrum for the provision of such services. The structural barriers to entry include the required network that needs to be set up for a company to operate economically. While these barriers are specific to the general provision of mobile services, there are specific barriers associated with roaming which have been highlighted in the section on barriers to entry above.

ACTUAL AND POTENTIAL ANTI-COMPETITIVE CONDUCT

87. In the case of roaming, subscribers can only access roaming services when they visit another country if their mobile operator has roaming agreements with the MNOs in the visited country. These agreements tend to be bilateral. The cost of roaming for subscribers on various networks is dependent on the negotiated wholesale rates which may inform the retail rates that the MNOs charge their subscribers. The wholesale rates are determined by the MNOs in the visited country while the retail rates are determined by the subscribers' MNO.

88. Some studies have shown that wholesale and retail rates of roaming are highly dependent on the call traffic that MNOs are able to generate; therefore, the larger the volume of traffic in minutes an operator can accrue on a visited network, the greater the bargaining power afforded to that particular operator when it is negotiating agreements with its counterpart in a given market[54].

89. This is because the telecommunications sector is characterized by scale economies, which typically place operators that have higher call traffic at an advantage compared with their competitors: the higher the number of calls per minute, the cheaper it becomes to terminate calls with a given MNO. Therefore, on a particular roaming agreement with an MNO in another country, an operator with higher traffic volumes is able to bargain lower wholesale rates, which can also be translated into lower retail rates. Importantly, this will typically mean that entrants and smaller players will find it more difficult to negotiate favourable wholesale prices due to lower subscriber bases and lower call volumes[55].

90. Other studies have also shown that wholesale level operators face different incentive structures depending on the size. The analysis shows that balancing traffic between operators distorts price signal, making price less important at the wholesale level and excluding smaller operators from competing in the wholesale market. Balancing traffic reduces net payments asymptotically towards zero as the traffic approaches perfect balance. Other studies have shown that it is the headline prices that are determinative in setting retail prices[56].

91. All in all, a number of factors have been recognised as contributing to the high cost of roaming. It has been noted that the wholesale agreements act as a barrier to entry. This was because large operators or operators who are part of a buying alliance are able to obtain better wholesale rates than small unaligned operators, which are largely price takers. The smaller or unaligned operators do not have the bargaining power of the larger or aligned networks. This limits their ability to introduce flat rates or bundled offers which would constrain international mobile roaming prices[57].

92. Demand for international mobile roaming is relatively inelastic, this is because such services are bundled with domestic services. When making a decision on which MNO to use, consumers do not pay particular attention to the prices of international mobile roaming rates as their focus is on domestic services offered. As such the bundling of such services with domestic services diminishes commercial incentives to provide reasonably priced retail services and limits consumers capacity to seek favourable roaming rates[58].

54 The Regulation of interconnection and regulatory alignment in the Southern African Development Community, Grace Nsomba, 2021

55 The Regulation of interconnection and regulatory alignment in the Southern African Development Community, Grace Nsomba, 2021
56 OECD Digital Economy Paper No 223; International Roaming Agreements, 2013.
57 Options Stage Regulation Impact Statement Trans-Tasman Mobile Roaming
58 Ibid

93. The high cost of entry into the provision of mobile services also presents a challenge. Mobile markets require significant investments in both network and associated backhaul infrastructure. There are also significant costs in implementing the information systems needed to manage billing, marketing and network management. Therefore, the size of the investment presents a natural barrier to entry. Further, international mobile roaming services represent a very small part of the overall mobile telephony use and revenue, this restricts the likelihood of market entry. Other restrictions are the availability of sufficient spectrum for MNOs which limits their ability to provide roaming services[59].

94. The extent to which larger, more integrated firms can bargain for lower wholesale prices is further compounded by their ability to embark on extensive investments. Regulators have found that MNOs with a presence in more than one member state typically have better access to funds for investment[60].

95. While all the above factors are affecting the cost of roaming for subscribers in the countries, the assessment on the cost of roaming has shown that some consumers benefit from lower rates of roaming compared to others. This is the case for Airtel subscribers who visit a country where there is Airtel as they benefit from Airtel's One Network. This allows subscribers of Airtel Network to benefit from reduced rates of roaming when they visit a country that has Airtel as they roam from that particular Airtel Network. It has been noted that this is the case for subscribers on Airtel Zambia who are charged the same rates when they visit Kenya and DRC. Specifically, the subscribers are charged USD 0.11 for making local calls, USD 0.55 for receiving calls and USD 0.11 for data per MB. Further, the rates are much lower than those charged when they visit Egypt, which is USD 0.55 for making local calls and USD 18.21 for data per MB. This is also the case for Subscribers on Airtel Kenya, who are charged lower rates when they visit DRC and Zambia when they roam on the Airtel Network and the subscribers on Airtel DRC when they roam on Airtel Kenya and Airtel Zambia.

96. The concept of One Network also seems to apply to other MNOs such as Vodafone subscribers who visit countries where there is a MNO related to Vodafone. Subscribers of Vodacom DRC who roam on Vodafone Egypt and Safaricom are charged the same rates which is also much lower than when they roam on other networks when visiting such countries. This was noted for subscribers on Vodacom DRC who are charged SD 0.5 for making local calls in Egypt and Kenya on Vodafone and Safaricom respectively compared to when they roam on other networks such as Orange Egypt where they are charged USD 1.04 and USD 0.64 on Telkom Kenya.

97. However, it has also been noted that consumers in Egypt have very high roaming rates when they visit DRC, Kenya and Zambia regardless of whether some of those MNOs in Egypt are part of the same group company. For example consumers on Vodacom Egypt do not get lower rates when they visit DRC and Kenya even if they roam from Vodacom DRC or Safaricom Kenya. They are charged a uniform rate for roaming on any of the networks in DRC, Kenya and Zambia. This applies to consumers on Orange and Etisalat who are all charged the same rate when roaming in DRC, Kenya and Zambia with some slight differences for Telecom Egypt as it has different rates for Kenya but has the same rates for Zambia and DRC.

98. The roaming charges are very high for consumers who roam outside the One Network arrangements that may exist for MNOs present in multiple jurisdictions. This is noted from the data provided above as some consumer pays as much as USD 8.74 for calling back home, USD 4.86 for making local calls, USD 1.59 for receiving calls and USD 27.98 for data per MB.

99. It has also been noted that countries that are part of the ONA arrangement under the EAC block benefit from very low rates of calling back home (USD 11), making local calls in the visited network (USD 11) and receiving calls at zero cost. These rates are lower than those charged when the consumers of these countries visit countries from COMESA and SADC. Notably, it appears to be very costly for consumers to roam in several COMESA Countries that are not part of special arrangements either by the MNO or if that country has not entered into special agreements to lower the cost of roaming. This is the case for countries such as Comoros where it costs as much as USD 13.8 to call back home or call locally using the visited network.

59 Options-Stage Regulation Impact Statement Trans-Tasman Mobile Roaming
60 The Regulation of interconnection and regulatory alignment in the Southern African Development Community, Grace Nsomba, 2021

100. It is clear that there is lack of effective competition in the provision of roaming services for both voice calls and data leading to high rates for consumers of the services. The rates charged to consumers are dependent on the wholesale rates that MNOs negotiate with the partner operators which is also dependent on the volume of traffic that will go on the visited network from the MNO. However, it has also been observed that even if the wholesale rates of roaming are reduced, there may be no incentive for operators to pass on the price reduction to consumers as there is very little competition at retail level.

101. It has also been noted that the market for MNOs and ultimately the provision of international mobile roaming is highly concentrated in all the countries under assessment. In addition, the market faces high barriers to entry and demand inelasticity. These factors may mean that the existing players in the provision of international mobile roaming may have some level of market power which plays a role in the determination of prices charged to consumers. There is lack of countervailing power from the users of the roaming services and as a result, they have no ability to influence prices.

102. It is also worth noting that there have been significant technological developments such as Whatsapp, Messenger, Facetime, Skype which all allow consumers who travel abroad to make voice calls. However, the use of such services require the user to have access to internet either through wifi or mobile data. The levels of development in access to internet in countries in the Common Market differs and this could likely affect the use of such new technologies for consumers if they do not have access to mobile data roaming. Nevertheless, the development of these technologies provided consumers have access to internet, could offer competition to the existing traditional means of voice calls but does not resolve the existing high prices for data roaming.

REGIONAL AND CONTINENTAL PRIORITIES

103. The high cost of roaming for voice and data is a concern for all continental and regional blocks. At Continental level, the African Union (AU) is concerned with the high cost of roaming, as such discussions have been held with regulators, policy makers and the industry. In 2011, a pre-feasibility study was undertaken on "programme for the establishment of affordable roaming rates in Africa". The study identified a number of issues including; the lack of transparency on consumer retail prices for international mobile roaming, consumer bill shock, lack of effective alternatives as well as the need to lower the retail rates for roaming for Africa consumers[61].

104. To respond to the concerns arising from the study, AU developed a set of international mobile roaming guidelines for regulators which were discussed between the AU Member States and representatives of the mobile industry in 2013. The guidelines outline the need to provide sufficient information to consumers on roaming services including the costs associated with it, measures to reduce the bill shock for consumers, the need for developing alternatives for mobile roaming and the feasibility as well as appropriateness of regional arrangements to address the high prices of roaming[62].

105. In 2016 the AU, in collaboration with the Ministry of Information, Communications and Technology of Kenya and the Telecommunication Service Providers Association of Kenya, launched the first Global GSM Roaming Exchange (GRX) in Africa at the Kenya Internet Exchange Point. The launch of the GRX was one of the milestones towards addressing the issue of high roaming charges in Africa. This is because, by joining forces and pooling their roaming traffic, operators using the GRX facility would benefit from lower rates and be able to make more attractive roaming offers to gain and retain subscribers[63].

61 African Union International Roaming Guides 2013 updated in June 2014
62 African Union International Roaming Guides 2013 updated in June 2014
63 Press Release No 309/2016, African Union, Directorate of Information and Communication

106. In the Common Market, there have been concerns on the high cost of roaming. In 2017, the Ministers and government representatives from 15 out of 21 Member States resolved to initiate action towards abolishing charges levied on mobile calls. The Ministers and Government representatives urged the Member States to emulate other groupings such as the EAC and the EU who have enforced regulations on roaming charges as highlighted in chapter 1. ICT Regulators were also advised to conduct studies to reduce interconnection rates and reduce or eliminate the roaming charges.

107. From the above, it is clear that the continental and regional priorities with regards to roaming aim at reducing the prices of the services to consumers. This is because, access to affordable roaming services is key in regional and continental integration.

108. In other regional groupings such as the EU, studies have been undertaken that show that in the whole roaming market, the majority of deals are reciprocal, so that purchasers buy and sell wholesale roaming from the same counterparty. Where the trade is intra-group or traffic is relatively balanced, in practice the unit price is of little consequence. For non-group trades, the volume of roaming sold may be of much greater commercial significance than the purchase price. In addition, the advent of traffic steering has meant that operators generally try to identify various preferred partners (in order of preference) to which the bulk of their traffic is directed. There appears to be a tendency to balance traffic as far as possible. There will usually be agreements for residual traffic with other operators to ensure good network coverage for their roaming customers. In effect, it is only this residual traffic which is subject to strong competition. Even so, for relatively small volumes of residual traffic, there is not much incentive to compete vigorously on price, especially for larger operators[64].

109. This also suggests that smaller operators in a country who do not have a lot of traffic to send back and balance off, are disadvantaged in seeking to compete in the wholesale roaming market since they lack the bargaining power of larger operators or groups. In this regard, in the EU Mobile Virtual Network Operators (MVNOs) have been introduced so that they may impact the outcome in terms of pricing and pricing structure[65].

110. In the EU previous attempts were made to examine the international roaming market but none of the NRA was in a position to identify dominance or appropriate measures to counteract the high prices observed in the market. High roaming prices persisted all the while and the NRAs observed that falling wholesale charges were not translating into retail charges. In 2007, roaming regulations targeting the retail prices were introduced, in 2009, the Regulations were extended to lower the existing caps on making and receiving voice calls. This Regulation also forced MNOs to introduce caps on data charges. In 2012, the Regulations were revised to oblige operators to allow the separate sale of roaming services from 1st July, 2014 and to allow a wholesale roaming access obligation for any access seeker such MNOs, MVNOs or resellers. This amended Regulation implies that subscribers can choose alternative service suppliers for roaming whilst retaining their national operators for domestic use. Any switch to an alternative roaming provider is required to be free of charge. The Regulation introduces the Local Break Out (LBO) where domestic mobile service suppliers would also have to enable their customers to access mobile local data services while abroad without having to unsubscribe from their existing data roaming contract or arrangement and while keeping the mobile number.

111. Data retail caps for roaming have also been introduced. However, the challenge that the price caps have is that they forestall market based competition. It is also important to note that the Regulations introduced in the EU were meant to push the wholesale savings through to the retail level as none was meant to address the level of pricing in the wholesale market directly until July 2012. The roaming regulations in the EU were issued on the basis of the Treaty of the European Union as lower roaming charges were found to be critical to create a true internal market within the European Union. This approach was backed by the European Court of Justice[66]..

64 OECD Digital Economy Paper No 223; International Roaming Agreements, 2013

65 ibid
66 opcite

112. The high cost of roaming was also observed by the Australia Competition and Consumer Protection Commission which prompted a joint market investigation with New Zealand in 2011. The investigation found that the prices and margins charged by MNO for roaming were very high. In 2013, the prime ministers of Australia and New Zealand announced that their countries would work together to address the high costs to businesses and consumers of using roaming across the Tasman[67].

113. Following the statement by the Prime Ministers and the joint investigation, the prices and margins for roaming reduced gradually. It was concluded that one of the factors contributing to the reduction in the prices and margins was the continued threat of regulatory intervention.

114. Other regions where regulations on roaming charges have been introduced or work is underway to address the high roaming charges include the SADC, Arab Regulators Network (AREGNET), GCC and Association of Southeast Asian Nations (ASEAN).

CONCLUSION

115. The Commission found that the mobile services market in the Common Market is dominated by MTN, Vodafone, Orange and Airtel. The four MNOs operate in 13 of the 21 Member States of the Common Market which makes up about 75.7% of the total population of the Common Market. The study focusing on five of the Member States namely, DRC, Egypt, Kenya, Uganda and Zambia found that the mobile services markets in these countries are highly concentrated with very few market players. The five countries were picked due to their size of population and economies which are likely to have an appreciable effect on trade in the Common Market.

116. The study also found that all the countries assessed have sector specific regulators enforcing the relevant laws in the market, four of these countries have developed competition authorities in place with the exception of DRC whose competition law enforcement is still in its early stages while Uganda does not have competition law in place. However, some sector regulators such as the telecoms sector have competition laws embedded in their law.

117. The study found that the cost of roaming for subscribers in the countries under the study is high. However, MNOs with an extensive network within the Common Market charge much lower prices in comparison to the other MNOs for subscribers that roam using the partner operators in their network, as is the case for Airtel and Vodafone. It is also clear that countries with special regional or bilateral arrangements for roaming enable their consumers benefit from lower cost of roaming as is the case for the ONA arrangement.

118. The study also found that there is no transparency in the wholesale agreements that MNOs enter into with their roaming partners and the prices in the agreements are influenced by the volume of roaming traffic. It was also noted that the demand for roaming services is inelastic and the market is characterised by high barriers to entry. Consumers of the services have no countervailing power and ultimately there is lack of effective competition in the market. The study found that these factors may be contributing to how the existing MNOs behave in the market.

119. The study also noted that even though, there are new developments on technology and with the use of Whatsapp, Messengers, Facetime and Skype which could offer competition to mobile roaming, the use of such services is affected by the high charges on mobile data roaming, restrictions of use in some countries and the lack of adequate access to internet in some countries.

67 OECD Digital Economy Paper No 223; International Roaming Agreements, 2013

RECOMMENDATIONS TO ADDRESS COMPETITION CONCERNS

120. Based on the above, it is recommended that:

120.1 Governments encourage competition in the mobile services market by relaxing the regulatory barriers to entry such as the issuing of licences and allocation of spectrum to new market players;

120.2 Governments should encourage the development of infrastructure that increases access to mobile and fixed internet. Such developments are necessary for the increased use of technologies such as Whatsapp, Messenger, Skype and Facetime among consumers as they provide an alternative to mobile roaming and if well-developed could offer competition to MNOs offering mobile roaming services;

120.3 Competition Authorities require MNOs to provide the cost of providing roaming services, so as to ascertain the margins attained and reasonableness of the margins. This could be done through market inquiries.

CHAPTER 4: KENYA

BACKGROUND

1. This country-study is part of a wider cross-country study which focuses on mobile roaming charges in the African countries. In this context, roaming refers to the ability for a cellular customer to automatically make and receive voice calls, send and receive data, or access other services, including home data services, when travelling outside the geographical coverage area of the home network, through a visited network as illustrated in Figure 38.

2. When a mobile user is using roaming services and initiates a call with their home country operator (HCO), it is automatically connected to a Roaming Country operator network (RCO) based on a wholesale agreement between the two operators. The agreement specifies details on exchange of the user's data and the wholesale charges as per call volumes and rates. Roaming fees are typically charged on a per-minute basis for wireless voice service, per text message sent and received, and per megabyte/s of data used for data service, and they are usually determined by the service provider's pricing plan.

3. A home country operator can have an agreement with more than one operator in the roaming country. At the retail level, the mobile user pays the price of the roaming call service to the home operator. There are three roaming charges incurred by a mobile user at the retail level, these are: incoming call charge, calling within roaming country, and making calls to home country.

4. This country-study seeks to understand the features of the telecommunications industry in ACF member countries. Furthermore, the study seeks to uncover the types of competition concerns that may exist regarding roaming charges in different countries across the region and develop regional and continental competition policy priorities to address any uncovered concerns. The harmonization of regulatory actions and elimination of regional surcharges on roaming have an important role to play in terms of broader continental objectives to strengthen economic relationships and deepen economic integration.

Figure 38: Roaming process illustration

THE TELECOMMUNICATIONS SECTOR STATISTICS

5. The total number of Subscriber Identity Module (SIM) connections in Africa was 774 million in 2020 and is expected to grow to 1.0 billion by the end of 2025[1]. According to the World Trade Organization (WTO), the African roaming tariff market size was valued at US$1.7 billion in 2019 and is expected to register a Compounded Annual Growth Rate (CAGR) of 5.5% from 2020 to 2027. This can be attributed to the increased adoption of smartphones and internet connectivity across the continent.

6. In Kenya, the telecommunications sector is one of the highest contributors to the country's GDP. According to the KNBS, the sector's revenue was US$2.51 billion in 2020 up from US$2.49 billion in 2019 accounting for more than 1.5% of Kenya's GDP. The industry has witnessed strong growth in recent years and is currently one of Africa's fastest growing markets due to increasing urban population coupled with rising adoption of the mobile phones that supports 3G, 4G, and 5G services across the country[2]. The demand for the mobile telephony services in Kenya has continued to rise and as of 31st December 2021, the total number of active mobile subscriptions was 65.08 million surpassing the total population of 48.7 million (KNBS Economic Survey, 2021).

7. The growth in the Kenya Telco sector has been shaped by increased competition, improved international connectivity, and rapid developments in the mobile market. The mobile network operators (MNOs) have been constantly innovating to ensure their survival and growth in the competitive marketplace. Despite the continuous innovation strategies to safeguard competitive advantage, several companies have

1 Sutherland, E. (n.d.). International mobile roaming: Competition, Economics and Regulation. Retrieved from World Trade Organization: https://www.wto.org/english/tratop_e/serv_e/sym_march12_e/doc_other_docs_a.pdf

2 Kenya Telecommunication Market Report (2020-2025). (2020). Retrieved from Global monitor: https://www.globalmonitor.us/product/kenya-telecommunication-market-report

not succeeded in the competitive environment of the telco industry with several companies exiting the market over the years. Further, the landing of four fibre-optic international submarine cables in Kenya led to a significant reduction in the cost of phone calls and internet access, which has in turn allowed internet services to be more affordable to end-users.

8. Moreover, the sector regulator Communications Authority of Kenya (CA), has intervened to reduce interconnection tariffs and implemented a range of regulations aimed at developing further competition. In December 2021, the regulator cut the mobile termination rate (MTR) from US$0.0087 to US$0.0011 in a bid to match shifts in technology that have made mobile telephony more efficient[3].

Table 18: Roaming traffic in EAC for 2020 and 2021

	Inbound		Outbound		Data Volumes (MB)	
	2020	2021	2020	2021	2020	2021
Uganda	151,427,129	114,359,752	275,226,136	390,094,658	39,158,467	86,714,448
Tanzania	573,673	8,564,216	2,421,786	10,932,972	6,089,639	12,194,237
Rwanda	35,450,147	33,900,316	19,228,778	23,786,942	2,103,034	5,266,893
Burundi	6,310	20,184	31,406	315,512	19,080	31,749
South Sudan	16,558,826	20,154,768	25,073,703	24,829,817	467,513	1,813,699
Total	204,016,085	176,999,236	321,981,809	449,959,888	47,421,322	101,390,680

Source: CA Sector statistics 2020 – 2021

9. Roaming traffic in the EAC for 2021 outbound traffic in the ONA region for incoming voice (Minutes) was 416,251,785 in 2021 compared to 203,911,617 in 2020. The outgoing voice traffic increased from 30,813,017 minutes in 2020 to 33,708,106 minutes in 2021 and the data volumes increased from 31,404,425 in 2020 to 94,279,198 in 2021. The inbound roaming traffic incoming voice was 199,805,002 in 2020 and reduced to 158,856,716 in 2021, the outgoing increased from 4,211,083 in 2020 to 18,142,520 in 2021. The data volumes registered an increase from 3,302,305 in 2020 to 7,111,480 in 2021.

10. Data from the Kenya Tourism Board indicates that the most popular destinations for Kenyans are within East Africa countries. The table below shows the Kenyan outbound traffic to the top African destinations from 2016 to 2020.

Table 19: Kenya Residents Outbound Top African destinations ('000')

Destination	2016	2017	2018	2019	2020
Uganda	353	335	372	409	85
Tanzania	234	231	239	254	70
Rwanda	51	41	49	58	15
South Africa	29	29	29	30	8
Ethiopia	30	32	23	27	10

Source: Kenya Tourism Board, 2021

ROAMING AGREEMENTS BY KENYAN OPERATORS IN THE TOP 5 KENYAN OUTBOUND DESTINATIONS

11. The Kenyan mobile operators have roaming agreements with operators in various countries visited by Kenyans as illustrated in Table 19 below. These agreements enable Kenyans to roam with the operators' preferred networks in those countries.

Table 20: Preferred roaming Networks by Kenyan mobile operators in the various countries

	Safaricom	Airtel	Telkom
Uganda	Airtel, MTN, Orange, UTL, Warid	Airtel, MTN, Orange, Uganda Telecom, Warid	Warid, Orange, Zain, UTL, MTN, Smart
Tanzania	Airtel, Vodacom, Tigo, Zantel	Airtel, Tigo, Vodacom, Zantel, Halo telecom	Zantel, Tigo, Vodacom, Airtel, Smart
Rwanda	MTN, Rwandatel, Tigo, Airtel	Airtel, MTN, Tigo	MTN, Rwandatel, Tigo, Airtel
South Africa	Cell C, MTN, Vodacom	Cell C, MTN, Telkom, Vodacom	MTN, Cell C, Vodacom, Telkom
Ethiopia	Ethiopia Telecom	Ethiopia Telecom	Ethiopia Telecom

Source: Kenyan Mobile Operators' Websites, December, 2021

3 Ngugi, B. (2021). CA slashes mobile call rates after six years. Business Daily, December 23, 2021. Retrieved from Business Daily: https://www.businessdailyafrica.com/bd/economy/ca-slashes-mobile-call-rates-six-years-3661182

12. Kenyan operators have agreements with multiple operators in the various countries which gives consumers freedom to choose the preferred roaming network. However, the costs for the different mobile roaming services may differ between the operators in the same countries.

STUDY OBJECTIVES

13. The objectives of this study are:

    13.1 To understand the market structure, state involvement and the regulatory setting of the telecommunications industry in Kenya, with a particular focus on the determination of roaming charges that impact on continental trade and tourism;

    13.2 To assess competition concerns that exist in regard to roaming charges in Kenya; and

    13.3 To provide a platform for identifying regional and continental priorities in respect of voice and data roaming charges.

METHODOLOGY AND SCOPE

14. The study is based on data collected from the Communications Authority of Kenya, and also the websites of three mobile telephone operators, namely: Safaricom, Airtel and Telkom, as at December 2021. It captures data for mobile roaming call and data services for the Kenyan consumer across 51 countries in Africa categorized as follows in the analysis:

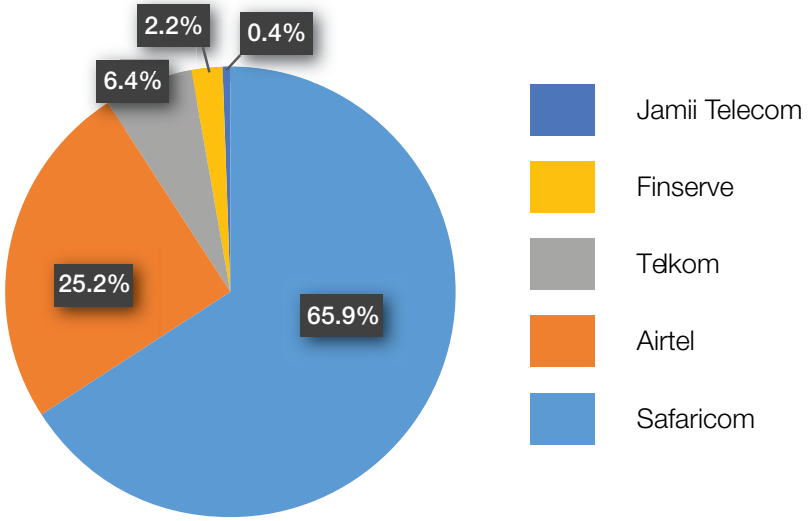
Table 21: Countries Kenyan Consumers use roaming call and data services

East Africa Community (EAC)	Burundi, Rwanda, South Sudan, Uganda, Tanzania
Common Markets of East and Southern Africa (COMESA Excl._ EAC)	Comoros, Democratic Republic of the Congo, Djibouti, Egypt, Zambia, Zimbabwe, Eswatini (Swaziland), Ethiopia, Madagascar, Mauritius, Sudan, Seychelles, Malawi
The Rest of Africa (ROA)	Algeria, Angola, Cote D'Ivoire, Gambia, Lesotho, Namibia, Niger, Sao Tome & Principe, Senegal, Sierra Leone, Togo, Tunisia, South Africa, Somalia, Nigeria, Liberia, Mozambique, Guinea, Guinea – Bissau, Ghana, Morocco, Mali, Mauritania, Gabon, Equitorial Guinea, Chad, Congo, Cape Verda, Botswana, Benin, Burkina Faso, Cameroon, Central African Republic

15. The Scope of the study is limited to the provision of international roaming voice and data services over SIM-supported mobile telecommunications devices to Kenyan mobile telephone subscribers when travelling to the African countries (Table 20). The study therefore does not consider fixed line telecommunications services and does not consider the provision of SMS over SIM-supported mobile devices.

16. The roaming calls categories in the data are for incoming call rate, calling to home country and calling within roaming country per minute, while the rates for data are per MB. The prices for roaming across providers are analysed using central tendency measure (median). The roaming tariffs considered are standard roaming prices by the three service providers, this did not consider special roaming payment packages. The prices considered are applicable to both business and individual consumers. The roaming costs have been converted from Kenya shillings to US$ using the Central Bank of Kenya exchange rate for 31st December 2021 (rate=116.6382).

Figure 39: Kenya Mobile services providers' percentage Market Shares as at 31st December 2021



Source: CA Sector Statistics Report Q2 2021/2022

STATE OF COMPETITION IN THE KENYAN MARKET

MARKET STRUCTURE

17. The Kenyan mobile telephony services market had five players as of 31st December 2021 and was dominated by Safaricom Plc. The Mobile Subscriptions market shares have been fluctuating over time across the providers and the largest mobile subscription market share was recorded in June 2009, where Safaricom PLC held 80.7% of the market. The lowest share ever held by Safaricom PLC in the last decade was in March 2019, which was 62.4%.

18. As of 31st December 2021, the number of active mobile SIM subscriptions in Kenya was 65.08 million (CA Sector Statistics Report, Q2 2021-2022). Safaricom PLC was the dominant player with a total SIM subscription of 42.8 million, Airtel was the second with a total SIM subscription of 16.4 million, and Telkom Kenya third with 4.1 million subscribers. Equitel (Finserve) and Jamii Telecommunications had subscriptions of 1.4 million and 0.23 million respectively.

MARKET PLAYERS IN KENYA

SAFARICOM PLC

19. Safaricom PLC was founded in 1997 as a fully owned subsidiary of Telkom Kenya which is a government parastatal. In the year 2000, Vodafone Group PLC acquired a 40% stake and the management responsibility of the company while the remaining 60% was owned by the Government of Kenya through Telkom Kenya. In 2008, the government offered 25% of its shares to the public through an initial public offering, leaving the Government's stake in Safaricom at 35%. The Vodafone group, which owns 26.1% of Safaricom PLC has operations in other African countries including: Egypt, Ghana, South Africa, Tanzania, Democratic Republic of Congo, Mozambique, and Lesotho (Vodafone Group PLC, 2020).

20. Safaricom PLC provides mobile telephony and mobile money transfer services, consumer electronics, e-commerce, cloud computing, mobile data, music streaming and fiber optic services. There were forty-two (42) Safaricom retail shops across Kenya in 2020[4].

AIRTEL KENYA

21. Airtel Kenya is the second largest mobile operator – by mobile subscriptions - with a mobile subscription market share of 26.4% as at September 2021. Airtel began operations in Kenya in 2010 as a subsidiary of Airtel Africa. It offers mobile telephony and mobile money services and currently has over sixty (60) retail outlets across the country.

22. Apart from Kenya, Airtel has operations in thirteen (13) other markets in Africa, namely: Democratic Republic of Congo, Gabon, Madagascar, Malawi, Nigeria, Niger, Rwanda, Chad, Uganda, Seychelles, Tanzania, Zambia, and Congo Brazzaville (Airtel, 2022).

4 https://majira.co.ke/list-of-all-safaricom-customer-care-shops-in-kenya/

TELKOM KENYA

23. Telkom Kenya is the third largest telecommunication company in Kenya with a market share of 6.4% as at September 2021. It was established as a telecommunications provider in Kenya in 1999. The Government of Kenya owns 40% of the company's shares and the rest is owned by a private investor. It provides mobile telephony services, internet services and mobile money services.

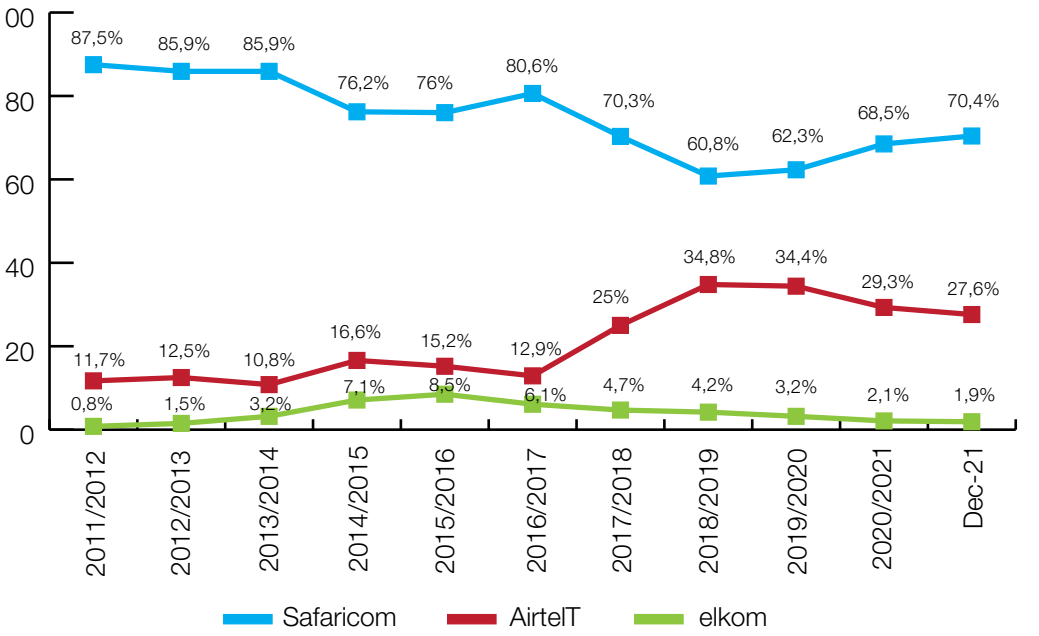
MNOS MARKET SHARES

24. The voice market in Kenya has been dominated by Safaricom PLC over the last decade and it accounts for the largest total voice traffic in the country. According to the CA, Safaricom PLC had a voice traffic of 52.4 billion minutes of calls originating from the operator in the 2020/21 financial year, followed by Airtel Networks Limited with about 24.4 billion minutes.

25. Safaricom has maintained its dominance in the voice traffic market in Kenya over the last decade, with the lowest market share of 60.8% in the 2018/2019 financial year (Figure 40). Airtel has also been gaining popularity in the last five years with their highest market share being 34.8% in the financial year 2018/2019. As at 31st December 2021, Safaricom had a market share of 70.4% followed by Airtel with 27.6% and Telkom with 1.9%.

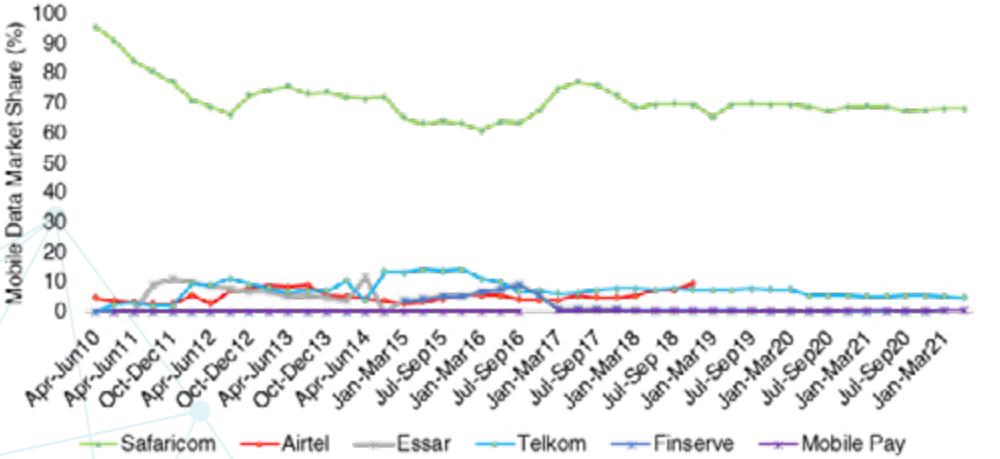
26. In the Mobile data market, Safaricom had the largest market share at 68% as at 30th June 2021, while Airtel Networks limited accounted for an average of 26.6%. Telkom had a market share of 4.6% while Equitel and Jamii Telecommunications Ltd both had 0.4% of the market.

Figure 40: Market share (in %) in terms of voice traffic (Minutes)



Source: Communications Authority of Kenya sector statistics reports, 2011 - 2021

Figure 41: Mobile Data Market Share



Source: Communications Authority of Kenya Sector Statistics Reports, 2010 - 2021

POTENTIAL BARRIERS TO ENTRY

27. The major players in the cellular mobile service in 2010 were Safaricom, Airtel, Essar and Telkom. In 2013, Finserve joined and operated independently until 2018 when Equity group took over and converted its mobile virtual network operator (MVNO) to a fintech. However, its mobile subscription market share is still below 5%. Jamii Telecommunication Limited also joined mobile cellular services provision and began its operations in Kenya in 2017.

28. India-based investment group Essar exited the telecoms business market in January 2015 by selling its Kenyan mobile operator yuMobile, officially known as Essar Telecom Kenya Limited (ETKL). Safaricom acquired yuMobile's network, IT, and office infrastructure assets, while Airtel took over its 2.55 million subscribers.

29. In order to analyse the barriers to entry, it's important to consider the following parameters:

    29.1 Investment: Entry into the telco industry can be hindered by the cost of the infrastructure needed and also the volumes of consumer data required to be able to compete in the market. The incumbents in the Kenyan market have made great strides in infrastructure development and the amassing of great volumes of consumer data which might prove difficult for new entrants to match.

    29.2 Spectrum Allocation:[5] In Kenya, an initial license fee of US$55 million is charged to new entrants in addition to a uniform renewal fee of US$27 million for all GSM Mobile Operator licences. This fee is based on the amount determined in the latest competitive auction process for the third GSM licence in the country. Licenses are renewable after 10 years.

    29.3 Regulatory Constraints: This may arise in cases where the regulatory responses in the sector take time causing new entrants to strain in getting a foothold in the market. A good example is on spectrum allocation which takes time and a huge cost outlay, therefore delaying adoption of new technological innovation (e.g., the adoption of 4G network). Furthermore, regulation in the telecommunication sector in Kenya has drawn a lot of public scrutiny due to the numerous complaints by the competitors and the public against the dominant firm citing abuse of dominance, excessive pricing and predatory pricing. This has caused a regulatory dilemma as excessive regulation may hinder further innovations in the sector.

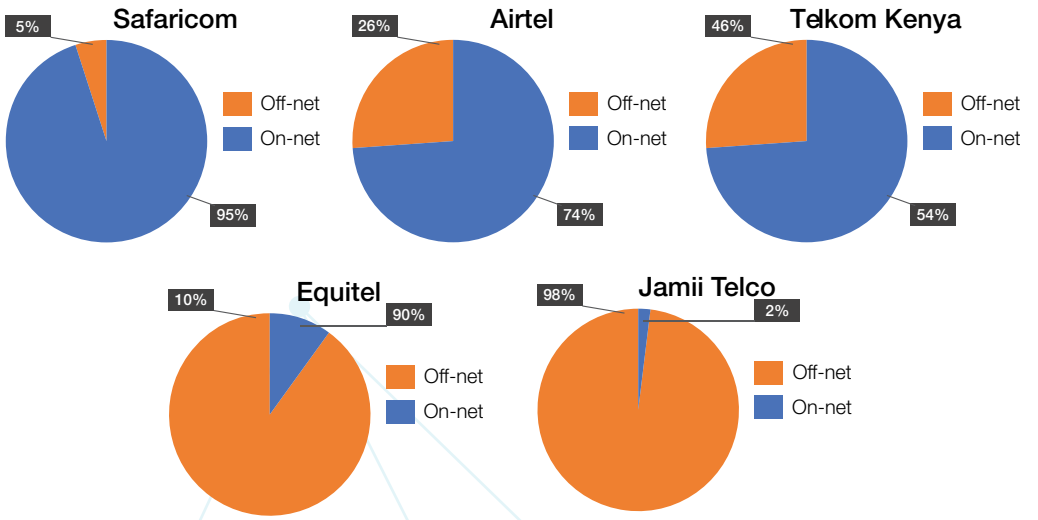
POTENTIAL BARRIERS TO EXPANSION AND MARKET RETENTION

30. Closed Network Pricing: This is the differentiation of retail prices for off-net and on-net services which may raise switching costs making it difficult for competitor networks to build a customer base. Incumbent firms may ensure that they price their services in a way that it becomes difficult for their customers to switch to competitor networks. In Kenya, the cutthroat competition in the mobile telephony services has resulted in various operators creating products and promotions aimed at reducing their on-net costs therefore, ensuring consumers do not switch to the competitors.

31. Network Effects: Strong network effects predispose markets to concentration and monopolization. The Kenya telecommunications sector exhibits strong network effects emanating from the mobile money market where Safaricom's M-PESA controls 98.45% of the market. The dominance in the mobile money market leads to majority of the consumers maintaining Safaricom for the provision of the other mobile services.

5 https://www.ca.go.ke/wp-content/uploads/2018/01/Press-Statement-by-CCK-Director-General-Mr.-Francis-W.-Wangusi-on-the-renewal-of-Safaricom%E2%80%99s-Licence.pdf

Figure 42: On-net, off-net traffic imbalance in Kenya, December 2021



Source: CA Sector Statistics report Q2 2021/2022

32. Mobile Termination Rates: these are charges mobile operators levy on each other and on fixed network operators for terminating calls on their networks. In Kenya, the Mobile termination rates have been considerably high up to December 2021 when the sector regulator (CA) reduced the MTR rates from US$0.0087 to US$ $0.0011. The Kenyan market is dominated by Safaricom Plc, with a market share of 70.4%, as at 31st December 2021. Safaricom has 95% of its calls on-net and only 5% off net (see Figure 42). Jamii Telecommunications the smallest of the five operators with a voice market share of less than 0.1% has 98% of their calls off-net and only 2% on-net. The smaller mobile operators with a higher proportion of off-net calls in their traffic mix transfer their resources to the big operator in terms of wholesale payments for calls terminated on the competitor networks.

33. Exclusive Agreements: Roaming agreements are bilateral in nature between MNOs in different countries and thus they include some level of exclusivity. When roaming, MNOs have their preferred partners in the countries that their customers are roaming. The roaming agreements allow the MNOs to unilaterally set the retail terms as they are cross-border and beyond any of the countries' jurisdictions.

KENYA'S TELCO REGULATORY FRAMEWORK

34. Regulation of international roaming differs from other telecommunication services in that the wholesale and downstream retail markets are always in different countries. Regulators are thus limited to measures that can be delivered nationally such as transparency measures for end-users, or regulating retail prices.

35. The telecommunications sector in Kenya is primarily regulated by the Communications Authority of Kenya (CA) which is established by the Kenya Information and Communications Act[6] (KICA). CA is mandated to develop the country's broadcasting, multimedia, telecommunications, electronic commerce, postal and courier services, and its mandate extends to licensing, e-commerce development, consumer protection, managing competition, setting tariffs, and overseeing the country's Universal Service Fund. Further, CA manages the country's radio frequency spectrum and numbering resources by ensuring harmonious sharing of frequencies by various users and services and coordination of international and regional frequency to avoid harmful interference of frequency users in different administrations.

36. Other laws include the Competition Act No. 12 of 2010[7] ('the Act') whose objective is to enhance the welfare of the people of Kenya by promoting and protecting effective competition in markets and preventing misleading market conduct throughout Kenya. Also, the Data Protection Act, 2019[8] (DPA) provides for the regulation of the processing of personal data, to provide for the rights of data subjects and obligations of data controllers and processors, and for connected purposes. The DPA provides regulation for collecting, processing, storage and use of personal data collected in the digital environment.

6 Reporting, N. C. (2020). Kenya Information and Communications Act No.2 of 1998. Retrieved from Communications Authority of Kenya: https://www.ca.go.ke/wp-content/uploads/2021/02/Kenya-Information-and-Communication-Act-1998.pdf
7 https://www.cak.go.ke/sites/default/files/Competition_Act_No._2012_of_2010.pdf
8 http://kenyalaw.org/kl/fileadmin/pdfdownloads/Acts/2019/TheDataProtectionAct__No24of2019.pdf

POLICIES ON ROAMING TARIFFS

37. In 2014, the members of the East African Community (EAC) purposed to implements a joint initiative on Roaming dubbed the One Network Area (ONA) roaming initiative[9]. The agreement came into force in January 2015, initially incorporating Kenya, Rwanda and Uganda, and were later joined by Tanzania and Burundi. The benefits of ONA have been extended to South Sudan who joined the EAC in 2016.

38. The aim of ONA is to promote regional integration by reducing the cost of roaming charges on calls. The key feature of the ONA is that a customer roaming in any of the East African countries receives similar treatment as a local customer for all calls originated in the visited country. The features include:

    38.1 Customers using the same telephone numbers and SIM cards across participating countries;

    38.2 Incoming calls made free, and the outgoing calls and SMSs charged at local rates;

    38.3 Prepaid customers automatically charged in their home currency;

    38.4 Post-paid customers charged at local rates converted to their home currency upon billing; and

    38.5 Prepaid customers traveling into participating countries to recharge their airtime with local top-up cards or with cards bought from the local network.

39. The regulatory interventions of ONA were as follows:

    39.1 Removing charges for receiving voice calls while roaming in any of the EAC member countries;

    39.2 Excise taxes and surcharges waivers for on incoming ONA voice traffic;

    39.3 A wholesale price cap of US$ 7 cents per minute without surcharges; and

    39.4 Requirement for mobile network operators (MNOs) to re-negotiate with a view to reduce wholesale tariffs with their roaming partners.

COST OF ROAMING

40. According to roaming data by Tarifica, Kenyans roaming within Africa pay from US$ 0.06/minute up to US$ 9.77/minute to call back home; between US$0.09 and US$2.83 to receive calls; and from US$0.06 to US$4.79 to make calls within other countries in Africa. The median cost of data is US$4.78 per MB and can be as high as US$29.41/MB or as low as US$0.004/MB. The variations in the cost of roaming calls and data charges are subject to the region, service provider, and payment plan.

Table 22: Cost Comparisons – Local and Roaming Costs

	Local Charges	Roaming Charges Within Africa
Calls to Kenya	Between US$0.015/Min and US$0.033/Minute	Between US$0.06/Min and US$9.77/minute
Receiving calls	MTR is US$0.0011	Between US$0.09 and US$2.83
Data	Between US$0.00088/Mb and US$0.0017/Mb (565.7Mb/US$ and 1131.4Mbs/US$)	Between US$29.41/MB and US$0.004/MB

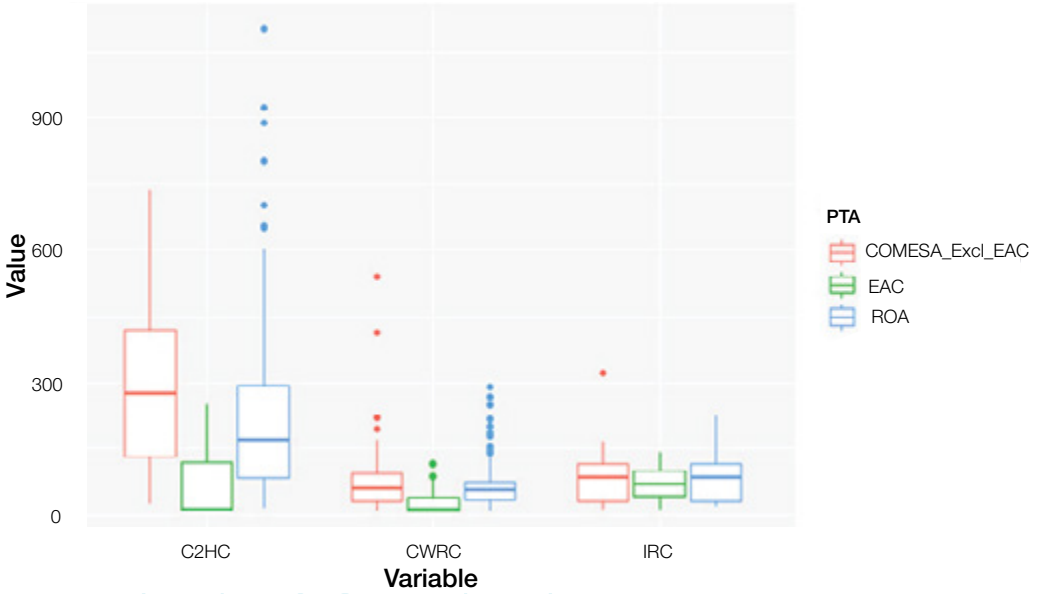
Source: Tarifica, December, 2021

COST OF ROAMING CALLS

41. This section analyses the cost of roaming calls at retail level by region, home country operator (HCO) and Payment plan type (Type). The three categories of calls are: incoming call rate (ICR), calling within roaming country (CWRC) and making calls to home country (C2HC).

9 https://www.itu.int/dms_pub/itu-d/opb/pref/D-PREF-EF.ONA-2016-PDF-E.pdf

Figure 43: Roaming Charges by Region



Source: Tarifica, December 2021

COST BY REGION

42. COMESA is the most expensive region to make calls to Kenya, receive calls from Kenya and make calls within the region, while EAC is the cheapest. As illustrated in Figure 43 below, the median call rates from the EAC region cost US$0.12 per minute in comparison to calls from COMESA that cost US$2.47/minute, while calls from the rest of Africa are cheaper than COMESA at US$1.50/ minute. 75% of those making roaming calls within the EAC incur roaming charges below US$0.35, this rate almost doubles when roaming within COMESA and the rest of Africa at US$ 0.84 and US$0.68, respectively. The median price of receiving an incoming call is US$0.60/ minute while in EAC and US$0.74/minute from COMESA and the rest of Africa.

COST OF ROAMING CALLS BY COUNTRY PAIRS

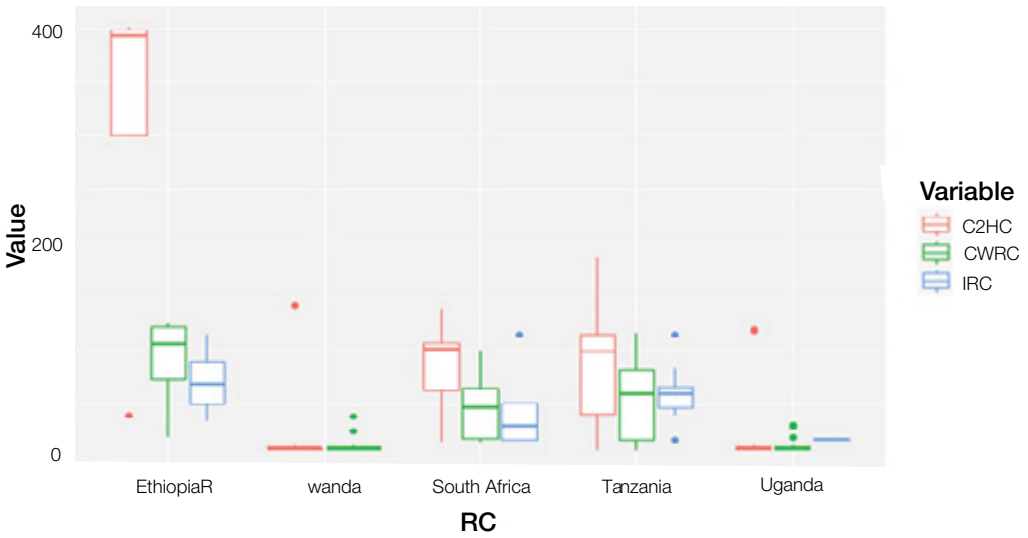
43. As noted earlier, the top five destinations for Kenyans within Africa are: Ethiopia, Rwanda, South Africa, Tanzania, and Uganda. A closer look at the roaming charges by country pairs reveal that Kenyans calling home from Ethiopia, a Member of COMESA, have the highest costs overall while calls from Uganda and Rwanda, who are EAC members, are the cheapest (see Figure 44). The average costs of calls from South Africa and Tanzania, who are SADC members, are comparable and are slightly lower than costs in Ethiopia.

44. Safaricom charges US$0.088 for voice calls roaming across all networks both calling within Uganda and back home to Kenya. Further, calls to other countries are charged between US$1.58 and US$0.84 per minute. Data charges are US$0.044 per Mb for MTN, US$0.31 per Mb for Orange, UTL and Sure Telecom and US$0.66 for Airtel and other networks. MTN is the cheapest network for Safaricom subscribers roaming in Uganda. For Airtel Kenya subscribers, the cheapest Networks in Uganda are Airtel and Airtel (Ex Warid) for both postpaid and prepaid tariffs, with charges of US$0.062 for both calls back home and calls within Uganda. Airtel also offers the cheapest internet of US$0.0035 per Mb. This makes Airtel the cheapest roaming network for Airtel Kenya subscribers in Uganda. When roaming in Uganda, using Telkom Kenya, the roaming charges for voice calls are US$0.074 across the preferred networks both when calling locally or calling back home to Kenya.

45. Safaricom charges between US$0.088 and US$0.4 per minute for voice calls within Tanzania while roaming with their preferred networks and US$0.44 for other networks. For calls back home, the call charges are between US$0.22 and US$0.66 per minute. The cheapest Network to roam in Tanzania as a Safaricom subscriber is Airtel which charges US$0.088 per minute for calls within Tanzania and US$0.22 for calls to Kenya. Airtel and Vodacom provide the lowest data charges at US$0.044 per Mb. Airtel Tanzania is the cheapest network to use for an Airtel Kenya subscriber.

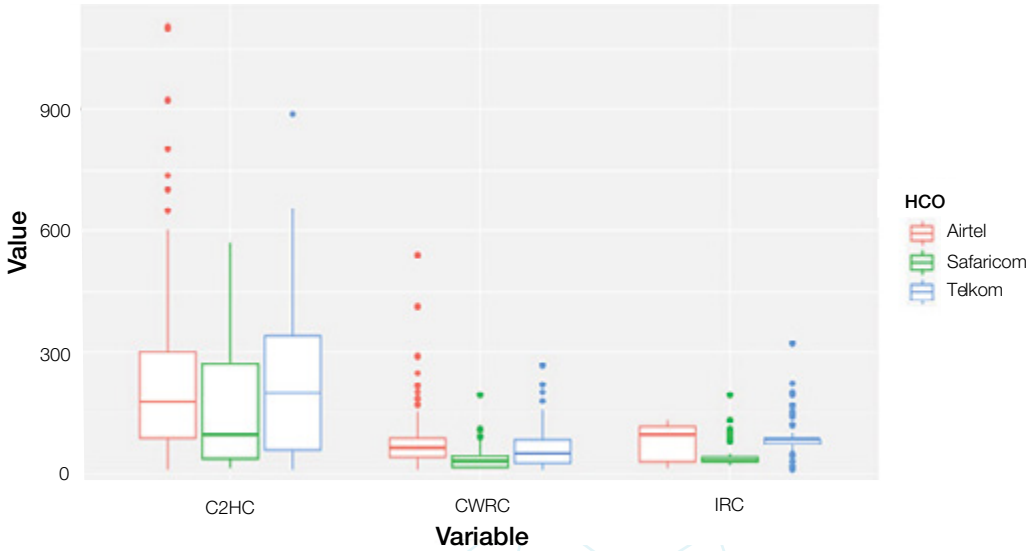
46. Safaricom charges US$0.088 across all the preferred networks and US$0.22 per minute for other networks in Rwanda. MTN is however the cheapest network to roam within Rwanda using Safaricom because the data charges are lower than the other networks. While calling other countries, MTN charges US$0.84, Tigo US$0.92 and all the other networks charge US$1.76 per minute. Data charges for MTN are US$0.044 and US$0.11 for Tigo while all other networks charge US$0.66 per Mb. Airtel Kenya voice call charges while on Airtel Rwanda and Tigo are US$0.062 for

Figure 44: Roaming Calls Prices by Country Pairs



Source: Tarifica, December 2021

Figure 45: Roaming Charges by Provider



Source: Tarifica December 2021

calls within Rwanda as well as calls back home to Kenya and international calls to other countries are US$1.35. Internet is charged at US$0.0035 per Mb for both Airtel Rwanda and Tigo Rwanda. Pre-paid customers are charged US$0.11 per minute for voice calls while roaming using MTN Rwanda and post-paid customers are charged US$0.088 per minute for voice calls within Rwanda and back home to Kenya.

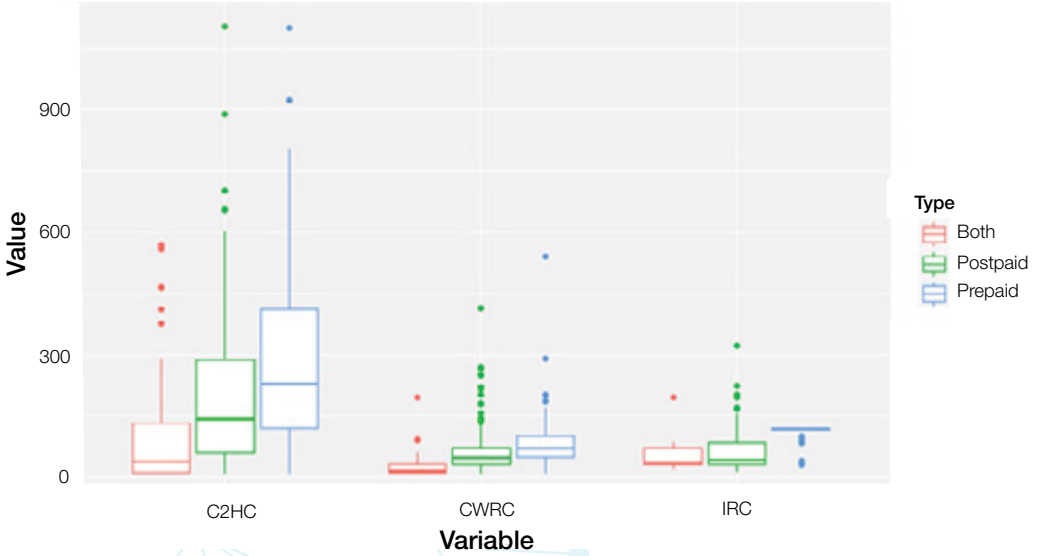
47. Safaricom charges between US$0.97 and US$0.13 for calls to Kenya, between US$0.265 and US$0.13 per minute for calls within South Africa, between US$0.16 and US$0.265 for incoming calls and between US$3.98/Mb and US$0.044/Mb for data. Vodacom is the cheapest network for Safaricom subscribers charging US$0.13 for voice calls, US$0.265 for incoming calls and US$0.044/Mb for data.

COSTS BY HOME COUNTRY OPERATOR

48. Safaricom is the cheapest operator when calling from other countries in Africa to Kenya, calling within other countries in Africa and receiving incoming calls, while Telkom and Airtel charge their customers almost double Safaricom's prices.

49. As illustrated in Figure 46, the median cost of making calls from other countries in Africa, using Safaricom operator, costs US$0.84, while calling from Airtel and Telkom cost US$1.56 and US$1.76/minute. The median cost of making calls within other African countries from Safaricom is US$0.27 and this cost is double at US$0.54 per minute when using Airtel and US$0.44 using Telkom. The cost of receiving a call while roaming in other African countries is US$0.27 when using Safaricom, and slightly more than triple the amount at US$0.84 on Airtel and US$0.75 on Telkom.

Figure 46: Roaming Charges by Payment Plan



Source: Tarifica, December 2021

COST BY PAYMENT PLAN

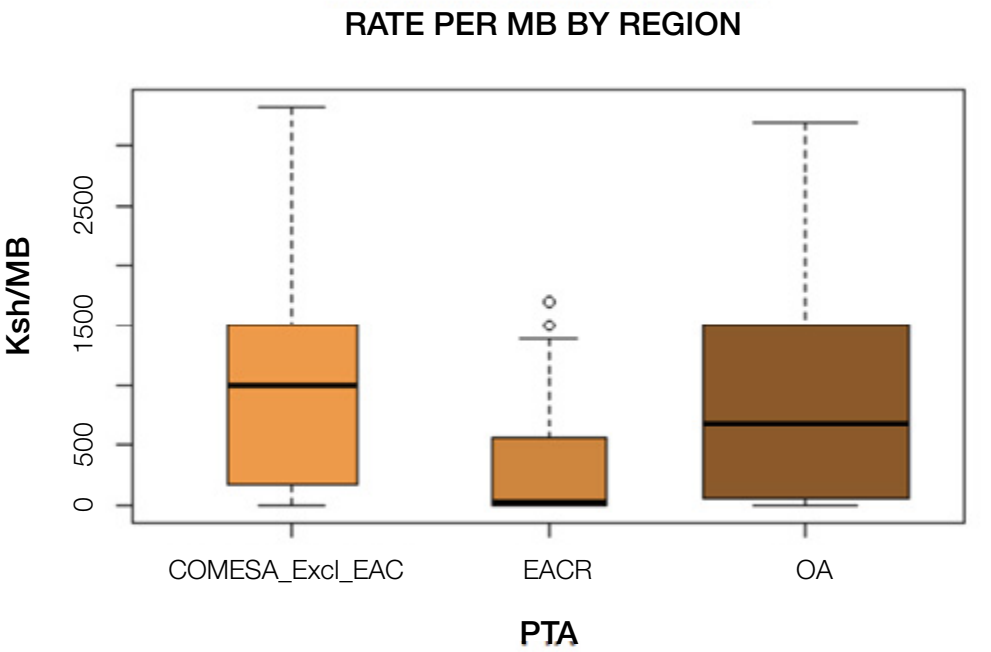
50. Post-paid subscribers get relatively cheaper rates in comparison to pre-paid subscribers. As presented in Figure 47, the median cost of calling back home for a post-paid subscriber is US$1.24 per minute in comparison to pre-paid subscribers whose median cost is US$2. The median cost of calling within roaming countries in Africa for post-paid and pre-paid subscribers is US$0.41 and US$0.62 respectively. 75% of subscribers on post-paid services are charged between US$0.09 and US$0.75 in comparison to the same percentage that will be charged US$1.02 fee to receive a call from Kenya while in other African Countries.

COST OF ROAMING DATA

ROAMING DATA COST BY REGION

51. The median data costs per MB to non-EAC member countries is at least nineteen times more than within the EAC. The median costs within the COMESA region are highest at US$8.85/MB while costs to other African countries stand at US$6.08/MB.

Figure 47: Roaming Data Cost by Region



Source: Tarifica December 2021

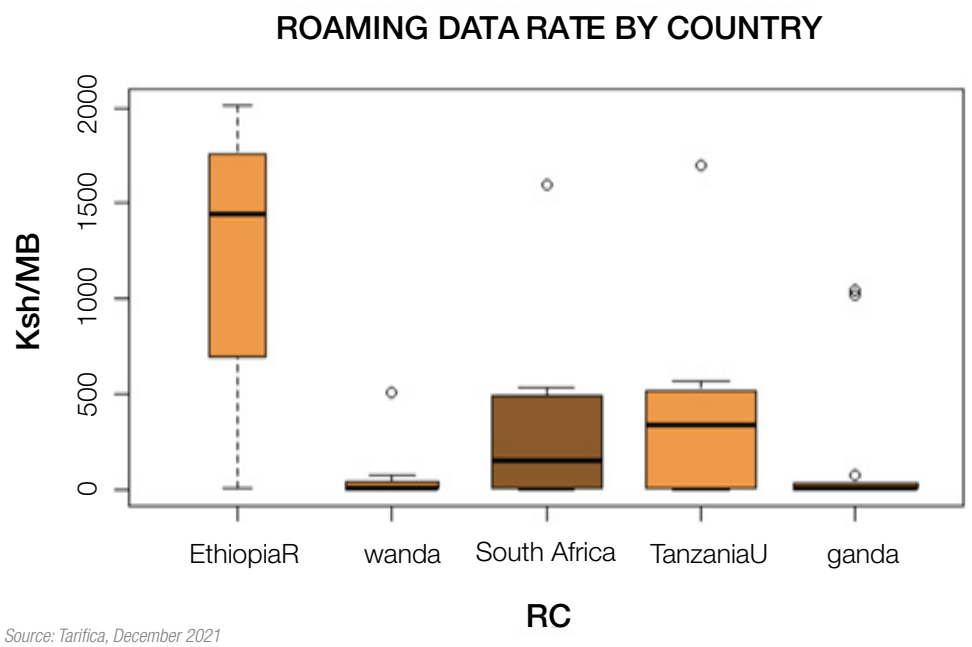
Interestingly, the costs per MB to all regions can go as low as US$0.003 per MB and as high as US$29.41 per MB in COMESA region, US$28.21 in the rest of Africa and US$12.31 in the EAC region (see Figure 46).

ROAMING DATA COST BY COUNTRY PAIR

52. As indicated in the regional dynamics of costs, a look at data charges in Uganda and Rwanda, who are EAC Member States, indicate they are the cheapest while Ethiopia, a COMESA member state, is the most expensive. The average data charges per MB for Ethiopia is US$12.78 per minute, in Rwanda is US$0.11, in South Africa is US$1.39, Tanzania is US$3.04 and Uganda is US$0.10.

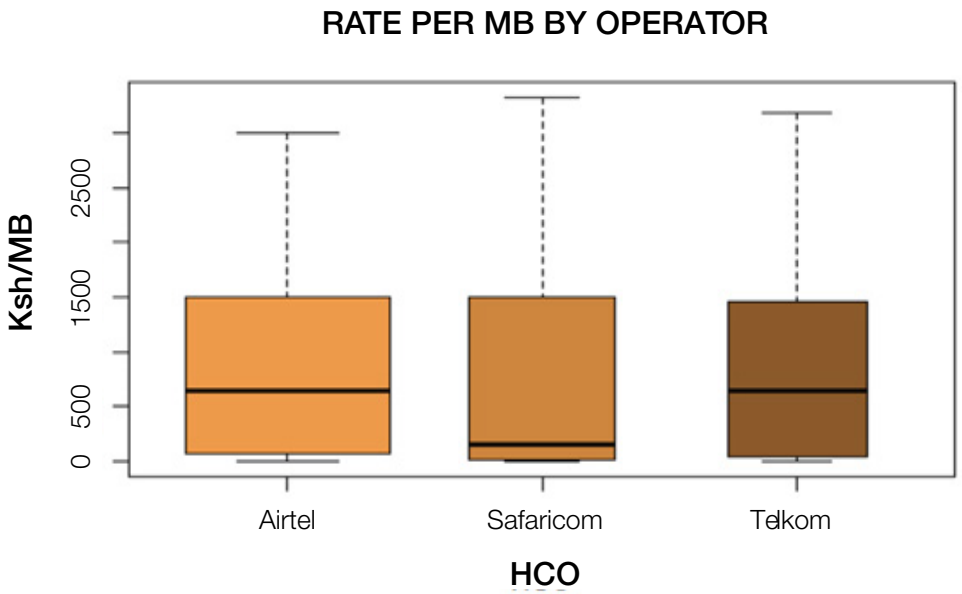
53. Data charges are US$0.088 for MTN and Orange networks, and US$0.074 for all other preferred networks. Compared to other operators in Tanzania, Airtel charges

Figure 48: Roaming data rate by country



Source: Tarifica, December 2021

Figure 49: Roaming Data Cost by Operator

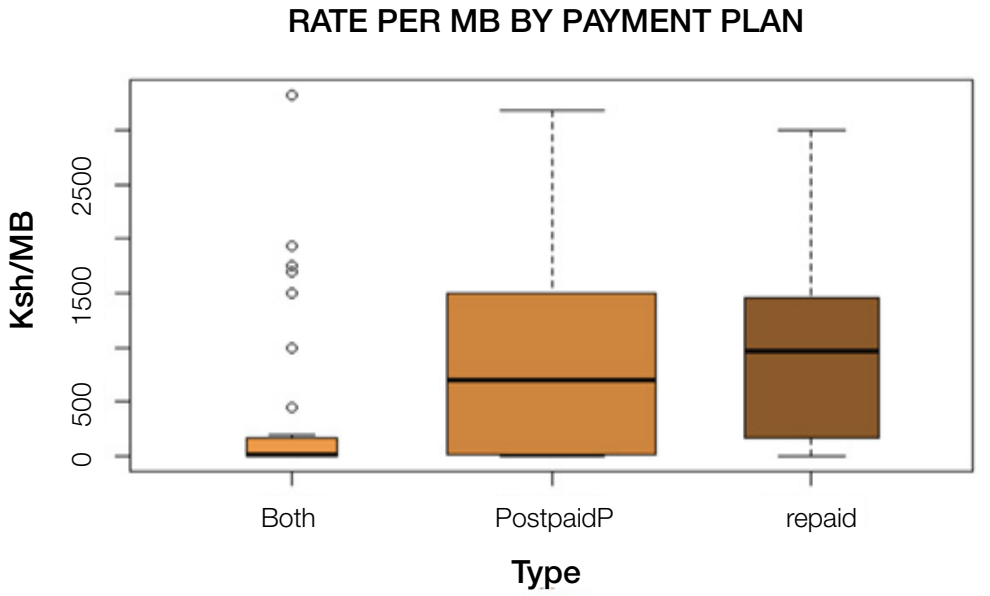


Source: Tarifica December, 2021

US$0.062 for calls and US$0.0035/Mb for data. For a Telkom Kenya subscriber, the charges are US$0.31 while roaming with KPN for both local calls and calls back to Kenya, and US$0.26 for receiving calls. Data charges are US$0.13 per MB. Internet for roaming using MTN Rwanda is charged at US$0.11. The charges while roaming with Telkom using MTN, Tigo and Airtel Rwanda are US$0.075 for both calls within Rwanda and calls back home to Kenya. However, Rwandatel charges are US$0.34 for calls within Rwanda and US$1.26 for calls back home to Kenya. Calls to other international countries are charged at US$0.5 while using Tigo Rwanda and US$1.26 while using Rwandatel. Data charges are US$0.075 while using MTN and Tigo and US$4.52 while using Airtel.

54. In Ethiopia, with Ethiotel being the only mobile network operating in the country, Airtel Kenya charges US$3.5 for calls to Kenya, US$1.1 for calls within Ethiopia, US$0.486 for incoming calls and US$13.26/Mb for data. Safaricom on the other hand charges US$0.35 for calls to Kenya, US$0.177 for calls within Ethiopia, US$0.31 for incoming calls and US$0.088/Mb for data. Telkom Kenya charges US$3.4 for call to Kenya, US$1.07 for calls within Ethiopia, US$0.72 for incoming calls and US$17.8/Mb for data. Airtel Charges between US$0.97 and US$0.9 for calls to Kenya, between US$0.53 and US$0.13 for calls within South Africa, US$0.265 for incoming calls and between US$0.12/Mb and US$3.98/Mb for data. Telkom Kenya charges between US$1.23 and US$0.54 for calls to Kenya, between US$0.79 and US$0.3 for calls within South Africa, US$0.16 for incoming calls and between US$14.13/Mb and US$0.038/Mb for data.

Figure 50: Roaming Data Cost by Payment Plan



Source: Tarifica December, 2021

ROAMING DATA COST BY HOME COUNTRY OPERATOR

55. The cost per MB by Safaricom is at least four times less than the charges by Airtel and Telkom. The median cost per MB by Safaricom is US$1.33 in comparison to US$5.75 by Telkom and US$5.66 by Airtel. As Figure 49 shows, the spread in the data charges by the service providers requires investigation as all of them can charge as low as US$0.003 per MB and as high as US$29.41 per MB. About 75% of users on roaming are charged up to US$13.27 by the three service providers.

ROAMING DATA COST BY PAYMENT PLAN

56. 75% of subscribers with both pre-paid and post-paid payment plans are charged below US$13.27. The median charge for pre-paid subscribers is US$8.56/MB in comparison to US$6.23/MB. As earlier observed the spread in the costs per MB can go as low as US$0.003 up to US$29.41 for both pre-paid and post-paid subscribers. This is illustrated in Figure 50;

57. Based on the above cost analysis, the following observations are apparent:

    57.1 Across Africa, Airtel Kenya has the highest costs of roaming despite having a presence in fifteen (15) countries. The roaming agreements could be investigated further;

    57.2 Countries that have Airtel and MTN networks that Kenyans are able to roam using Safaricom and Airtel Kenya are fairly priced. Safaricom pairing tariff is however, notably lower than Airtel charges across Africa; and

    57.3 COMESA is the most expensive region to make calls to Kenya, receive calls from Kenya and make calls within the region, while EAC is the cheapest region for Kenyans to roam. This may be as a result of the ONA initiative by the EA Partner States.

REGIONAL AND CONTINENTAL PRIORITIES

58. The following conclusions can be drawn from the roaming calls and data charges for Kenyan subscribers across Africa:

    58.1 EAC Policy initiative: The ONA initiative by the EAC Partner States can be seen to have had positive influence on the calling prices faced by consumers in the region as they are consistently the lowest prices for calling to home country, making calls within roaming country and receiving calls within roaming country. Although the EAC region still maintains the lowest average cost of data, the spread in the cost of data requires further consideration in the ONA initiative;

    58.2 High costs within COMESA: The costs of roaming for Kenyans in the COMESA region are the highest within the African continent. This is the case for all types of calls as well as roaming data charges. This requires further monitoring on

the reasons for such high costs of roaming and remedied as soon as possible in order to support the regional goals within COMESA regional economic community; and,

58.3 High Data Costs: In the current era of e-commerce driving most economies, the costs of roaming data are important for both business and individual users. The distribution in the costs of roaming by region, operator and payment type show a huge spread in the costs per MB. This requires further monitoring to determine any pointer to competition issues that may result in this high spread.

RECOMMENDATIONS TO ADDRESS COMPETITION CONCERNS

59. There have been a number of initiatives within Africa to reduce roaming charges for calls and mobile data. For instance, the One Africa Alliance[10] which seeks to reduce roaming charges among the thirty (30) participating countries, the Central African Economic and Monetary Community (CEMAC) initiative[11] by the central African countries (Cameroon, Central African Republic, Congo, Equatorial Guinea, Chad and Gabon) which is aimed at establishing a One Telephone Network zone within the community, among others. In order to enhance these efforts, the following recommendations are made to remedy some of the possible competition concerns as follows:

59.1 Further research is needed on roaming calls and data prices within the COMESA region. This requires collaboration between COMESA Competition Commission and the Competition Authority of Kenya. The research may include review of the roaming agreements amongst players and regulatory obligations of players in the region to determine the reason behind the high prices;

59.2 In the EAC region the cost of calls amongst Partner States are relatively lower than other parts of Africa. However, the distribution of the cost of data is high indicating a possibility of competition concerns. It is recommended that the Authority, in collaboration with the EAC Competition Authority, may carry out further research in the market for roaming data for any competition concerns. Further, there seems to be a disparity in the roaming costs across the countries with Burundi and Tanzania having high costs than the other member countries; and,

59.3 Moreover, there is a trend with Safaricom and MTN pairing having the lowest roaming tariff across Africa for Kenyan subscribers which may indicate that their roaming agreement may be working better than the other Network pairings. Alternatively, there are competition issues present in the roaming agreements, such as exclusivity, which may call for further research on roaming agreements.

10 https://smartafrica.org/bics-joins-smart-africa-alliance-to-implement-the-free-roaming-initiative-on-the-continent/
11 https://itweb.africa/content/j5alrvQajm8vpYOk

APPENDIX

OVERALL DESCRIPTIVE STATISTICS COST OF ROAMING

Price (US$)	Minimum	LQ	Median	Mean	UQ	Maximum	Missing
Calling to Home Country	0.06	0.53	1.42	1.87	2.57	9.77	0
Calling within roaming country	0.06	0.27	0.44	0.53	0.68	4.79	0
Incoming Call rate	0.09	0.27	0.74	0.63	1.02	2.83	0.40
Price per MB	0.003	0.13	4.77	7.06	13.27	29.41	0.20

SUMMARY OF DESCRIPTIVE STATISTICS BY REGION

REGION	COMESA	EAC	ROA
Calling to home country			
Minimum	0.22	1.15	0.13
Lower Quartile	1.15	0.09	0.75
Median	2.41	0.11	1.50
Upper Quartile	3.72	1.06	2.60
Maximum	6.51	2.21	5.31
N	97	78	254
Calling within roaming country			
Minimum	0.06	0.06	0.06
Lower Quartile	0.27	0.08	0.30
Median	0.53	0.09	0.49
Upper Quartile	0.84	0.35	0.68
Maximum	1.50	0.73	1.20
N	97	78	254
Incoming Call rate			
Minimum	0.09	0.09	0.16
Lower Quartile	0.27	0.35	0.27
Median	0.74	0.60	0.74
Upper Quartile	1.02	0.88	1.02
Maximum	1.48	1.25	1.99
N	96	34	254
Rate per MB			
Minimum	0.003	0.003	0.003
Lower Quartile	1.50	0.08	0.53
Median	8.85	0.31	6.08
Upper Quartile	13.27	5.01	13.27
Maximum	29.41	12.31	28.13
N	95	74	237

SUMMARY OF DESCRIPTIVE STATISTICS BY OPERATOR

Mobile operator	Airtel	Safaricom	Telkom
Calling to home country			
Minimum	0.06	0.09	0.07
Lower Quartile	0.76	0.33	0.53
Median	1.56	0.84	1.76
Upper Quartile	2.65	2.41	3.01
Maximum	5.31	5.04	5.79
n	207	107	115
Calling within roaming country			
Minimum	0.06	0.09	0.06
Lower Quartile	0.35	0.13	0.24
Median	0.54	0.27	0.44
Upper Quartile	0.77	0.34	0.77
Maximum	1.35	0.71	1.39
N	207	107	115
Incoming Call rate			
Minimum	0.09	0.16	0.42

Lower Quartile	0.27	0.27	0.62
Median	0.84	0.27	0.75
Upper Quartile	1.02	0.35	0.75
Maximum	1.15	0.44	0.88
n	187	95	102
Rate per MB			
Minimum	0.35	0.04	0.04
Lower Quartile	0.61	0.12	0.34
Median	5.66	1.33	5.75
Upper Quartile	13.27	13.27	12.88
Maximum	26.57	29.41	28.13
n	205	105	96

Lower Quartile	0.27	0.27	1.02
Median	0.27	0.35	1.02
Upper Quartile	0.71	0.75	1.02
Maximum	0.74	1.35	1.02
n	38	247	99
Rate per MB			
Minimum	0.003	0.003	0.003
Lower Quartile	0.04	0.12	1.56
Median	0.12	6.24	8.56
Upper Quartile	1.53	13.27	12.94
Maximum	1.73	28.13	26.57
n	48	252	106

SUMMARY OF DESCRIPTIVE STATISTICS BY PAYMENT PLAN

Payment Plan	Both	Post-paid	Prepaid
Calling to home country			
Minimum	0.06	0.06	7.100
Lower Quartile	0.09	0.53	117.385
Median	0.32	1.24	2.00
Upper Quartile	1.15	2.52	3.63
Maximum	2.57	5.31	7.10
n	49	272	108
Calling within roaming country			
Minimum	0.06	0.06	0.06
Lower Quartile	0.09	0.27	0.44
Median	0.13	0.41	0.62
Upper Quartile	0.27	0.62	0.89
Maximum	0.53	1.15	1.50
N	49	272	108
Incoming Call rate			
Minimum	0.16	0.09	1.02

LOCAL VOICE AND DATA CHARGES

	Voice	Data
Safaricom	Av. 3.7 Ksh/Min	5mbs/Ksh
Airtel	Av. 3.64 ksh/Min	10mbs/Ksh
Telkom	Av 1.75 per min	8mbs/ksh

CHAPTER 5: MAURITIUS

INTRODUCTION

1. In the past few decades, Mauritius has experienced significant growth in the Information and Communications Technology (ICT) sector, particularly, the mobile services industry. Today, mobile subscribers benefit from enhanced services in terms of voice, SMS and Data based on the latest technology. The technological advancement in mobile telephony has enabled people to remain connected and share information with each other irrespective of their location around the globe. One of the important features of mobile telephony services is the international mobile roaming ('IMR'). The IMR enables subscriber to remain in contact with their family members and peers when travelling abroad.

2. A major concern often raised in relation to IMR is high roaming rates. Exorbitant roaming charges can be a constraint for investment and trade. For a small island state like Mauritius which is largely reliant on tourism and financial services, it is crucial to create conducive environment to attract more tourists and investment into the country. Facilitation of investment and trade within Africa is also high on the regional development agenda. In this regard, it important to reduce business costs, including exorbitant roaming charges and thus support growth in the continent.

3. Several international authorities such as the Europe Union (EU) have addressed the issue of high roaming charges. This has been done in a concerted manner by the EU member states through regulations, which has brought down roaming charges. Currently, mobile subscribers within the EU are benefiting from roaming charges which are like domestic mobile charges under the Roam-Like-At-Home project.

4. Within Africa, the issue of high IMR charges has raised alarms. Exorbitant mobile roaming tariffs can constrain regional trade and economic growth. Given the cross-jurisdictional nature of mobile roaming services, any attempt made by individual national regulator can be ineffective. Thus, harmonisation of regulatory actions and elimination of regional surcharges on roaming are necessary to reduce mobile roaming charges in Africa and thus achieve the broader continental objectives to strengthen economic relationships and deepen economic integration.

5. This study of the Competition Commission is a contribution to the cross-country research on the cost of roaming charges in Africa by the African Competition Forum (ACF). The ACF study aims at understanding the features of the telecommunications industry in member countries that may explain the high variance in roaming charges across the continent. Furthermore, the study seeks to uncover the types of competition concerns that exist regarding roaming charges in different countries across the region and develop regional and continental competition policy priorities to address these concerns.

6. Thus, the Mauritian chapter of the ACF Study has the following objectives:

   6.1 To understand the market structure, state involvement and the regulatory setting of the telecommunications industry in Mauritius, with a particular focus on the determination of roaming charges.

   6.2 To have an understanding of the type of competition concerns existing in regard to roaming charges in Mauritius

   6.3 To provide a platform for identifying regional and continental priorities in respect of the telecommunication industry.

7. The rest of the report is structured as follows:

   7.1 Chapter 2 provides an overview of the Mauritian telecommunications industry, describes how mobile roaming works and highlights the regional and continental initiatives being taken to address high roaming charges.

   7.2 Chapter 3 describes the regulatory framework governing the local telecommunications industry.

   7.3 Chapter 4 assesses the general state of competition underlying the mobile industry and discusses the potential the barriers to entry.

   7.4 Chapter 5 analyses the costs of mobile roaming for Mauritian subscribers.

   7.5 Chapter 6 identifies the priorities at continental and regional levels to address the concerns in relation to high roaming charges.

7.6 Chapter 7 concludes and provides potential recommendations to address the concerns identified.

BACKGROUND

8. This section provides an overview of the telecommunication industry in Mauritius and briefly describes the functioning of mobile roaming. The section also provides an overview of the different cost elements associated with the provision of mobile roaming services and highlights the initiatives being taken at continental and regional levels to address the issue of high roaming charges in Africa.

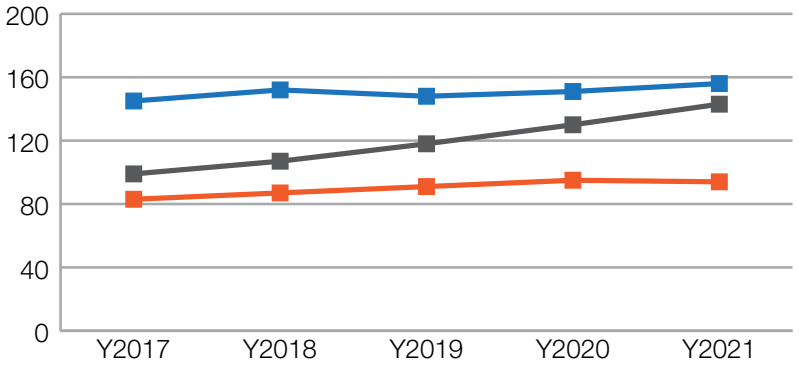
THE TELECOMMUNICATION INDUSTRY IN MAURITIUS

9. Telecommunication is a key industry for any economy. The industry helps to connect businesses and individuals, and essentially stimulates economic growth by facilitating trade and investment. In 2021, the telecommunication industry generated a revenue of Rs 20.1 billion (over USD 500 billion), accounting for about 5.1% of the Mauritian Gross Domestic Product (GDP).

10. Mauritius has a developed telecommunication industry. The local mobile network operators ('MNOs') provide voice, short message service (SMS), and data services throughout the island as well as international roaming services. These operators are currently offering their services on the 4G technology and are in the process of unfolding the latest 5G technology. Internet services, mainly broadband connectivity, are offered across the island with 100% fibre coverage to households and businesses.

11. In 2021, there were about 1,811,700 internet users in Mauritius. It is worth highlighting that 1,740,600 or 96% of these users had broadband internet subscription. In terms of fixed line and mobile cellular, there were 469,100 and 1,971,300 subscribers, respectively. Figure 51 illustrates the evolution of the penetration rate in terms of fixed line households, mobile cellular and internet subscriptions for the period 2017-2021[1].

Figure 51: Evolution of fixed line, mobile and internet penetration rate



	Y2017	Y2018	Y2019	Y2020	Y2021
Mobile Cellular	145	152	148	151	156
Fixed Line	83	87	91	95	94
Internet	99	107	118	130	143

Source: Mauritius Statistics, ICT Statistics

12. The figure above clearly demonstrates the high level of penetration rate for fixed line, mobile cellular and internet in Mauritius. For instance, 94% households had access to fixed line telephone in 2021. The mobile cellular penetration rate reached 156% and the population internet penetration rate was 143% in the same year.

MNOS IN MAURITIUS

13. The MNOs in Mauritius are Cellplus Mobile Communications Ltd, Emtel Ltd and Mahanagar Telephone (Mauritius) Ltd, who are duly licensed by the Information and Communication Technologies Authority (ICTA) with the Public Land Mobile Network (PLMN) Licence.

14. The MNOs are providers of wireless communications services. The MNOs usually own or control all the elements necessary to deliver services to end users including radio spectrum allocation, wireless network infrastructure, billing and customer care.

15. A brief background on the MNOs operating in Mauritius is provided below.

1 To be noted that the figures for fixed line are compiled in terms of household while mobile cellular and internet data are in terms of subscribers.

15.1 Cellplus Mobile Communications Ltd ('Cellplus')

15.1.1 Cellplus is a fully owned subsidiary of Mauritius Telecom and offers a range of voice, data and multimedia services for both the mass market and business segments. Cellplus operates as "my.t" in the offering of the aforementioned services.

15.1.2 Cellplus, which provides data roaming in addition to voice roaming facilities, has roaming agreements with more than 260 operators in 126 countries.

15.2 Emtel Ltd

15.2.1 Emtel Ltd started operations in 1989 as the first mobile operator in the Southern Hemisphere. It is owned by the Currimjee Jeewanjee Group (with 75% shareholding) and by the promoters of Bharti Airtel (with 25% shareholding). It should be noted that the latter is a global telecommunications company with operations in 20 countries across Asia and Africa, offering a range of services to individuals and enterprises.

15.2.2 Emtel Ltd has customers ranging from individual, households, to enterprises. It supplies a range of telecommunications services in addition to mobile services.

15.2.3 International roaming offered by Emtel enables connection throughout 187 countries across 540+ world class networks while travelling the world with the Emtel Prepaid number. All Emtel numbers are already preconfigured for international calls[2].

15.3 Mahanagar Telephone (Mauritius) Ltd (MTML)

15.3.1 MTML is a subsidiary of Mahanagar Telephone Nigam Limited (MTNL)[3] and operates in Mauritius since 2004. It provides a wide range of services such as mobile services to customers including voice, data (3G & 4G LTE), international long-distance calling services, internet services and international roaming.

15.3.2 MTML launched 'CHiLi' GSM services in Mauritius, in November 2011. MTML offers international roaming tariffs for Europe, Russia, India, China, Australia and New Zealand and other countries.

16. Table 23 provides information on the establishment year and ownership structure of the three MNOs.

Table 23: Information on establishment year and ownership of MNOs

Company	Establishment year	Ownership
Cellplus	1996	Wholly owned subsidiary of Mauritius Telecom (MT). MT is owned by: Rimcom Ltd[4] - 40% Government of Mauritius - 33% SBM Holdings Ltd - 19% National Pensions Fund - 7% Employees of Mauritius Telecom _ 1%
Emtel	1989	Currimjee Jeewanjee Group - 75% Indian Continent Investment Limited (owned by Bharti group of India) - 25%
MTML	2004	Subsidiary of Mahanagar Telephone Nigam Limited

Source: MNO's website and registrar of companies

17. In terms of state involvement, Cellplus is the only MNO in which the Government of Mauritius has stake. The other MNOs, Emtel and MTML are privately owned.

VOICE, SMS, AND DATA SERVICES PROVIDED BY MNOS IN MAURITIUS.

18. Each MNO has its own network infrastructure through which the three main services; voice, SMS, and data, are provided. To better understand the domestic landscape for calls and SMS in Mauritius, Table 23 shows the evolution of domestic calls and domestic SMS exchanged.

2 Information gathered from Emtel's website: https://www.emtel.com/services/international-prepaid-roaming

3 MTNL is a government of India owned enterprise.

4 Rimcom Ltd is an investment vehicle wholly owned by Orange SA (formerly France Telecom).

19. In 2021, a total of 1,469 million minutes of domestic calls was made. This represents a fall of 8% since 2017 from 1,759 million minutes. There has been a decline of 20% in the number of domestic calls from 341 million minutes to 259 million minutes. Calls made through mobile networks remain the most popular mode of communication where above 80% of calls are made. Regarding SMS[5] exchanged, there has been a significant drop of 69% from 1,011 in 2017 to 314 in 2021.

Table 24: Domestic calls made and SMS, 2017-2021

Year	Domestic calls (million minutes)			SMS (million)
	Fixed	Mobile	Total	
2017	341	1,418	1,759	1,011
2018	320	1,506	1,826	960
2019	298	1,515	1,813	728
2020	271	1,351	1,622	497
2021	259	1,210	1,469	314

Source: Information gathered from ICTA website, Observatory data

20. In terms of international long-distance (ILD) services, as seen in Table 24, the mobile access network is the dominant mode of network used to make calls. In 2021, out of 31 million minutes of total outgoing ILD voice calls, 87% (27 million minutes) originated from mobile access networks. Similarly, 64% (16 out of 25 million minutes) of the incoming calls was from mobile access networks. Table 25 shows the evolution of the outcoming and incoming voice ILD calls made between 2017 and 2021.

Table 25: International long-distance calls, 2017-2021

Year	International long-distance calls (million minutes)					
	Outgoing			Incoming		
	Fixed	Mobile	Total	Fixed	Mobile	Total
2017	18	48	66	29	37	66
2018	14	39	53	22	30	52
2019	10	31	41	18	24	42
2020	6	29	35	11	17	28
2021	4	27	31	9	16	25

Source: Information gathered from ICTA website, Observatory data

21. Both the total outgoing and incoming ILD voice calls have significantly dropped from 66 million minutes to 31 million minutes and from 66 million minutes to 25 million minutes respectively between 2017 and 2021. This represents a fall by 2.5 and 3.3 times respectively. Calls made through mobile phone retained its upper edge against fixed line.

22. The table below illustrates the internet traffic usage and the number of internet subscriptions in Mauritius from year 2017 to 2021. While the volume of voice calls including ILD ones and SMS exchanged have been on the decline since 2017, the total number of internet subscriptions has been on the rise during the same period from 1.2 million to 1.7 million. Internet subscriptions through both the fixed and mobile access networks increased by 32% and 48% respectively. Internet downloads, uploads and international bandwidth usage drastically scaled up during the same period (See Table 25). Internet downloads rose from 172,181 terabytes in 2017 to 674,098 terabytes in 2021. Internet uploads increased from 21,541 terabytes to 74,559 terabytes and international bandwidth usage grew from 43,059 Mbps to 211,312 Mbps during the same period. They represent a 292%, 246% and 391% increase in their internet traffic usage respectively.

Table 26: Number of internet subscriptions and internet traffic usage, 2017-2021

Year	Subscriptions			Traffic usage		
	Fixed	Mobile	Total	Internet downloads (Terabytes)	Internet uploads (Terabytes)	International bandwidth usage Mbps
2017	248,400	999,600	1,248,000	172,181	21,541	43,059
2018	275,000	1,080,600	1,355,600	276,074	32,436	64,977
2019	307,200	1,189,100	1,496,300	444,397	49,279	101,657
2020	323,200	1,324,800	1,648,000	711,287	74,232	144,973
2021	329,000	1,482,700	1,811,700	674,098	74,559	211,312

Source: Information gathered from ICTA website, Observatory data

5 SMS is a service for sending short messages of up to 160 characters to mobile devices.

23. From the above data, it has been observed that the volume of calls at both domestic and international level as well as the number of SMS exchanged are gradually decreasing over the years while the number of internet subscribers and data usage are rapidly increasing. A migration from voice and SMS to data with more and more internet subscriptions and internet traffic. This shift can be attributed to the change in consumer behaviour with the use of more over the top applications such as WhatsApp, Telegram, or Facebook Messenger and the upgrading of network infrastructures of MNOs providing better services in terms of bandwidth, speed and quality of connectivity.

MOBILE ROAMING

24. International mobile roaming is a quasi-automatic feature of the mobile telecommunications. It is an essential service provided by MNOs to mobile phone subscribers travelling to other countries. Roaming allows the mobile phone subscriber to use his mobile phone to make and receive voice calls, to send and receive SMS, or make use of data services while being outside the geographical area of Mauritius. This coverage extension is made possible through the roaming agreement entered between the subscribed network operator and the network operator in the visited country.

25. The four types of roaming services offered are:

    25.1 Calls/SMS/Data made/used inside a visited country;

    25.2 Calls/SMS/Data made/used from a visited country to the home country;

    25.3 Calls/SMS/Data made/used from a visited country to a third country; and

    25.4 Receiving calls/SMS/Data in a visited country.

26. Table 26 illustrates the roaming revenue generated in Mauritius in terms of voice call, SMS, and data from year 2016 to 2020. In 2019, prior to the Covid-19 pandemic, total roaming revenue generated from both abroad and inland totalled Rs 493 million. It declined to about Rs 132 million in 2020, which was an exceptional year. The spread of Covid-19 in 2020 adversely affected the market, mainly due to international travel restrictions. These international travel restrictions and lockdowns imposed across several countries resulted in a shortfall in international roaming revenue, including that for Mauritius.

27. Roaming data services generated the highest revenue. They are then followed by voice calls and SMS services. In 2019, they represented 62%, 31% and 6% of the total roaming revenue generated. As observed in Table 27, the amount of revenue generated from the mobile roaming has been declining since 2016, by an overall change of 80%. The greatest fall of 73% occurred between 2019 and 2020. This fall is attributed mostly to the travelling restrictions which were imposed on countries due to the Covid-19 pandemic.

Table 27: Roaming revenue generated by category

Category	2016		2017		2018		2019		2020	
	Rs (M)	%	Rs (M)	%	Rs (M)	%	Rs (M)	%	Rs (M)	%
Voice call	315	44	202	39	209	34	155	31	43	33
SMS	49	7	31	6	34	5	30	6	7	5
Data	350	49	279	55	369	60	308	62	82	62
Total roaming revenue	714	100	512	100	612	100	493	100	132	100
Outbound	147	21	99	19	116	19	80	16	14	11
Inbound	567	79	413	81	496	81	413	84	118	89

Source: Computed from information gathered from ICTA

28. A fall has also been noted in terms of the proportion of revenue generated from roaming services. For example, in 2016, roaming services represented 11% of the total revenue generated by MNOs. In 2020, it dropped to only 2% before falling to 8% in 2017 and 2018 and 6% in 2019.

29. Over the period, inbound roaming revenue decreased by about 27%, from Rs 567 million in 2016 to Rs 413 million in 2019. Similarly, a larger downward shift of about

46% was noted in terms of outbound roaming revenue, from Rs 147 million in 2016 to Rs 80 million in 2019. The general pattern across the period analysed reveals that inbound roaming revenue exceeds by far outbound roaming revenue. While this may mean that inbound roaming revenue is of major importance to the mobile network operators, small countries like Mauritius which have a high dependency on the tourism industry, derive a significant percentage of revenue generated from international roaming.

HOW MOBILE ROAMING WORKS?

30. When making domestic calls, the MNOs transmit information from one subscriber to another subscriber via the access, transport and core network. On roaming, the same network is used except that the receiving MNO is in a foreign country and access to the receiving subscriber is enabled through access to a visited network. This requires a little extra functionality other than the signalling between the visited and home network.

31. When a mobile user is abroad and turns its mobile device on, the mobile device attempts to communicate with a visited mobile network. The visited network picks up the connection from the user's mobile, recognises whether it is registered with its system, and attempts to identify the user's home network. If there is a roaming agreement between the home network and one of the mobile networks in the visited country, the call is routed by the visited network towards an international transit network. The international transit network carrier is responsible for the call delivery to the destination network. Once this is done, the destination network will connect the call. Figure 53 illustrates how international roaming works in relation to a phone call.

32. The visited network also requests service information from the home network about the user and creates a temporary subscriber record for the authorised device. The home network updates its subscriber record on where the device is located so if a call is made to the phone, it can be appropriately routed.

Figure 52: International Roaming Routing

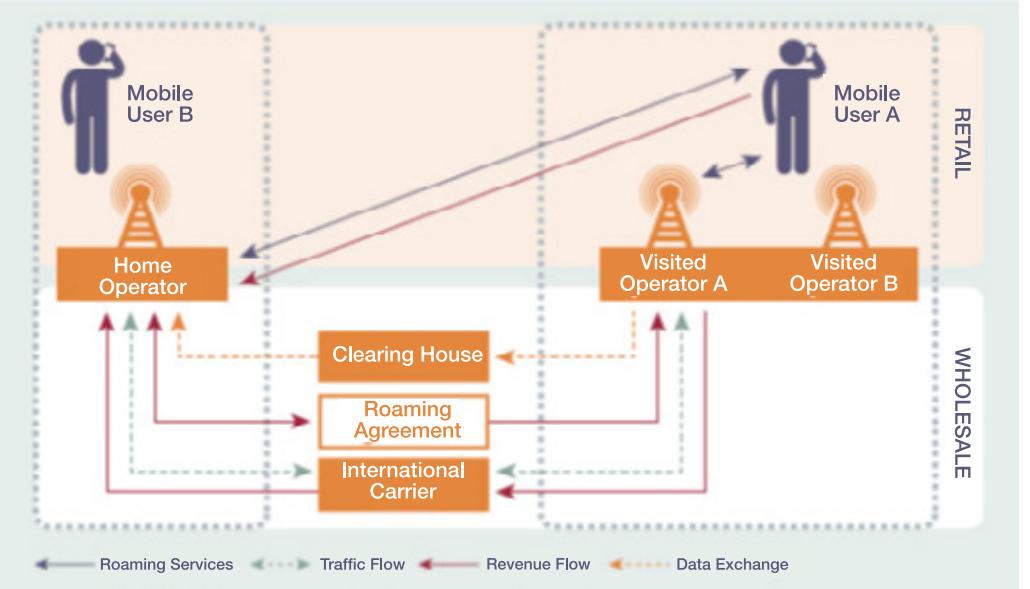
Source: GSMA, 2012[1]

1 See Information Paper on Overview of International Mobile Roaming, 25 June 2012.

33. The structure of the mobile roaming services is split into two markets: the wholesale roaming market, and the retail roaming market. The MNOs are mostly vertically integrated and operate at both levels of the value chain.

34. Wholesale roaming services are those services a mobile operator of a given country ("visited network operator") offers to a mobile operator licensed in another country ("home network operator"), enabling the subscribers of the latter to use the network of the former. Wholesale roaming services include the provision of access to the visited network, and the provision of speech, data, fax, and SMS to the roaming subscriber. In the wholesale roaming services market, the MNOs operate by building a radio access physical infrastructure network across all the regions in the country (see figure above). This will enable connection across subscribers and network operators through (i) the access network, (ii) the transport network and (iii) the core network.

Figure 53: Commercial links for international roaming



Source: International Roaming Explained, Aug 2012, GSMA, UK

35. The retail roaming services market includes the services a home mobile operator (such as Mauritius Telecom, Emtel or MTML) offers its subscribers, allowing them to use their subscription in other countries, by using the network of mobile operators licensed in those countries. To ensure the best possible service to their customers, home network operators tend to maximise coverage by concluding international roaming agreements with (i) operators in a maximum number of countries and (ii) all mobile operators in a given country market where the mobile telephone services are sold to individuals and corporates. Usually, the retail market for final costing to the subscribers will be at a level above the wholesale price for carrying the call.

36. The commercial and technical details for international mobile roaming are further illustrated in the figure above.

37. The mobile user (Mobile User A) has an international roaming service with their home operator (Home Operator) and is automatically connected to a visited network (Visited Operator A) while roaming. Mobile User A is automatically granted access to Visited Operator A's network when arriving in the visited country by an exchange of data between Home Operator and Visited Operator A, where Visited Operator A confirms Mobile User A is a roaming customer with Home Operator. As such, the wholesale roaming agreement between Visited Operator A and Home Operator specifies how this data is to be provided to the visited operator.

38. Home Operator usually has wholesale roaming agreements with more than one operator in the same visited country, which in this case is Visited Operator A and a second network, Visited Operator B. As a result, Mobile User A can call home using either visited operator networks, both of which use international transit services to carry the call back to Mobile User A's home country. Mobile User A pays a retail price to Home Operator for the roaming service and does not pay Visited Operator A. Provided Mobile User B is not also roaming, they will not incur any extra charges to receive a call from, or to make calls to Mobile User A. Visited Operator A sends transferred account procedure (TAP) files to a clearing house which forwards them to the Home Operator. TAP files are used for billing of calls while roaming.

39. Home Operator can then pay Visited Operator A the wholesale charges as per call volumes in the TAP file and rates in the wholesale roaming agreement. Visited Operator A pays an international carrier (International Carrier) for carrying the call and handing over the call to Home Operator. International Carrier pays Home Operator a termination rate for terminating the call in the home country.

40. There are several cost components associated with conveying a call internationally from a roaming customer. As can be observed from the above section that international roaming requires services of local and international telecommunication operators. In relation to those services, the charges can be categorised into:

    40.1 Wholesale roaming charges, for the services offered by:

        40.1.1 the network operators in the visited countries, which is set out under the respective bilateral agreements between the local MNOs and visiting countries' networks.

40.1.2 international carrier charges.

40.2 Retail roaming charges, which the users of international roaming pay to their respective MNOs. The retail roaming charges include the wholesale roaming charges and the MNOs own charges involved in the provision of the roaming services. The cost components for the retail roaming charges are segregated into voice and data roaming services.

41. It follows that in setting the retail roaming charges (the total charges imposed on users of international roaming services), MNOs must factor in the wholesale roaming charges and its own charges to cover for providing mobile roaming. The specific costs for MNOs to provide roaming services essentially comprise of:

41.1 Extra software for billing and customer care, with the information technology (IT) infrastructure such as extensions to data centres.

41.2 Staff costs of handling extra call volumes and of roaming business processes.

41.3 Network elements, both hardware and software, including additional capacity for greater calling volume.

42. International roaming users do not see the various component of the roaming charges but the total charges as the retail roaming charges, which are billed by their home networks. It should be noted that the various charges are also subject to taxation (VAT) in respective countries for the service offered which inflates the roaming charges.

43. Among other technical specifications, international mobile roaming agreements set Inter-Operator Tariffs (IOT), which are agreed bilaterally between the home and visited network operators.

44. The IOT is the wholesale fee that the visited network operator charges to the home network operators for allowing the roaming customer to make calls or use data services. It is the cost charged by the visited network to cover the costs of roaming overheads, origination, carriage, and termination. The actual level of an IOT chargeable for an individual call may vary by factors including time of day, call destination, total bilateral volumes of roaming traffic.

45. The various costs associated with mobile roaming can be classified into broad categories as shown below.

45.1 Call origination

45.1.1 This cost is a notional internal cost that a network incurs for initiating and carrying the call. When he initiates the call, he is first connected to the visited network.

45.2 Signalling costs

45.2.1 This cost relates to the exchange of roaming related signalling traffic between the home network and the visited networks. This is made through an international carrier.

45.3 Overheads

45.3.1 Overheads are the fixed and variable operating costs associated with making a call on roaming. They include accounting, payments, revenue assurance and fraud prevention, SIM detection among others. Fixed costs include staff costs for negotiating agreements, establishing and testing roaming connections and purchasing software and systems to manage the technical and operational side of roaming.

45.4 TAP files processing costs

45.4.1 TAP is the process that allows a visited network operator to send billing records of roaming subscribers to their respective home network operator. When the mobile subscriber travels to another country and creates usage in the foreign network, this information has to be passed back to the subscriber's home network. The foreign network collects information on the usage from its switches, etc., and then creates TAP files containing the information set out in the standard.

45.4.2 The files are then exported (on a regular basis, generally at least one file per day) to the home operator, who will import them and then use the information to invoice the subscriber. The foreign operator rates the calls and then charges the subscribers home network for all the calls within a file. The home operator can mark up or re-rate the calls in order to make revenue.

45.5 Mobile termination rate

45.5.1 This charge is borne by the network from whom the call is initially transmitted for use of the receiving network's infrastructure to terminate the call. This cost is incurred by the visited network and paid to the roaming customer's home network. It is often included in the carrier charge and paid by the international carrier to the home network.

REGIONAL POLICY ON ROAMING

46. Having identified the different elements in the way roaming works and the associated cost structure, the regional policy around roaming charges is being further assessed. The issue of high roaming charges is being addressed at regional and continental levels and there have been numerous initiatives across the African continent to regulate roaming charges. It is important to highlight the regional initiatives of different Regional Economic Communities (RECs) like the Southern African Development Community (SADC), Common Market for Eastern and Southern Africa (COMESA), East African Community (EAC) and Central African Economic and Monetary Community (CEMAC) regarding this issue. The initiatives of the African Union (AU) at the continental level and private initiative such as Smart Africa will also be considered in this chapter.

47. Mauritius is party to two RECs in Africa namely the SADC and COMESA and is also signatory to the Tripartite Free Trade Agreement comprising of the SADC, COMESA and the EAC and the African Continental Free Trade Area (AfCFTA). In view of evolving towards a common market at the regional and ultimately continental level through the African Union, the harmonisation and regulation of roaming becomes of upmost importance in facilitating integration. It is also essential to work on the harmonisation of legislations while considering important factors like transparency, cost, as well as regulation of mark up. In view of the above, the initiatives taken have been highlighted below.

AFRICAN UNION

48. The African Union launched in 2011, a pre-feasibility study, the 'programme for the establishment of affordable roaming rates in Africa" to develop a program to establish affordable roaming rates in Africa. The aim of the study was to identify the important barriers which limit the development of roaming in African countries and to find ways to waive these barriers, thus allowing the AU to consider actions to address the issue of high roaming rates in a practical way. The issues identified in the study were in relation to:

48.1 Transparency; whereby a need to improve transparency and clarity of consumer retail pricing for IMR was identified

48.2 Bill shock; a need for measures to minimize and mitigate against consumer bill shock

48.3 Alternatives to roaming; the lack of substitutes for IMR services; and

48.4 Retail prices; pertaining to a desire to lower retail IMR tariffs for African consumers.

49. To address the concerns arising from the pre-feasibility study and the issue of high roaming rates in Africa, the AU discussed the issues with AU Member states and representatives of the mobile industry in Nairobi in September 2013. Following the meeting, the African Union came up with the African Union International Mobile Roaming Guidelines[6]. The guidelines emphasise on the need to provide information to customers of IMR and encourage national regulators to create a specific page on their website to do so. The guidelines similarly address the issue of bill shock, the need to regulate IMR prices and alternatives to roaming[7].

6 African Union (AU) International Mobile Roaming Guidelines 2013 updated in June 2014
7 ibid

50. In September 2016, the African Union Commission (AUC) launched the first Global GSM Roaming Exchange (GRX) in Africa at the Kenya Internet Exchange Point to address the issue of high roaming in Africa and it is an important step towards making Africa more technologically competitive as operators who use the GRX facility benefit from more attractive roaming offers and from lower roaming rates.

SOUTHERN AFRICAN DEVELOPMENT COMMUNITY (SADC)

51. The SADC has been working on the 'SADC Home and Away Roaming' project since 2007. The aim of this project is to harmonise the regulation of roaming services and charges between member states to address the issue of high roaming charges and to facilitate socio-economic development. The SADC roaming policy strives to comply with the following guiding principles:

    51.1 ensuring that prices for roaming services are transparent, fair, and non-discriminatory.

    51.2 providing consumers with adequate information with regards to the provision of roaming services in relation to retail prices and billing cycles;

    51.3 ensuring that prices for all roaming services should not be less than underlying costs;

    51.4 ensuring that prices for regional roaming services should be cost based and not be too excessive in comparison with prices charged for the same services at national level;

    51.5 prices charged and other obligations imposed on operators should not distort the competitive conditions between mobile operators within the region;

    51.6 establishing any roaming network connection with the user's consent; and

    51.7 The quality-of-service parameters for roaming services should at least be equivalent to those prescribed by the national regulatory authority of each Member State.

    51.8 ensuring that prices for roaming services are transparent, fair, and non-discriminatory.

    51.9 providing consumers with adequate information with regards to the provision of roaming services in relation to retail prices and billing cycles;

    51.10 ensuring that prices for all roaming services should not be less than underlying costs;

    51.11 ensuring that prices for regional roaming services should be cost based and not be too excessive in comparison with prices charged for the same services at national level;

    51.12 prices charged and other obligations imposed on operators should not distort the competitive conditions between mobile operators within the region;

    51.13 establishing any roaming network connection with the user's consent; and

    51.14 The quality-of-service parameters for roaming services should at least be equivalent to those prescribed by the NRA of each Member State.

52. The SADC Home and Away Roaming project are to be implemented in three phases as follows:

    52.1 Phase 1: Transparency to Roaming Tariff and Increase in Roaming Footprint and Transparency.

    52.2 Phase 2: Wholesale and Retail Price Cap Regulation, and Three Route Approach.

    52.3 Phase 3: Cost-based roaming price regulations.

53. Mauritius is part of the SADC Roaming project. At this stage, Mauritius, together with nine other SADC member states[8] have only implemented the first two phases of the project. However, as at now, Mauritius, through the ICTA, has not yet applied the wholesale and retail price cap regulation as required by Phase II of the SADC roaming project.

8 Botswana, Eswatini, Malawi, Mozambique, Namibia, South Africa, Tanzania, Zambia, and Zimbabwe.

COMMON MARKET FOR EASTERN AND SOUTHERN AFRICA (COMESA)

54. The COMESA has, since 2017, undertaken several attempts to initiate actions for the elimination of roaming charges within COMESA member states. COMESA members also met in October 2017 to discuss the elimination of roaming charges and draft the related regulations to address the issue of high roaming charges.

55. This initiative was however abandoned, and the COMESA decided to create a telecommunication company for the COMESA region (COMTEL). The aim of the project was to make communication and information services easier and more accessible in the region. This project was also not pursued, showing the potential challenges that such harmonisation of roaming costs and charges can entail.

EAST AFRICAN COMMUNITY (EAC)

56. The EAC is a regional intergovernmental organisation of 7 Partner States. In 2014, the members implemented a joint initiative known as the One Network Area (ONA). The ONA roaming initiative aims to promote regional integration by bringing down the high costs of mobile roaming. ONA is based on a set of regulatory interventions, specifically[9]:

    56.1 Eliminating charges for receiving voice calls while roaming in Kenya, Rwanda, South Sudan, and Uganda if the call originates in one of these countries.

    56.2 A waiver of excise taxes and surcharges on incoming ONA voice traffic while establishing wholesale and retail price caps on outbound ONA traffic.

    56.3 Requiring MNOs to re-negotiate with their roaming partners to reduce wholesale tariffs.

57. The ONA initiative has proven to be such a success that regulators and MNOs have begun to cooperate effectively and there has been a reduction in roaming tariffs for the benefit of end-consumers. There has also been the implementation of a capping of retail prices.

9 https://www.itu.int/dms_pub/itu-d/opb/pref/D-PREF-EF.ONA-2016-PDF-E.pdf

CENTRAL AFRICAN ECONOMIC AND MONETARY COMMUNITY (CEMAC)

58. The CEMAC constitutes of six member states namely Cameroon, the Central African Republic, Chad, Equatorial Guinea, Gabon, and the Republic of the Congo. The countries within the CEMAC have recognised the issue of high roaming charges within African and the need to make telecommunication more accessible for businesses and trade. Years of technical work and advocacy on mobile roaming in Central Africa in collaboration with the International Telecommunications Union (ITU) have been undertaken. Subsequently, a draft community regulation which aims at regulating roaming tariffs within members of the CEMAC was drafted and hence a one network zone within the CEMAC area was established.

59. In November 2021, member states of the CEMAC signed a bilateral agreement which has the effect of removing roaming surcharges in countries which are members of the CEMAC. This comes in line with the vision of the CEMAC of creating a one network zone within the community. This project aims at harmonising the tariff schedules for calls, SMS, and mobile data services and at the same time supporting borderless communication and regional integration.

60. Despite not being a member of the CEMAC, the successful initiative of the CEMAC of coming up with draft regulations and a one network zone shows that regionally, progress is being made to tackle the high roaming charges and aiming to harmonise costs.

SMART AFRICA

61. Smart Africa is a bold and innovative commitment from African Heads of State and Government to accelerate sustainable socio-economic development on the continent, bringing Africa into a knowledge economy through affordable access to broadband and usage of Information and Communications Technologies[10]. Smart Africa launched the 'One Africa Network' (OAN) project, which advocates free movement of people, goods, ideas, and services across the continent while boosting trade and fostering intracontinental growth. The project aims to reduce roaming charges among its 30

10 https://smartafrica.org/

participating African countries which represent more than 700 million people. This will be enabled through affordable voice and data roaming rates and cross-border mobile payments. To make the One Africa Network project a success, Smart Africa is working in close collaboration with regulators, MNOs, regional economic communities and ICT ministries of all the member states of Africa.

62. Belgacom International Carrier Services (BICS), which is a global leading neutral carrier, and communications enabler having a network which spans more than 180 countries, connecting more than 5 billion mobile subscribers has joined the Smart Africa Alliance and is supporting the OAN. Given that BICS already carries a considerable proportion of messages, mobile data connectivity and voice within Africa, it will support Smart Africa in its mission to reduce roaming charges within the continent through its 'free- roaming' solutions. This will help local mobile operators to launch the OAN initiative affordably and within a short span of time

63. The above initiatives of RECs in Africa such as the SADC, CEMAC, EAC, COMESA as well as private initiatives such as Smart Africa demonstrate that there is an acknowledgement that the roaming charges in African countries are high, and it is an issue that needs to be addressed. The SADC produced the SADC Roaming regulations to address the issue which was inspired by the European Union's Roam Like at home regulations (RLAH).

64. The CEMAC has similarly demonstrated willingness to eliminate roaming surcharges and has taken actions to address the issue as have the EAC, the African Union and the Smart Africa.

65. For Mauritius, it is mainly the SADC Roaming project that must be implemented in terms of price caps and cost-based roaming price regulations. However, regional initiatives and regulations relative to roaming costs and charges are likely to have an impact on Mauritius.

REGULATORY AND LEGISLATIVE FRAMEWORK

66. This section provides an overview of the regulatory and legislative framework governing the telecommunications industry in Mauritius.

67. The telecommunication industry in Mauritius is governed by the Information and Communication Technologies Act 2001 (''ICT Act 2001"). The ICT Act 2001 caters for the regulation of the broader information and communication technologies sector, including the telecommunications industry.

68. The ICT Act 2001 is enforced by the Information, Communication and Technology Authority (''ICTA"), which is the sector regulator. The ICTA is tasked with the execution of key functions such as licensing, numbering, spectrum management, standardisation, interconnection, pricing, universal service/access, structural separation, and type-approval amongst others. The sector regulator has the responsibility of implementing government policy related to the telecommunications sector.

69. In so far as the broader policy purview is concerned, it is the Ministry of Information Technology, Communication, and Innovation which is responsible for the crafting of the regulatory framework and related policy directives.

70. As per Section 24 of the ICT Act 2001, a person must hold a licence from the sector regulator to operate an information and communication network or service including telecommunication network or service. The license which is issued to the MNOs in accordance with the applicable licensing regime is the PLMN Licence, as mentioned before.

71. In addition to the physical infrastructure, there is the need for proper allocation of spectrum and numbering for MNOs to provide mobile telephony services. In this regard, Section 18 (1)(q) of the ICT Act 2001 empowers the ICTA "to determine the numbering system to be used for every information and communication services including telecommunication service, and manage, review, and, where appropriate, reorganize the numbering system."

72. The ICTA also have purview on interconnection agreements for access to respective networks between operators. Section 28 of the ICT Act 2001 empowers the ICTA to have an oversight on interconnection aspects with the aim of ensuring fair, efficient, and a competitive telecommunications market. It must be noted that there are no specific legislations pertaining to international roaming services in the enabling legislation for the telecommunications sector, i.e., the ICT Act 2001.

73. Pursuant to Section 31 of the ICT Act 2001, the sector regulator must provide for a framework for tariff regulation and stands guided by a tariff policy, which is continuously re-assessed in order to secure the best possible outcomes for all stakeholders. This is done through the regular issuance and revision of telecom directives.

74. Section 31 of the ICT Act 2001 additionally provides that PMLN licence holders are required to have the approval of the ICTA before imposing a tariff for any information and communication service they want to supply and for every alteration to existing approved tariffs. The section also provides additional protection to customers by empowering the authority, when it is provided with a tariff to approve, to ask additional information it considers necessary to public operators who have significant market power.

75. The legislative framework puts an obligation on local MNOs to the Universal Service Fund. As per the Information and Communication Technologies (Universal Service Fund) Regulations 2008, public operators must make an annual contribution payable in monthly instalments and each instalment shall consist of: (i) 5 per cent of the gross revenue which the public operator generates from the provision of international roaming service for that month and (ii) 0.025 US dollar on every minute of international calls which the public operator terminates in Mauritius in that month.

76. The ICTA also has purview on regulating competition in the sector to create a level playing field for all operators in the interest of consumers in general. Section 30A of the ICTA Act provides that the ICTA may impose such conditions as it may consider appropriate where a public operator has significant market power. It is to be highlighted that the ICTA is yet to issue guidelines on enforcing this provision.

77. On its part, the Competition Commission has a broader mandate of regulating competition in terms of abuse of monopoly situation, anti-competitive mergers, and collusive agreement. To ensure collaboration and sharing of expertise on matters of mutual interests between the two institutions, the two institutions have entered into a Memorandum of Understanding.

78. At regional level, the SADC Home and Away Project provide for a harmonised policy framework. Under this framework, the SADC Roaming Regulations 2015 provide a regulatory response to the issue high roaming charges in the region. While the jurisdiction of the ICTA is limited to services offered by MNOs operating from Mauritius, the SADC regulations provides for a cross-jurisdictional framework for the MNOs in SADC member countries.

79. The SADC Roaming Regulations 2015 effectively addresses the issue of 'bill shock' by requiring for more transparency in terms of roaming charges and customer protection under Section 5 to 7. The regulations bind member states, including Mauritius, to provide basic and more advanced information (when required) relating to the retail charges for roaming calls, data, and SMS Messages free of charge. The regulations impose a duty on member states to ensure that customers are informed through text messages, email, or other means of the services available and the prices of those services as soon as they enter a visited member state so that they become aware of the financial consequences of using roaming calls, data, and SMS Messages and this allow them to monitor and control their expenditure.

80. It should be noted that the regulations introduced through Sections 12 and 13 impose price ceilings for both retail and wholesale charges that should not be exceeded by the MNOs. At the same time, the regulations permit MNOs to set 'peak' and 'off-peak' charges when applying wholesale charges. There is a duty on member states to ensure that retail and wholesale charges are approved by the national regulators before being imposed on customers and these provisions aim at ensuring that MNOs are complying with the regulations and protecting customers of mobile roaming.

81. Similarly, the regulations encourage member states to actively participate in establishing the cost based roaming charges. The member states should work in

collaboration with the MNOs to ensure that the cost of roaming charges and tariffs are properly determined after considering the relevant cost elements laid down under Section 9 of the regulation.

82. Therefore, in line of the above, Mauritius has to a certain extent a well-established regulatory framework for MNOs but compliance with the SADC regulations and harmonisation of domestic laws accordingly would ensure that Mauritius remains competitive, and the high cost of roaming do not cause a barrier for trade and business, especially in Africa.

GENERAL STATE OF COMPETITION IN THE SECTOR

83. The previous sections provided an overview of the mobile services sector in Mauritius in terms of key market players and the governing regulatory framework. Against this background, this section discusses the state of the competition in the Mauritian mobile network services market in terms of market structure and barriers to entry.

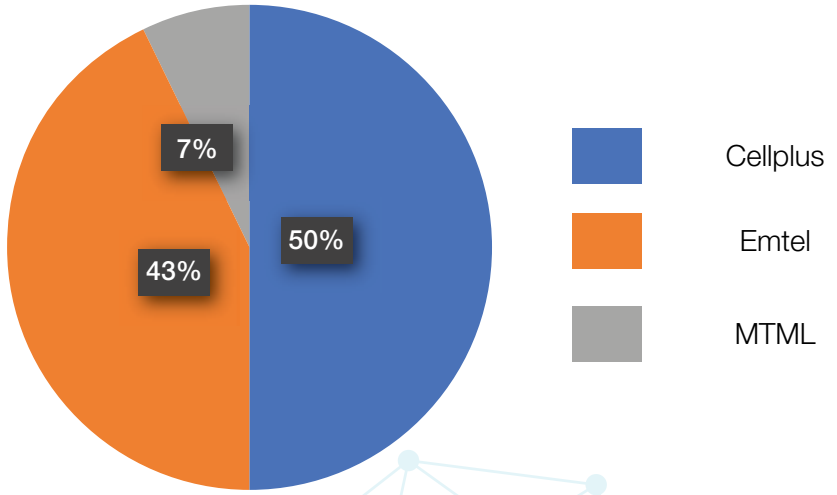
THE MARKET STRUCTURE

84. The mobile telephony market in Mauritius is concentrated with only three MNOs namely, Cellplus, Emtel and MTML. As shown in Figure 54 below, Cellplus and Emtel respectively hold 50% and 43% of the market mobile subscription in 2020. MTML had only 7% mobile subscriptions in that year. This meant that the three MNOs collectively held 100% of the overall market. The degree of concentration in terms of the Herfindahl-Hirschman Index [11] (HHI) was 3,455 in 2020, which is well above the 2,500-mark considered by authorities to indicate a highly concentrated market in terms of number of subscribers.

85. The high degree of concentration in the local mobile telecommunications market can also be reflected in terms of revenue generated by the three operators. Table 28 provides revenue figures for those operators over the period 2015-2020.

11 See FTC's website; Markets with an HHI of between 1,500 and 2,500 are considered to be moderately concentrated and those in excess of 2,500 are considered to be highly concentrated. Available at: https://www.justice.gov/atr/herfindahl-hirschman-index

Figure 54: Market share of MNOs in terms of mobile subscription, 2020



Source: Annual reports

Table 28: Turnover of MNOs in Mauritius (Rs million)

MNOs	2016	2017	2018	2019	2020
Cellplus	3,701	3,794	3,942	4,106	3,680
Emtel	2,557	2,740	3,005	3,238	3,091
MTML	521	496	468	448	462

Source: Information gathered from registrar of companies and Annual Reports

86. As observed in the above figure, Cellplus is the clear leader in the mobile services market. Its revenue rose from Rs 3,701 million in 2016 to Rs 3,794 million in 2017 before experiencing continuous decline. Cellplus' decline in revenue is mirrored by Emtel's gradual increase from Rs 2,740 million in 2017 to Rs 3,091 million in 2020. Nevertheless, Cellplus appears to be extracting more revenue on average than its competitors.

87. Table 29 illustrates the evolution of their indicative market shares for the three MNOs over the period 2016-2020, with particular emphasis on the concentration ratio in terms of HHI.

Table 29: Evolution of market shares of MNOs & concentration ratio

Year	2016	2017	2018	2019	2020
Market shares of MNOs (%)					
Cellplus	54.6	54.0	53.2	52.7	50.9
Emtel	37.7	39.0	40.5	41.6	42.7
MTML	7.7	7.1	6.3	5.7	6.4
Concentration ratio					
Herfindhal-Hirschman Index (HHI)	4,462	4,487	4,510	4,540	4,455

88. With an HHI of above than 4,400 over the period, the market for mobile telephony falls in the highly concentrated category. In fact, a closer examination shows higher concentration levels in terms of revenue levels than mobile subscriptions levels in Mauritius and is likely to be more significant.

89. The high degree of concentration can also be reflected in terms of their financials when looking at the profit margins generated by the operators. To have a better understanding of the financial position of the three MNOs, the following table captures their respective asset positions, gross profit margins and net profit margins.

Table 30: Financial indicators of MNOs (2016 - 2020)

MNOs	Indicators	2016	2017	2018	2019	2020
Cellplus	Assets (Rs M)	3,700	4,117	4,309	570	6,041
	Gross profit margin (%)	59%	57%	55%	60%	53%
	Net profit margin (%)	16%	12%	17%	14%	3%
Emtel	Assets (Rs M)	3,124	2,946	3,288	4,570	5,487
	Gross profit margin (%)	48%	44%	49%	49%	48%
	Net profit margin (%)	11%	9%	14%	15%	18%
MTML	Assets (Rs M)	950	961	834	869	867
	Gross profit margin (%)	72%	72%	73%	74%	74%
	Net profit margin (%)	4%	4%	4%	4%	4%

Source: Calculated from information gathered from registrar of companies

90. As observed in Table 29, by any standard, the profit margins of the three MNOs which stayed well above the average of 40% are high and considerable. Cellplus' consistent profitability ratios over the five-year period are suggestive of a stable financial health. Over the five years, its gross profit margin declined gradually from 59% in 2016 to 55% in 2018 before registering its highest increase at 60% in 2019. Comparably, Emtel's highest gross profit margin stood at 49% in two consecutive years, 2018 and 2019, before it declined only marginally the following year. Given that Cellplus and Emtel's market shares have stayed relatively constant over the five years and coupled with the presence of barriers to entry (which are elaborated in the next sub-section), some indication of dominance on the part of the incumbents is established.

91. Given the high level of investment required in the network infrastructure to provide quality mobile services, asset value is another important element which demonstrates the market position of the different MNOs. Both Cellplus and Emtel have invested in their asset on the market. Cellplus and Emtel increased their assets by 63% and 76% from Rs 3.7 billion to Rs 6.0 billion and Rs 3.1 billion to Rs 5.5 billion between 2016 and 2020 respectively. The leading positions of the two MNOs is further confirmed in terms of the use of the latest technology types of telecommunication network provided.

92. Having established the MNOs' market shares in terms of their total revenues, it may be useful to evaluate the MNOs' market positions in terms of their total revenues generated from mobile roaming services. Taking into account that 2020 was an exceptional year due to the Covid-19 pandemic, the roaming revenue averaged to around Rs 583 million between 2016 and 2020. The following table illustrates the evolution of their market shares, which are reported in terms of range, between 2016 and 2020.

Table 31: Market share in terms of roaming revenues (2016 - 2020)

Operators	2016	2017	2018	2019	2020
Cellplus	45-55%	25-35%	35-45%	55-65%	25-35%
Emtel	25-35%	45-55%	35-45%	35-45%	55-65%
MTML	5-15%	15-25%	15-25%	5-15%	15-25%

Source: Adapted from ICTA figures

93. Table 30 shows that Cellplus' roaming revenue market share is markedly higher than Emtel and MTML in different years such as 2016 and 2019. In the remaining years, 2017 and 2020, the higher market share is more in favour of Emtel than Cellplus and MTML. This reflects on average that Cellplus and Emtel are more likely to compete against each other. In contrast, MTML is less likely to extract less roaming revenue than the other two.

BARRIERS TO ENTRY AND EXPANSION

94. As established, competition in mobile telecommunications market in Mauritius is limited among the three MNOs. When assessing whether effective competition exists in such a market, it is also important to examine the potential for the development of competition in the market including barriers to entry. The prevailing high concentration level combined with a mobile penetration exceeding 150% are preliminary structural factors to suggest limited expansion of existing players as well as new entry on the market. Other than that, factors such as market size, high capital investment required, accessibility to spectrum, absence of mobile phone portability, regulatory limitations and network effects characterise the extent of barriers to entry in the industry. These are discussed below.

95. Market size. Given the small size of the market for a population of around 1.3 million and the very high mobile penetration rate, the mobile market has already attained saturation. It is very difficult for new entrants to achieve a minimum efficient scale.

96. Investment in infrastructure. The market structure in the Mauritian telecom market is closely related to the dynamics concerning investments in and access to infrastructure by MNOs. Thus, new entrants into the telecommunications industry may face structural impediments such as the cost of infrastructure to be able to compete in the market. Investment in network building for a new entrant requires significant capital expenditure. MNOs in the Mauritian mobile services market has achieved significant infrastructure development which might be difficult for new entrants to match. Moreover, three MNOs over the years serves a certain customer base, it becomes even more challenging for the new entrants to replicate the same service at similar or better-quality level.

97. Absence of number portability. Mobile number portability facilitates switching behaviour by allowing customers to retain their mobile number when switching to a different provider. As of now, this portability feature is still at the discussion level of the authorities and has not yet been materialised. The absence of MNP can be said to impede customers from making more informed decisions and switching. This can act as a potential barrier to entry as new players.

98. Access to spectrum. Another significant barrier to entry is spectrum limitations. Radio frequency spectrum refers to wireless frequency network used as a transmission medium for electronic communications. Spectrum allocation, largely determined by ICTA, is limited and could thus refrains the entry of new market players.

99. Regulatory impediments. MNOs of wireless communication services are required to be licensed by the ICTA the regulator and with the PLMN Licence. It has to be highlighted that the current regulatory framework does not provide for Mobile Virtual Network Operators (MVNOs) to offer services. In addition, the lack of facilities such as leasing regulations can certainly create an issue. However, there is possibility of opening network access to MVNOs. These are companies that do not own a mobile spectrum license but sell mobile services under its brand name using the network of a licensed mobile operator. Therefore, access at the services layer via MVNOs, a project still in the pipeline, may increase competition.

100. Network effects. As previously highlighted, two out the three MNOs (Mauritius Telecom and Emtel) are vertically integrated companies and exert some form of power in the market. Using their established network to provide a range of services, they have already created network effects which may potentially discourage new entrants from joining the market.

101. In general, higher number of players in a market and lower concentration tend to indicate conducive conditions of competition. For Mauritius, the current structure and prevailing conditions of the market clearly indicate that it may appear difficult for an existing MNO to expand or a new MNO to enter the market. Such a situation reinforces the market power of the incumbents rather than promoting competition. While it can be challenging to address the market size issue, there are various possible ways that above mentioned issue could be addressed. For example, moving towards mobile phone portability and opening of markets towards the MVNOs may help in the expansion of market as well as the promotion of competition.

ANALYSIS OF ROAMING CHARGES

102. This section provides an assessment of international roaming charges for Mauritian subscribers. The assessment is based on the comparative analysis of the roaming charges for voice, SMS, and data at continental level and within two regional blocs, namely SADC and COMESA. A further comparative analysis is undertaken across 5 selected African trading partners of Mauritius.

103. For the comparative analysis, data on the 54 African countries was obtained from Tarifica. It is to be noted that complete data was available for only 42 countries. For the remaining 12 countries, data was either incomplete or unavailable. As such, the average computed figures on the various roaming services used in the analysis are mostly based on complete information for 42 countries.

104. The roaming rates provided by Tarifica have been converted from the respective national currencies to US dollar for the comparative purposes at continental and regional levels.

105. The comparative analysis of roaming charges across the 5 selected African countries is based on data from Tarifica and complemented with available information from local MNOs through ICTA, the sector regulator. The roaming rates are converted to local currency, Mauritian rupee (Rs), for comparison from Mauritius' perspective.

ROAMING TARIFFS AT CONTINENTAL & REGIONAL LEVELS

106. This section provides an assessment of local MNOs' charges compared to the African counterparts at regional and continental levels. The objective of this exercise is to determine Mauritius' positioning in the African region in terms of roaming rates.

107. The average roaming rate has been computed for the three categories: voice, SMS, and data.

VOICE ROAMING CHARGES

108. The results for the voice roaming charges at the African continental level are summarised in Table 32 below. Detailed results for the 42 African countries' roaming tariffs are presented in Annex 1.

Table 32: Voice roaming tariffs at continental level

Voice roaming tariffs (USD/min)	Call to home country	Call within roaming country	Incoming call
African Continental			
Average	2.30	1.07	0.33
Minimum	0.13	0.10	0.05
Maximum	7.85	4.44	1.21
Mauritius' Average	1.38	0.71	0.34

109. It can be observed that rates for Mauritius are lower than the African continental mean. It costs a Mauritian subscriber an average charge of USD 1.38 per minute to make a call back home when roaming across the African continent. Comparatively, the average roaming charge per minute for countries across the continent to call back home is estimated at USD 2.30, implying that Mauritius' rates are on average 1.7 times lower than the continental average. As regards calling within roaming country, the average rate per minute for the Mauritian subscriber is USD 0.71 which is lower than the continental average of USD 1.07 per minute. A similar comparison in relation to receiving call rates on roaming shows Mauritian subscribers are incurring an average of USD 0.34 per minute which is marginally higher than the average continental rate of USD 0.33 per minute.

110. The mean roaming rates for Mauritius, despite being lower than the average continental rates, are still higher than for some countries such as Malawi, Gabon, South Africa, etc. The reasons for the lower tariffs could be attributed to network infrastructural development, sound regulatory framework, and the presence of large operators. For instance, in South Africa there is the presence of larger multi-country operators such as Airtel, MTN and Vodacom which find themselves at an advantage when negotiating rates through bilateral agreements.[12] Countries such as Gabon or Malawi, which are still in process of economic development stage, can offer lower rates, possibly due to the regional initiative of One Network Africa (ONA).

111. The results for the voice roaming charges at the levels of SADC and COMESA are summarised below in Table 33. Detailed figures are available in annexes 2 and 3.

Table 33: Voice roaming charges at regional levels

Voice roaming charges (USD/min)	SADC			COMESA		
	Call to home country	Call within roaming country	Incoming call	Call to home country	Call within roaming country	Incoming call
Regional						
Average	2.25	0.84	0.57	2.01	1.15	0.55
Minimum	0.13	0.1	0.09	0.13	0.1	0.09
Maximum	7.85	1.52	1.05	5.73	4.44	1.15
Mauritius' Average	1.38	0.71	0.34	1.38	0.71	0.34

112. The same method, as applied at the African continental level, is adopted here to make comparison of roaming rates at the two blocs' levels. Results in terms of regional comparison follow narrowly with those drawn at the continental level; the average roaming rates for Mauritius are lower than the mean regional rates.

113. The average roaming charge per minute for countries to call back home in the SADC and COMESA regions are USD 2.25 and USD 2.01, respectively. The result indicates that Mauritius' rates are lower on average by 1.6 and 1.5 times compared to SADC and COMESA, respectively. For calls back to home country, rates are cheaper within the COMESA than the SADC region. As regards calls within the roaming country, the average rates per minute are USD 0.84 and USD 1.15 for SADC and COMESA respectively. It can be derived that Mauritius' rates are 1.2 and 1.6 times lower than the regional averages.

114. With respect to receiving calls, the average charge per minute stands at USD 0.57 and USD 0.55 for SADC and COMESA, respectively. The Mauritius' rates are comparatively lower by 1.7 times and 1.6 times for SADC and COMESA.

115. Despite that Mauritius' average rates fall on the lower quartile, there are certain countries offering more competitive rates such as Angola, Zimbabwe, Eswatini or Malawi. However, it is important to pay attention as such simple averages tend to obscure the wide degree of variation which may exist between mobile operators.

SMS ROAMING CHARGES

116. Mauritius' position in terms of SMS roaming charges at both continental and regional levels is provided in Table 34 below.

Table 34: SMS roaming charges at continental & regional levels

SMS roaming charges (USD/SMS)	Continental	Regional	
		SADC	COMESA
Continental/Regional			
Average	0.56	0.32	0.32
Minimum	0.09	0.05	0.05
Maximum	1.16	1.11	1.21
Mauritius' Average	0.58	0.58	0.58

12 Nsomba, (2021). The regulation of interconnection and regulatory alignment in the Southern African Development Community.

117. As can be observed, it costs the Mauritian subscriber an average charge of USD 0.58 to make use of SMS services when roaming across Africa. The average roaming charge for SMS services at the continental level is relatively lower at USD 0.56, implying that Mauritius' rates are in excess by about 4%. However, when compared to the regional rates, the rates for Mauritius appear to be even significantly higher by about 81% as the average roaming rate is USD 0.32 across SADC and COMESA.

DATA ROAMING CHARGES

118. Table 35 provides comparative rates for data roaming at continental and regional levels.

Table 35: Data roaming charges at continental & regional levels

Data roaming charges (USD/MB)	Continental	Regional	
		SADC	COMESA
Continental/Regional			
Average	15.54	9.72	7.95
Minimum	0.005	0.08	0.04
Maximum	208.083	66.29	40.17
Mauritius' average	7.3	7.3	7.3

119. As observed, it costs the Mauritian subscriber an average charge of USD 7.3 per megabyte on roaming.

120. The rates for voice, SMS and data are found to be lower than the continental or regional average rates. At the same time, however, roaming charges on Mauritian mobile subscribers are not the lowest in the continent. In the most extreme case, it costs a Bissau-Guinean subscriber about USD 208 per megabyte to use data services when roaming in Africa. Mauritius, despite being the one of the most advanced countries in terms of mobile network infrastructure and penetration rates, does not offer the best tariffs. The high roaming rates could potentially be explained by highly concentrated structure of the Mauritian telephony market and the fact that local MNOs benefit from traffic and revenue from inbound roaming. There appear to be little incentive on the part of operators to compete aggressively on roaming retail through negotiation on lower wholesale tariffs.

ROAMING TARIFFS ACROSS SELECTED AFRICAN COUNTRIES

121. It has been gathered that despite roaming tariffs for Mauritian MNOs being lower than the regional averages, the rates are higher in comparison to certain countries. To assess whether roaming tariffs for Mauritius are indeed high or not, a benchmarking exercise is carried out in relation to the different roaming segments. It is to be noted that the conventional cost-based pricing analysis has not been done in view of the complexity and technical expertise required to evaluate the costs and the limited scope of this study.

122. For the voice segment, roaming calls' rates are benchmarked against international long-distance calling rates. As for SMS and data segments, their roaming charges are compared against local rates. The comparison for roaming rates levied by MNOs is made across five countries. These countries are the main trading partners of Mauritius in Africa, namely: Egypt, Kenya, South Africa, Seychelles, and Madagascar. For comparative purposes, the analysis is extended in the reverse direction (that is, how much roaming charges do subscribers from these five countries incur when travelling to Mauritius). This sheds light on whether the selected African countries face the same concern as Mauritius.

123. The cost of roaming for Mauritian MNOs is assessed for voice, SMS, and data for the following categories: (i) calling from visited countries (Egypt, Kenya, Madagascar, Seychelles, and South Africa) to the home country (Mauritius); (ii) calling within the roaming visited countries); and receiving calls in visited countries.

VOICE CALLING SEGMENT

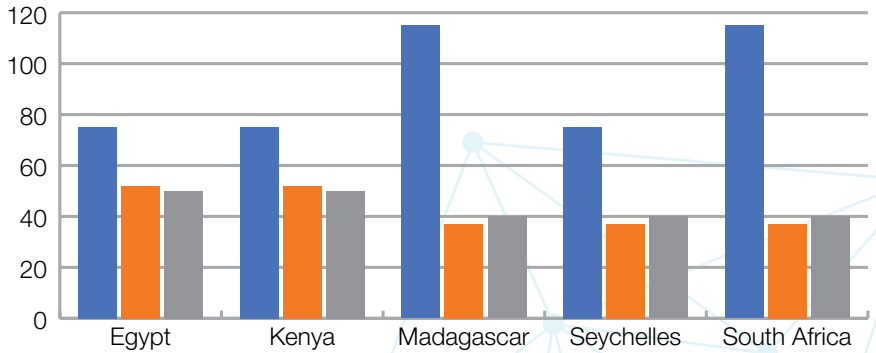
124. Roaming charges for making calls to home country (to and from Mauritius)

124.1 Roaming rates of local MNOs are considered when the Mauritian subscriber using his home country SIM card visits either Egypt, Kenya, Madagascar, Seychelles or South Africa. ,

124.2 The roaming rates charged by the three MNOs Emtel, MTML and Cellplus on a Mauritian subscriber while roaming in the selected countries are reported in Figure 55.

124.3 As observed in Figure 55, Emtel offers lower roaming charges for making calls to Mauritius from Madagascar, Seychelles and South Africa at Rs 37 per min. As for Cellplus, its rates are lower for Egypt and Kenya, at Rs 50 per min. On average, MTML charges the highest roaming rates across the five countries. The significant difference in roaming rates could potentially be attributed to the size and market shares of the MNOs. Cellplus and Emtel, which attract the majority of subscribers on their networks and have above 90% market share, hold higher bargaining power in comparison to MTML.

Figure 55: Voice roaming rates by local MNOs (Rs/min) – Calls to home country



	Egypt	Kenya	Madagascar	Seychelles	South Africa
MTML	75	75	115	75	115
Emtel	52	52	37	37	37
Cellplus	50	50	40	40	40

Source: Computed from information gathered from Tarifica and MNOs' websites

124.4 The average cost of using the three MNOs for making calls to Mauritius from these countries is computed and compared with the benchmarked international long-distance calls' rates, as shown in Table 36:

Table 36: Calls to home country – on roaming and international long-distance

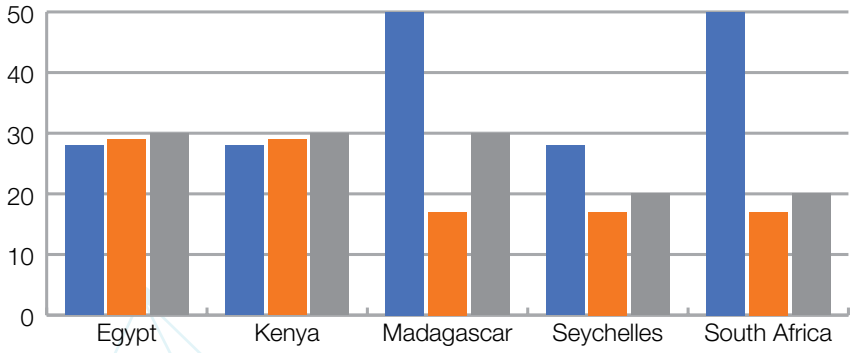
Partner Countries	Call to Mauritius from selected countries			Call from Mauritius to selected countries		
	Roaming rate (Rs/min)	International long-distance rate (Rs/min)	Price difference (times)	Roaming (Rs/min)	International long-distance call (Rs/min)	Price difference (times)
Egypt	59.0	11.1	5.3	98.0	23.4	4.2
Kenya	59.0	9.1	6.5	65.8	11.4	5.8
Madagascar	64.0	25.8	2.5	131.7	14.9	8.8
Seychelles	50.7	29.5	1.7	26.7	22.4	1.2
South Africa	64.0	8.5	7.5	54.2	15.0	3.6
Average	59.3	16.8	3.5	75.3	17.4	4.3

Source: Computed from information gathered from Tarifica and MNOs' websites

124.5 On average, the roaming costs a Mauritian subscriber about Rs 59.3 to make a one-minute call to the home country (Mauritius) from one of the selected countries. In comparison to voice roaming, the international long-distance calling rate averages to about Rs 16.8 per minute. Thus, the average roaming rate is higher by 3.5 times than it's the international long-distance calling rate.

124.6 We also assess roaming rates in the reverse direction as well, that is, to see how much it would cost subscribers from the selected partner countries to make calls from Mauritius to their individual home countries. It costs subscribers from these countries an average of Rs 75.3 for a one-minute call on roaming. As anticipated, the average international call rate is lower by about 4.3 times than roaming with an average rate of Rs 17.4.

Figure 56: Voice roaming rates by local MNOs (Rs/min) – Calls within selected countries



	Egypt	Kenya	Madagascar	Seychelles	South Africa
MTML	28	28	50	28	50
Emtel	29	29	17	17	17
Cellplus	30	30	30	20	20

Source: Computed from information gathered from Tarifica and MNOs' websites

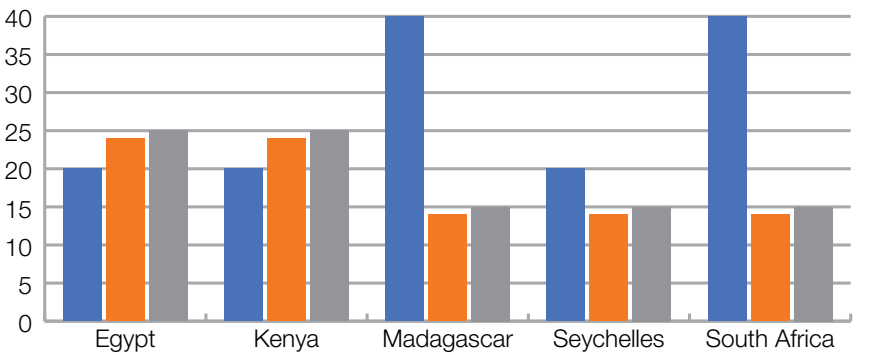
124.7 An interesting point of observation is roaming rates tend to be higher than international calling rates for all five countries. However, the gap between roaming rate and international call rate is lowest for Seychelles. The small difference could potentially be attributed to the fact that Seychelles is an island destination for tourism. Lower roaming charges would be one among the various factors to make the destination more attractive to tourists.

124.8 Mobile roaming calls have similar cost features as international long-distance calls, save for roaming specific costs such as SIM identification, Transfer Procedure Accounts (TAP) costs, etc. While such costs would imply that roaming charges would be more than international long distance call costs, it should not be disproportionately high. The comparative analysis indicates that roaming rates are at least three times higher than international long-distance call rates. As such, it can be inferred that roaming charges for voice are likely to be exorbitant.

125. Roaming charges for making calls within the visited country

125.1 The roaming charges levied on Mauritian subscribers by the three local MNOs while travelling in the selected countries are illustrated in Figure 56.

Figure 57: Voice roaming rates by local MNOs (Rs/min) – Receiving calls



	Egypt	Kenya	Madagascar	Seychelles	South Africa
MTML	20	20	40	20	40
Emtel	24	24	14	14	14
Cellplus	25	25	15	15	15

Source: Computed from information gathered from Tarifica and MNOs' websites

125.2 As can be observed, MTML levies the highest cost on its subscribers for Madagascar, Seychelles, and South Africa. On average, Emtel provides lowest roaming charges in Madagascar, Seychelles, and South Africa. Cellplus is more expensive in Egypt and Kenya than MTML, revealing some form of competition to one of the dominant MNOs in Mauritius.

125.3 The average cost of using the three MNOs for calls within these countries is provided and compared with the benchmarked domestic calls' rates, as shown in Table 36. Domestic rates were collected from the different websites of targeted MNOs in the selected countries.

Table 37: Calls within visited country – on roaming and local

Partner Countries	Call within visited countries			Call within Mauritius		
	Roaming rate (Rs/ min)	Domestic rate (Rs/ min)	Price difference (times)	Roaming rate (Rs/ min)	Domestic rate (Rs/ min)	Price difference (times)
Egypt	29.0	2.2	13.3	78.0	0.3	288.0
Kenya	29.0	2.2	13.3	15.0	1.0	14.5
Madagascar	32.3	2.2	14.8	36.9	2.5	14.9
Seychelles	21.7	2.2	9.9	2.5	8.5	0.3
South Africa	29.0	2.2	13.3	36.9	1.7	22.0
Average	28.2	2.2	12.9	33.9	2.8	12.1

Source: Computed from information gathered from Tarifica and MNOs' websites

125.4 On average, it costs the Mauritian subscribers an average of Rs 28.2 for a one-minute roaming call within any of the five countries. Compared to the domestic rate for calls in Mauritius which amounts to Rs 2.2 per minute. The roaming call rates are almost 13 times the domestical call rates.

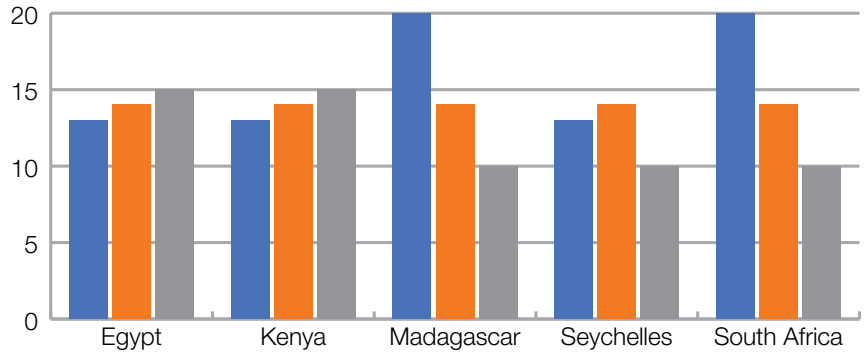
125.5 Roaming rates in the reverse direction are also examined to see how much it costs subscribers from the selected countries to make calls within Mauritius. Subscribers from the selected countries incur an average of Rs 33.8 for a one-minute call in Mauritius which is higher by almost 12 times when compared to the average domestic rate at about Rs 2.8 per minute.

126. Roaming charges for receiving calls

126.1 The roaming charges levied on the Mauritian subscribers by the three MNOs while travelling in the selected countries are reported in Figure 58.

126.2 As observed, on average Emtel offers the lowest rates on incoming calls in the selected countries. MTML is most expensive in countries such as Madagascar and South Africa where its roaming rates are more than twice higher than those of Emtel and Cellplus. But at the same time, MTML offers lower rates than the other two rival MNOs in Egypt and Kenya.

Figure 58: SMS roaming charges by local MNOs (Rs/SMS)



MTML	13	13	20	13	20
Emtel	14	14	14	14	14
Cellplus	15	15	10	10	10

Source: Computed from information gathered from Tarifica and MNOs' websites

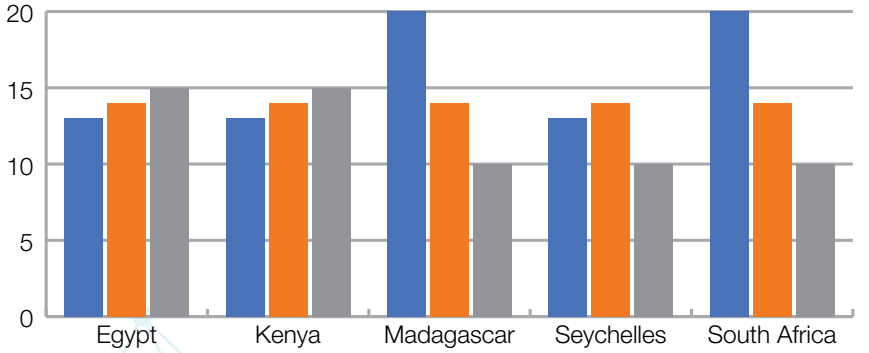
126.3 The average cost of using the three MNOs for receiving calls is provided and compared with the benchmarked roaming rate in the opposite direction, as shown in Table 38.

Table 38: Receiving calls – on roaming

Mauritian subscriber receiving a call abroad (A)	Rs/Min	International sub-scriber receiving a call in Mauritius (B)	Rs/Min	Price difference between A & B (times)
Egypt	23.0	Egypt	15.0	1.5
Kenya	23.0	Kenya	26.8	0.9
Madagascar	23.0	Madagascar	14.4	1.6
Seychelles	16.3	Seychelles	3.8	4.4
South Africa	23.0	South Africa	16.0	1.4
Average	21.7	Average	15.2	1.4

Source: Computed from information gathered from Tarifica and MNOs' websites

Figure 59: SMS roaming charges by local MNOs (Rs/SMS)



MTML	13	13	20	13	20
Emtel	14	14	14	14	14
Cellplus	15	15	10	10	10

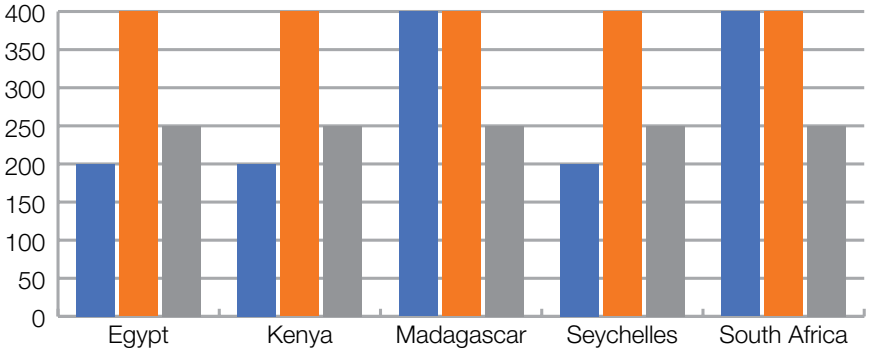
Source: Computed from information gathered from Tarifica and MNOs' websites

126.4 It should be highlighted that Mauritius has adopted that Caller Pay Principle (CPP), whereby receivers do not pay to receive calls. The CPP is also very common in most jurisdictions. Regarding receiving call on roaming, it costs the Mauritian subscriber an average of Rs 21.7 from these five African countries. For the foreign visitors from these 5 selected countries, it costs those them an average of Rs 15.2 per minute to pick up a call in Mauritius. By any standard the roaming costs for receiving calls are deemed to be high. Event when compared to what subscribers form the 5 selected countries pay for receiving call in Mauritius, the rates charged by the local MNOs are 1.4 times higher.

SMS SEGMENT

127. In relation to SMS, the roaming charges levied on the Mauritian subscribers by the three MNOs while travelling in the selected countries are reported in Figure 59.

Figure 60: Data roaming charges by local MNOs (Rs/MB)



MTML	200	200	400	200	400
Emtel	400	400	400	400	400
Cellplus	250	250	250	250	250

Source: Computed from information gathered from Tarifica and MNOs' websites

128. As observed, Cellplus provides lower roaming charges on SMS in countries like Madagascar, Seychelles, and South Africa at Rs 10 per SMS. MTML provides the lowest rates in Egypt and Kenya where Cellplus is the most expensive MNO.

129. The average cost of transmitting SMS on roaming is provided and compared with the benchmarked domestic rate, as reported in Table 39.

Table 39: SMS – on roaming and domestic

Partner Countries	For Mauritius			In selected countries		
	Roaming rate (Rs/SMS)	Local SMS rate (Rs/SMS)	Price difference (times)	Roaming rate (Rs/SMS)	Local SMS rate (Rs/SMS)	Price difference (times)
Egypt	14.0	0.6	24.6	8.5	0.3	31.2
Kenya	14.0	0.6	24.6	12.1	1.0	11.6
Madagascar	14.7	0.6	25.7	17.5	2.5	7.0
Seychelles	12.3	0.6	21.6	3.9	8.5	0.5
South Africa	14.7	0.6	25.7	10.4	1.7	6.2
Average	13.9	0.6	24.4	10.5	2.8	3.7

Source: Computed from information gathered from Tarifica and MNOs' websites

130. The average roaming rate for Mauritius is Rs 13.9 per SMS. When benchmarked against domestic rate levied on SMS which is about Rs 0.6 per SMS, a pronounced difference of about 24 times is noted. Therefore, the roaming rate on SMS is markedly higher than domestic SMS rate.

131. Assessment in the opposite direction shows subscribers from the selected African countries incur an average of Rs 10.5 per SMS on roaming. Subscribers from these countries pay a local charge of Rs 2.8 per SMS. As expected, roaming charges on SMS are more expensive in comparison to domestic rates by about 4 times.

DATA SEGMENT

132. The data roaming charges levied on the Mauritian subscriber by the three MNOs while travelling in the selected countries are reported in Figure 60.

133. As illustrated in Figure 60, Emtel is the most expensive operator and levies uniform amount of Rs 400 per megabyte across the five countries. MTML provides the lowest rate of Rs 200 per megabyte for 4 out of the 5 selected countries. Cellplus is lowest only for the South Africa destination.

134. The average data roaming cost incurred by Mauritian subscribers in these visiting countries is provided and compared to the benchmarked local data rate, as shown in Table 40.

Table 40: Data – on roaming and domestic

Partner Countries	For Mauritius			For selected countries		
	Data roaming rate (Rs/MB)	Domestic data rate (Rs/MB)	Price difference (times)	Data roaming rate (Rs/MB)	Domestic data rate (Rs/MB)	Price difference (times)
Egypt	283.3	18.3	15.5	212.4	0.0	9148.5
Kenya	283.3	18.3	15.5	517.5	0.1	9956.6
Madagascar	350.0	18.3	19.1	536.2	0.1	7446.1
Seychelles	283.3	18.3	15.5	1.7	10.8	0.2
South Africa	350.0	18.3	19.1	174.2	0.4	451.8
Average	310.0	18.3	16.9	288.4	2.3	126.9

Source: Computed from information gathered from Tarifica and MNOs' websites

135. On average, Mauritian subscribers incur about Rs 310 per megabyte for mobile roaming in the selected countries. Against the benchmarked domestic data prices which are Rs 18.3 per megabyte, roaming data prices are higher by about 17 times. Seychelles, which shares similarities in terms of population size and its nature of being tourism-reliant like Mauritius, is able to provide competitive data roaming rates. As a matter of fact, Seychelles has Airtel as a powerful mobile network operator and benefits from the ONA. Again, this may be a reflection of the relative bargaining positions of the MNO in that country.

136. As for the subscribers from selected countries, on average, they pay about Rs 288 per megabyte on roaming in Mauritius and Rs 2.3 on domestic rate, highlighting a larger price difference of about 127 times. Roaming charges are quite expensive if compared to local data charges.

OVERALL ASSESSMENT

137. The above exercise has been carried out to determine Mauritius' positioning in terms of roaming charges at the African regional level. At both continental and the two economic blocs' (SADC and COMESA) levels, the roaming rates for Mauritius are found to be lower than the regional average across the three segments. However, rates offered by local MNOs in Mauritius are not the lowest in the region.

138. The assessment of roaming charges for voice and SMS reveals that Emtel and Cellplus provide better rates than MTML. In the provision of roaming data services, MTML does provide some sort of competition to the rival MNOs. It can also be noted that the international roaming rates which have stayed almost constant for Cellplus and Emtel provide some indication of the MNOs potentially being dominant in the provision of roaming services.

139. To assess whether roaming rates are excessive or not, roaming tariffs are benchmarked against equivalences to provide a more robust examination. Voice roaming charges are benchmarked against international long-distance call rates and domestic call rates. SMS and data roaming charges are benchmarked against local SMS rates

and local data rates respectively. The bottom line of the benchmarking exercise has revealed roaming tariffs for Mauritius are high.

140. A similar inference is drawn for the partner countries in Africa that roaming costs may be excessive. The gap between their voice roaming charges and international long-distance call rates or domestic call rates are like Mauritius. Also, the tariffs charged for their local SMS and data services are much lower than the roaming services.

141. High roaming tariffs may be explained by the high wholesale charges determined by partner agreements and by the challenging economic environment in some African countries to some extent. However, some countries are able to provide competitively lower roaming tariffs. The prime reason why they can charge such lower tariffs to their subscribers may be attributed to successful regional initiatives such as the One Network Area by the East Africa. Even countries in the One Network zone of CEMAC have been able to bring down roaming rates.

REGIONAL AND CONTINENTAL PRIORITIES TO ADDRESS THE COMPETITION CONCERNS IN RELATION TO INTERNATIONAL MOBILE ROAMING

142. This section identifies the competition concerns in international roaming and sheds light on the regional and continental priorities to address such concerns.

143. The comparative analysis undertaken in the above section and gathered through the different jurisdiction across the ACF network demonstrates that roaming charges are high in Africa. RECs like the SADC, COMESA, EAC, CEMAC have recognised this issue.

144. While it can be argued that the high roaming charges may be due to the lack of transparency of the IOT, there are also other factors such as the structural aspects of market characteristics and regulatory setting that may be contributing to the high roaming charges.

145. Since the mobile network licenses are accorded on a national basis, wholesale roaming markets are typically national. Each country constitutes a distinct national market for the provision of wholesale roaming services. The supply-side of wholesale roaming is characterised by the oligopolistic interdependency between the leading players and the lack of incentives to engage in a process of competitive IOT undercutting.

146. Moreover, oligopolistic interdependence is not the sole possible reason for the price rigidity that characterises wholesale roaming markets. The reason is found on the demand-side of wholesale roaming. This is because foreign roaming partners:

146.1 face little competition in retail roaming markets at home, and, therefore, little pressure to seek more favourable IOTs in order to cut costs,

146.2 have insufficient control over their subscribers' network selection in the visited country, which makes demand for roaming on a given visited network largely insensitive to price changes, gives rise to demand externalities and reduces incentives to offer preferred roaming status and/or traffic growth in exchange for discounts on IOTs.

147. It can be noted that structural conditions of retail roaming markets are not conducive to price competition. Therefore, domestic roaming prices and structural conditions have an impact on the roaming market regionally and continentally. This high roaming prices between African countries act as a barrier and prevents the African continent from achieving broader objectives like the movement of goods and services across the African continent. Parallel to the efforts made by the African countries to facilitate the movement of goods and services, the same should be done for telecommunication. This is because telecommunication is an important factor for economic integration be it regional or continental.

148. Another concern identified is the important degree of variation in the roaming tariffs between African countries. The prevailing high roaming rates and the variation in roaming rates across countries provides an indication that the regulation of international roaming may be warranted.

149. However, while a national regulator can ensure that retail roaming prices are reflective

of the costs incurred by the MNOs under its jurisdiction, it cannot ensure that the costs by these MNOs and, ultimately, the retail roaming prices incurred by the customers of these MNOs are efficient and reflect the actual costs of providing roaming services. It is essential that national regulators coordinate on the regulation of wholesale and retail international roaming prices to ensure efficient roaming rates.

150. Therefore, it is important to concretise a harmonised cost model and regulation across the different countries. This harmonised cost model and regulatory framework at regional and continental levels could help in lowering the roaming rates. The application of such a model can however have challenges. For example, not all African countries have the required infrastructure and regulation in place to ease the application of such model. Moreover, while the national regulator can ensure that retail roaming prices are reflective of the costs incurred by the MNOs under its jurisdiction, it cannot ensure same for the costs borne by the MNOs beyond its jurisdictions. This makes it difficult for any regulator to ensure that the retail roaming prices incurred by the customers of these MNOs reflect the actual costs of providing roaming services.

151. As discussed in this paper, the SADC Home and away project, which was inspired by the European Union's Roam-Like-At-Home regulations, was introduced for this purpose and to address high roaming charges in Africa. The SADC Roaming project has been considering innovative policies and regulations to reduce the cost of IMR through closer collaboration among SADC Member States. The project is to provide an enabling environment for provision of affordable and competitive mobile roaming service in the region thereby contributing towards regional integration. Regional integration could be measured four-fold; trade integration, productivity integration, free movement of people, and financial and macroeconomic integration[13].

152. However, as mentioned previously, as at now, only ten countries, including Mauritius[14] have implemented Phase II of the SADC project. It appears that the SADC is not following the pace of the other RECs in Africa, who are already experiencing the numerous advantages of their respective initiatives to address the issue of high roaming rates.

153. It is important to note that the initiatives of the RECs to tackle excessive roaming prices demonstrate that several countries who are part of a one area network like One Africa Network or MTN Zone are able to offer lower roaming rates. High price of international roaming was also observed in other jurisdictions like the EU. In order to address this issue, European Union's RLAH regulations was introduced by EU member states. The aim of the roaming regulations is to protect consumers and competition among MNOs. It is interesting to note that the RLAH regulations is an unprecedented success story in the European Union in that it has allowed customers to benefit from the same roaming tariffs in other member states as if they were in their home country. This demonstrates that having a one area network helps to achieve the desired results of reducing roaming prices for roaming customers.

154. Despite the different challenges mentioned above, in order to achieve economic integration and facilitate the movement of goods, services and people, a harmonised cost model and regulation across the different countries appears to be the best solution. African countries should collaborate with each other help and each other to overcome the different obstacles mentioned above to make the SADC Home and away project a success. The remaining six SADC countries should be encouraged to participate in the project for the benefit of the customers. This can also be extended to non-SADC countries, for the benefit of roaming customers in African countries.

CONCLUSION AND RECOMMENDATIONS

CONCLUSION

155. The mobile telecommunications industry in Mauritius comprises three operators with two, namely Cellplus and Emtel, sharing a combined market share in excess of 90%. The third operator, MTML, appear to be fringe competitor with market share below 10%. The Government of Mauritius has majority stake in the major operator, namely Cellplus through Mauritius Telecom.

13 See Document on "Request for proposals to develop a harmonised cost model for roaming services in the SADC" by ICTA. Available at: https://www.icta.mu/documents/2021/10/RFP-SADC2017.pdf

14 Reference be made to regional policy section. The phase 2 in Mauritius has not yet been fully implemented and the costing phase is being catered for currently.

156. The local mobile telecommunication market is highly concentrated, which is not atypical for a small island economy. But at the same, the industry is characterised by high level of structural and regulatory barriers. Several structural barriers such as heavy investment requirement in infrastructure and limited size of the market combined with high mobile penetration rate could potentially deter entry. Absence of mobile number portability and necessary regulatory framework for enable mobile virtual network operators to provide services could also act as potential barriers to entry.

157. As regards the regulatory setting, the mobile telecommunications industry in Mauritius is highly regulated like in any other country in terms of licensing, spectrum allocation and tariff approvals. In relation to roaming charges, the local sector regulator, ICTA has a limited purview on tariffs in so as retail roaming charges is concerned but not for wholesale roaming charges.

158. Assessment of roaming rates indicates that local MNOs in Mauritius charge lower than the regional average across the three segments. However, these rates are not necessarily the lowest in the African region. The benchmarking exercise for voice roaming against international long-distance call and domestic call rates for SMS and data roaming charges tends to be indicate roaming charges of local MNOS may be high.

159. To address the issue of high roaming rates, initiatives are being taken at regional and continental levels by the African Union and regional economic communities. Some of the these include: the One Are Network Area by CEMAC; One Area Network by EAC; SADC Home and Away Roaming project and Smart Africa.

RECOMMENDATIONS

160. To address the issue of high mobile roaming charges, local authorities should ensure that the regulatory framework in place encourages reduces the barriers to entry and exert pressure on existing players bring down the retail roaming charges. In this regard, consideration could be given to the following.

160.1 Putting in place a framework for MVNOs - This could attract new operators in market and exercise competitive pressure for incumbents to offer competitive roaming charges to local subscribers.

160.2 Speeding up implementation of Mobile Number Portability (MNP) - The introduction of MNP and the related legislations could also lead to intensified competition in the market. This would allow customers to switch mobile operators and keep the mobile numbers originally assigned to them, thus avoiding the cost of switching to new numbers and promoting a healthier competitive environment.

161. At the regional level, consideration could be given to the following:

GREATER COORDINATION AMONG RECS

162. Despite difficulties arising due to differences in infrastructure, financial resources and market size, RECs within Africa should work together to harmonise and regulate wholesale and retail roaming charges across the continent. As highlighted earlier, several RECs have taken different initiatives to address the issue of high roaming rates in Africa. These initiatives should be coordinated to ensure achievement of their common objective, which is the regulation of the high roaming rates in Africa. As far as the regulations on wholesale charges are concerned, there is a sense of urgency to expedite matters at the regional levels. The effectiveness of the response would be to come close, if not at par, with the EU roaming rates.

COLLABORATION AMONG COMPETITION AUTHORITIES FOR POTENTIAL ENFORCEMENT ACTIONS

163. Competition authorities could collaborate to look into the high roaming rates across Africa. This can trigger enforcement actions if potential cases of abuse of dominance are detected and ensure concerted efforts. For that to occur, coordination and information sharing amongst competition authorities are of utmost importance.

ENFORCEMENT ACTION BY REGIONAL COMPETITION AUTHORITIES

164. While the need for speedy actions by RECs to regulate roaming charges has been highlighted, regional competition authorities such as the COMESA Competition Commission could in the meanwhile investigate into potential anticompetitive practices, as agreements on wholesale roaming charges among operators in the different countries has a cross border dimension.

ANNEXURES

ANNEX 1

Table 41: Roaming rates at continental level

Country	Call to home country (USD/min)	Call within roaming country (USD/min)	Incoming call (USD/min)	SMS (USD/SMS)	Data (USD/MB)
Algeria	2.82	1.65	0.38	0.48	11.88
Angola	0.50	0.50	0.09	0.26	3.24
Benin	0.62	0.21	0.12	0.12	1.86
Botswana	1.91	1.49	0.26	0.56	5.52
Burkina Faso	0.54	0.28	0.09	0.46	n/a
Burundi	2.65	1.42	0.37	0.88	18.73
Cabo Verde	1.86	0.15	0.27	0.62	2.99
Cameroon	6.83	1.52	0.57	0.44	15.52
Central African Republic	2.55	1.02	0.26	0.85	n/a
Chad	2.06	1.12	0.66	0.64	1.71
Comoros	n/a	n/a	n/a	n/a	n/a
Congo	0.61	0.61	0.18	0.19	n/a
Côte d'Ivoire	2.34	0.78	0.31	0.41	18.57
Djibouti	n/a	n/a	n/a	n/a	n/a
DRC	2.77	0.87	0.41	0.79	8.37
Egypt	2.05	1.70	0.2	0.47	5.35
Equatorial Guinea	n/a	n/a	n/a	n/a	n/a
Eritrea	n/a	n/a	n/a	n/a	n/a
Eswatini	0.13	0.10	0.06	0.09	0.08
Ethiopia	0.57	0.31	0.19	0.22	0.21
Gabon	0.87	0.30	0.23	0.26	0.00
Gambia	n/a	n/a	n/a	n/a	n/a
Ghana	0.47	0.16	0.17	n/a	0.04

Guinea	n/a	n/a	n/a	n/a	n/a
Guinea-Bissau	6.20	1.27	0.48	0.4	208.08
Kenya	1.88	0.53	0.26	0.64	7.10
Lesotho	3.83	1.48	0.41	0.99	9.03
Liberia	2.33	1.66	0.41	0.38	3.50
Libya	3.18	1.3	0.39	1.16	n/a
Madagascar	2.83	1.13	0.36	0.76	12.13
Malawi	0.95	0.47	0.28	0.47	2.37
Mali	n/a	n/a	n/a	n/a	n/a
Mauritania	n/a	n/a	n/a	n/a	n/a
Mauritius	1.38	0.71	0.34	0.58	7.30
Morocco	7.85	1.51	1.11	n/a	66.29
Mozambique	2.68	2.68	0.43	0.93	63.83
Namibia	2.97	0.67	0.26	0.44	5.45
Niger	1.84	1.79	0.54	0.6	0.34
Nigeria	2.17	0.81	0.36	0.83	10.85
Rwanda	0.41	0.19	0.10	1.09	0.04
Sao Tome & Principe	n/a	n/a	n/a	n/a	n/a
Senegal	1.77	0.76	0.27	0.33	3.23
Seychelles	1.75	0.51	0.22	0.57	4.21
Sierra Leone	n/a	n/a	n/a	n/a	n/a
Somalia	3.00	3.00	0.25	0.35	n/a
South Africa	1.71	0.69	0.24	0.50	3.77
South Sudan	n/a	n/a	n/a	n/a	n/a
Sudan	5.73	4.44	1.21	1.15	40.17
Tanzania	2.18	1.52	0.28	1.05	7.51
Togo	n/a	n/a	n/a	n/a	n/a
Tunisia	2.06	1.65	0.24	0.28	7.62
Uganda	2.77	1.06	0.28	0.26	7.49
Zambia	2.53	0.79	0.5	0.75	7.24
Zimbabwe	0.45	0.13	0.05	0.10	3.27

ANNEX 2

Table 42: Roaming rates at SADC level

Country	Call to home country (USD/min)	Call within roaming country (USD/min)	Incoming call (USD/min)	SMS (USD/SMS)	Data (USD/MB)
Angola	0.50	0.50	0.26	0.09	3.24
Botswana	1.91	1.49	0.56	0.26	5.52
Comoros	n/a	n/a	n/a	n/a	n/a
DRC	2.77	0.87	0.79	0.41	8.37
Eswatini	0.13	0.10	0.09	0.06	0.08
Lesotho	3.83	1.48	0.99	0.41	9.03
Madagascar	2.83	1.13	0.76	0.36	12.13
Malawi	0.95	0.47	0.47	0.28	2.37
Mauritius	1.38	0.71	0.58	0.34	7.30
Mozambique	7.85	1.51	n/a	1.11	66.29
Namibia	2.97	0.67	0.44	0.26	5.45
Seychelles	1.75	0.51	0.57	0.22	4.21
South Africa	1.71	0.69	0.50	0.24	3.77
Tanzania	2.18	1.52	1.05	0.28	7.51
Zambia	2.53	0.79	0.75	0.50	7.24
Zimbabwe	0.45	0.13	0.10	0.05	3.27

ANNEX 3

Table 43: Roaming rates at COMESA level

Country	Call to home country (USD/min)	Call within roaming country (USD/min)	Incoming call (USD/min)	SMS (USD/SMS)	Data (USD/MB)
Burundi	2.65	1.42	0.88	0.37	18.73
Comoros	n/a	n/a	n/a	n/a	n/a
Djibouti	n/a	n/a	n/a	n/a	n/a
DRC	2.77	0.87	0.79	0.41	8.37
Egypt	2.05	1.70	0.47	0.20	5.35
Eritrea	n/a	n/a	n/a	n/a	n/a
Eswatini	0.13	0.10	0.09	0.06	0.08
Ethiopia	0.57	0.31	0.22	0.19	0.21
Kenya	1.88	0.53	0.64	0.26	7.10
Libya	2.33	1.66	0.38	0.41	3.50
Madagascar	2.83	1.13	0.76	0.36	12.13
Malawi	0.95	0.47	0.47	0.28	2.37
Mauritius	1.38	0.71	0.58	0.34	7.30
Rwanda	0.41	0.19	1.09	0.10	0.04
Seychelles	1.75	0.51	0.57	0.22	4.21
Somalia	3.00	3.00	0.35	0.25	n/a
Sudan	5.73	4.44	1.15	1.21	40.17
Tunisia	2.06	1.65	0.28	0.24	7.62
Uganda	2.77	1.06	0.26	0.28	7.49
Zambia	2.53	0.79	0.75	0.50	7.24
Zimbabwe	0.45	0.13	0.10	0.05	3.27

CHAPTER 6:
SOUTH AFRICA

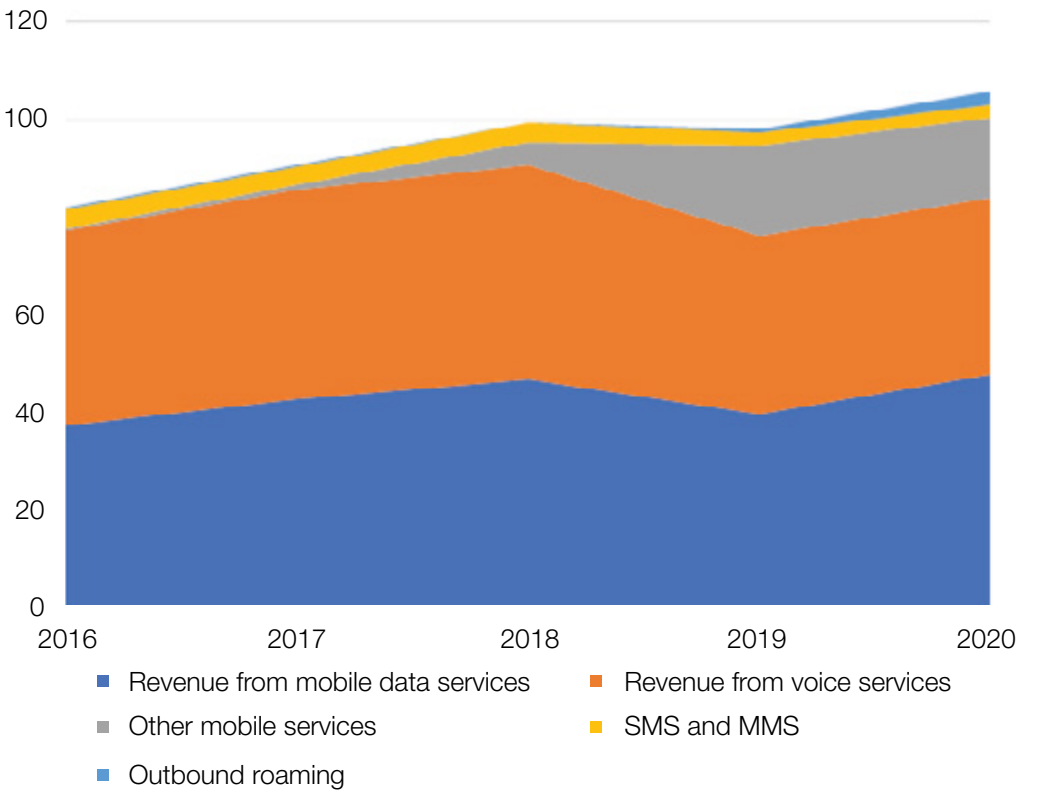
BACKGROUND

1. South Africa's mobile services market is dominated by two vertically integrated companies, Vodacom and MTN, who entered the market in 1993, making them the first entrants. Jointly, these mobile network operators (MNOs) account for 70% of the market share with Cell C, Telkom Mobile and several Mobile Virtual Network Operators (MVNOs) making up the balance of the market. Mobile services in South Africa are largely vertical integrated with the largest players owning upstream network infrastructure and radio equipment while also providing services to their customers. As the MNOs with the widest coverage, Vodacom and MTN also provide domestic roaming services to challenger MNOs who do not have an extensive infrastructure network.

2. Independent Communications Authority of South Africa (ICASA) and to a lesser extent the Department of Communication and Digital Communications are responsible for regulation and policy in the sector. Concerning legislation, the mobile sector is governed by the Electronic Communications Act No. 35 of 2003 (as amended); the ICASA Act No. 13 of 2000 (as amended); and the Competition Act No.89 of 1998 (as amended) and their regulations. Some of the key government policies that affect the sector include the National Broadband Policy 2013, the National Development Plan 2030 and the National Integrated ICT Policy White Paper 2016.

3. Mobile services (data, voice, and messaging) constitute most of the revenue generated by the telecommunication sector. In 2020, mobile services revenue totalled R 106 billion with mobile voice and mobile data representing the largest contributors at R 36 billion and R 46 billion respectively. Messaging revenue was only R 2.7 billion and outbound roaming (South African subscribers accessing a foreign network's services) earned the sector R 2.5 billion. As MNOs have diversified their offering by entering other markets such as entertainment and mobile money, there has been a dramatic increase in revenue from these services from R 463 million in 2016 to R 16 billion in 2020.[1] These additional services are a more important contributor to the sector compared to SMS and MMS. A summary of the revenue contribution is presented in Figure 61 below.

Figure 61: Revenue generated by mobile services (millions)



Source: ICASA State of the Sector report, 2020 (published March 2021)

4. South African mobile service users can choose to pay for their services on a pre-paid or a post-paid (contract) basis. While only 15% of total subscriptions are post-paid, they make up the majority (63%) of mobile revenues.[2] Further, contract subscribers offer MNOs higher and more stable average revenue per user (APRU).[3]

1 ICASA (2021) The State of the ICT Sector in South Africa. Available at: https://www.icasa.org.za/uploads/files/State-of-the-ICT-Sector-Report-March-2021.pdf [Last accessed: 20 January 2022]

2 ICASA (2021) The State of the ICT Sector in South Africa. Available at: https://www.icasa.org.za/uploads/files/State-of-the-ICT-Sector-Report-March-2021.pdf [Last accessed: 20 January 2022]

3 WhoOwnsWhom (2021) The telecommunications industry and retail of devices in South Africa. Available at: https://www.whoownswhom.co.za/report-store/telecommunications-industry-retail-devices-south-africa-2021/ [Last accessed: 20 January 2022]

5. The sector's 2020 pre-paid revenue was R 56 billion. This revenue was largely made up of mobile voice revenue (R 36 billion) and pre-paid data revenue (R 16 billion). Messaging only contributed R 700 million to prepaid revenue. Regarding post-paid revenue, which was R 98 billion, a similar pattern holds; voice accounted for R 36 billion, data for R 40 billion, and messaging R 2.5 billion.[4]

Table 44: Prepaid revenue earning by South African MNOs in 2020

Prepaid revenue source	Revenue
Prepaid revenue mobile data	R 15,985,529
Prepaid revenue mobile voice	R 38,889,588
Prepaid revenue mobile messaging	R 693,489
Total	R 55 568 606

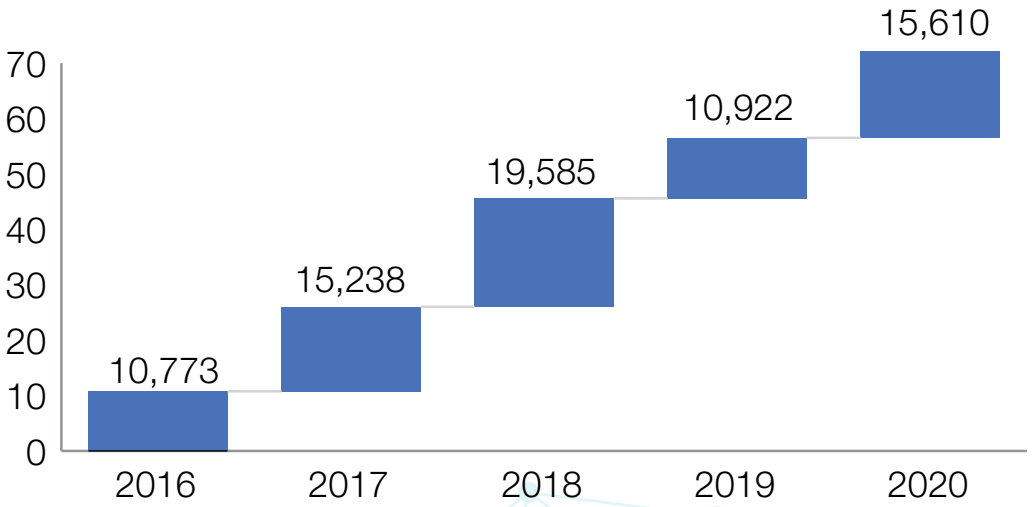
Source: ICASA State of the Sector report, 2020 (published March 2021)

6. Very few South African households do not have access to a mobile phone as South Africa enjoys a high mobile penetration[5] rate of 176% and per capita mobile penetration of 96.5%. The ubiquity and importance of mobile phone communication are further underscored by the fact that 60% of internet-connected households use a mobile phone to connect to the internet. Interestingly, most mobile phone users now use smartphones; as of 2019, smartphone penetration was 91.2% in South Africa.[6]

7. As the sector prepares itself for 4G and continues to be affected by the shift from voice to data, high quality and high bandwidth networks have become a significant competitive advantage for telecommunications operators. The COVID-19 pandemic induced shift towards remote working, which has hastened this trend.

8. As such, investment in networks has increased significantly from R 11 billion in 2016 to nearly R 16 billion in 2020 and totalling over R 72 billion over the period.[7] This investment is likely to have been driven by Vodacom and MTN as Telkom and Cell C have reduced their network investment and shifted towards wholesale roaming agreements with Vodacom and MTN.[8]

Figure 62: Investment in mobile communications from 2016 to 2020 (R millions)



Source: ICASA State of the Sector report, 2020 (published March 2021)

CONSUMER PROTECTION MEASURES

9. There have been several initiatives and regulations aimed at protecting consumers and improving competition in the sector.

9.1 The amended End-User and Subscriber Service Charter regulations have been in effect since 1 March 2019. These regulations changed how MNO deal with expiring bundles and out-of-bundle billing. Particularly, they require that MNOs inform subscribers when their bundles reach 50%, 80%, and 100% depletion. Furthermore, MNOs cannot switch consumers to out of bundle prices when their bundles have been depleted unless they have provided instructions permitting it. Lastly, MNOs must allow customers the option to roll-over unused data before it expires or to transfer it to other customers on the same network.[9]

4 ICASA (2021) The State of the ICT Sector in South Africa. Available at: https://www.icasa.org.za/uploads/files/State-of-the-ICT-Sector-Report-March-2021.pdf [Last accessed: 20 January 2022]

5 The official mobile penetration figure is defined as SIM Cards against population, as such it includes machine-to-machine connections and entities with multiple subscriptions.

6 WhoOwnsWhom (2021) The telecommunications industry and retail of devices in South Africa.

7 ICASA (2021) The State of the ICT Sector in South Africa. Available at: https://www.icasa.org.za/uploads/files/State-of-the-ICT-Sector-Report-March-2021.pdf [Last accessed: 20 January 2022]

8 WhoOwnsWhom (2021) The telecommunications industry and retail of devices in South Africa. Available at: https://www.whoownswhom.co.za/report-store/tele-communications-industry-retail-devices-south-africa-2021/ [Last accessed: 20 January 2022]

9 WhoOwnsWhom (2021) The telecommunications industry and retail of devices in South Africa. Available at: https://www.whoownswhom.co.za/report-store/tele-communications-industry-retail-devices-south-africa-2021/ [Last accessed: 20 January 2022]

9.2 Since 2013, ICASA has been actively regulating the level of fixed and mobile termination rates, which are the fees charged by one network to another for ending a call on its network.[10]

9.3 In 2020, the Competition Commission's Data Service Market Inquiry found that data prices and MNO profits were more than comparable markets. The Commission reached settlement agreements with MTN and Vodacom to reduced prepaid data prices.[11]

REMAINING CHALLENGES

10. Despite these positive developments, several industry stakeholders still cite numerous challenges to operating in South Africa.

10.1 The slow process for realising 4G spectrum has compelled MNOs to repurpose the existing spectrum and build more sites than they otherwise would to continue 4G roll-out. This, according to MTN and Vodacom, has contributed to increasing costs and the slow decline in data prices in the industry. In a to bid help the sector with increased traffic, ICASA assigned emergency spectrum to MNOs and other telecoms firms. Cell C was the only major MNO not to apply for emergency spectrum as it had shifted towards a roaming model and had excess network capacity.[12]

10.2 MNOs are vulnerable to electricity supply disruptions and rolling blackouts have led to widespread network and data centre outages. As a result, MNOs have invested in back-up generators and battery systems that can power sites for 12 to 24 hours.[13]

10 Ibid
11 WhoOwnsWhom (2021) The telecommunications industry and retail of devices in South Africa. Available at: https://www.whoownswhom.co.za/report-store/telecommunications-industry-retail-devices-south-africa-2021/ [Last accessed: 20 January 2022]
12 Ibid.
13 Ibid.

STUDY OBJECTIVES

11. The study has the following objectives:

11.1 To understand the market structure, bargaining dynamics, state involvement and the regulatory setting of the telecommunications industry in South Africa, with a particular focus on the determination of roaming charges that impact continental trade and tourism.

11.2 To get an understanding of the type of competition concerns that exist regarding roaming charges in South Africa; and

11.3 To provide a platform for identifying regional and continental priorities in respect of roaming on the African continent.

METHODOLOGY AND SCOPE

12. The scope of the study is limited to the provision of international roaming voice and data services offered to South African consumers when travelling in other African states. The study does not consider fixed-line telecommunications services. However, the study does briefly consider the provision of SMS over SIM-supported mobile devices.

13. International roaming markets are assessed based on mobile network operator ("MNO") pairs within country-to-country pairs. Thus, the study considers voice and data services offered between all MNO pairs between South Africa and other African states.

14. The December 2021 roaming charges are used in the study and such data was procured from Tarifica and shared with the participating countries. Tarifica was not able to provide historical data. Prices were collected by Tarifica in the local currency of the MNOs and have been converted to South African Rand using the average exchange rate during December 2021. The United States Dollar conversions are also provided for ease of comparability with the other country chapters to the study.

REGULATORY AND LEGISLATIVE FRAMEWORK IN SOUTH AFRICA

15. In South Africa, the electronic communication industry is regulated by ICASA. ICASA is empowered to regulate the electronic communications industry in terms of the Electronic Communications Act no 36 of 2005, as amended (the ECA).

16. To operate a commercial wireless network in South Africa that offers retail services, two licences are required, an 'infrastructure' licence known as an Electronic Communications Network Service (ECNS) licence and a 'services' licence known as the Electronic Communications Services (ECS) licence. The ECNS licences are issued by invitation from the Minister of Digital Technologies and Communications only. There are currently over 500 ECS licences issued, most of which are dormant and some of which are for sale. However, the licenses are technology-neutral and do not give insight into the market for the provision of mobile roaming.

17. The provision of mobile roaming services requires both an infrastructure licence and a services license. Furthermore, the MNO must have licensed spectrum. Spectrum is a scarce resource and due to regulatory constraints, is not easily accessible. The ECA mandates that ICASA control, plan, administer and manage radio frequency spectrum. Spectrum designated for mobile use lies between 700 MHz and 2.1 GHz and is held by Vodacom, MTN, Cell C, Telkom and Neotel. However, only Vodacom, MTN, Cell C and Telkom use the spectrum for the provision of mobile services.

18. ICASA regulates the mobile termination rate ("MTR") which is applicable in the wholesale layer of mobile telecommunications. The downstream retail pricing of mobile telephony services (including SMS and data) is not regulated. National roaming (where MNOs use the network of other MNOs domestically) is also unregulated. MNOs are only required to submit their tariff plans to ICASA. MTR regulation in South Africa is held as an example of pro-competitive regulation that enabled lower prices for consumers and the growth of challenger MNOs, such as Cell C. In 2011, ICASA reduced termination rates and created asymmetry, whereby challenger MNOs paid lower rates to terminate calls on the networks of the incumbent. Before Cell C's entry, Vodacom and MTN raised MTRs by more than 500%.

19. Recent research has found that the 90% reduction in MTRs from 2009 to 2017 was accompanied by a 40% decline in prepaid prices and quality-adjusted prices.[14] However, only 30% of the prepaid price decline and 60% of the quality-adjusted post-paid price decline could be explained by lower MTR costs. Nonetheless, the introduction of the MTR regulations increased call volumes across all networks and drove an increase in the subscriber bases of challenger MNOs.[15]

GENERAL STATE OF COMPETITION IN THE SECTOR

20. This section discusses the state of the competition in the South African mobile network services market concerning market structure, bargaining dynamics, and barriers to entry.

MARKET STRUCTURE

21. The South African mobile network services market is dominated by Vodacom and MTN. From 2017 to 2020, Vodacom and MTN's jointly held market share (by subscribers) fell from 77% to 72%. Vodacom's market share increased from 42% to 43%, whereas MTN's market share declined from 35% to 29%. Vodacom and MTN are the oldest MNOs in South Africa having both entered the market in 1994. Cell C, which entered the market in 2001 as the third MNO, experienced a decline in its market share from 17% to 12%. Telkom Mobile, which entered in 2010, increases its market share from 5% to 14% over the period. Telkom Mobile, therefore, appears to have eroded the market shares of MTN and Cell C. Mobile Virtual Network Operators (MVNOs) which are service providers that do not own the transmission infrastructure but lease it from service providers that do (local examples include MRP Mobile, FNB Connect and others) are a fairly new feature of the market and account for a negligible proportion. The market shares are summarised in Table 44 below.

Table 45: Market shares of South African MNOs and MVNOs

14 Hawthorne, R. "The effects of lower mobile termination in rates in South Africa". Telecommunications Policy 42 (5). DOI:10.1016/j.telpol.2018.02.007
15 Ibid

	2017/18		2018/19		2019/20	
	Subscriptions (millions)	Market Share	Subscriptions (millions)	Market Share	Subscriptions (millions)	Market Share
Vodacom	37.1	42%	44.1	44%	42.8	43%
MTN	30.8	35%	31.2	31%	29	29%
Cell C	15.3	17%	16.3	16%	11.7	12%
Telkom	4	5%	6.5	7%	13.7	14%
MVNOs	1	1%	1.7	2%	2	2%
Total	88.2	100%	99.8	100%	99.2	100%
HHI	3311	3242	3050			

Source: WhoOwnsWhom Report – The telecommunications industry and retail of devices in South Africa and Commissions calculations

22. Despite recent entry by MVNOs and evidence of increased contestation, it is widely accepted that South Africa's mobile market remains concentrated and oligopolistic. Indeed, the CCSA has found this to be the case in several proceedings such as the prohibited Telkom/BCX merger[16] and the abandoned Vodacom/Neotel[17] and MTN/Telkom[18] transactions. From 2017 to 2018, the industry Herfindahl-Hirschman Index (HHI) declined from 3311 to 3050, which remains well above the 2500 mark considered by authorities to indicate a highly concentrated market.[19]

23. The retail market structure described above is closely related to the dynamics concerning investments in and access to infrastructure by MNOs. As the first entrants, Vodacom and MTN were able to build networks with national coverage while having the opportunity to recoup the investment in an uncontested market. The result of this advantage is that when Cell C and Telkom Mobile entered the market, they needed to roam on Vodacom and MTN's networks to provide services to their clients. These domestic roaming agreements increase the marginal costs of the challenger MNOs and may make them less able to compete on pricing than the MNOs who own their network infrastructure. As such, the constraint that challenger MNOs place on incumbents is limited. The large MNOs have also been found to be better placed to compete on the quality and coverage of their mobile services. This has entrenched MTN and Vodacom's positions.

BARGAINING DYNAMICS

24. The Data Services Market Inquiry (DSMI) conducted by the Competition Commission of South Africa (CCSA) identified several issues concerning the bargaining dynamics at the wholesale level of the local mobile market. To provide retail services, new entrants rely on the wholesale supply of infrastructure to provide mobile services (voice, data, USSD & SMS) through national roaming. The supply of wholesale infrastructure is concentrated and dominated by incumbents with a first-mover advantage, Vodacom, and MTN. As national roaming provides challenger MNOs with nationwide coverage and access to spectrum for mobile services it is likely an important determinant of whether they can also conclude international roaming agreements. A foreign MNO is unlikely to enter a roaming agreement with a domestic MNO that doesn't have national coverage or doesn't offer the services its customers are accustomed to in the home market.

25. While the presence of incumbents with national coverage and a full range of services suggests that new entrants would be able to benefit from the investments made by first movers, this has not been the case in practice. The DSMI found that the distribution of market power between the incumbents and challengers disadvantages the latter and, ultimately, consumers. The provision of wholesale access is largely unregulated. Leasing requirements, which is are the lone area of wholesale regulation, have not been effectively implemented.

26. Historically, smaller operators such as Cell C and Telkom had unfavourable agreements with Vodacom and MTN. Their concerns with these agreements included roaming costs that exceed the incremental costs of providing the same services on their networks; exclusion of seamless handover so that calls don't drop when changing networks. This degraded the quality of the customer experience on challenger MNOs and makes it more difficult for them to attract and retain subscribers based on lower prices. Furthermore, variable costs beyond a minimum fee meant that when

16 Competition Tribunal. Case No: 51/LM/Jun06
17 Competition Tribunal. Case No; 2014Jul0382
18 Competition Commission (2015) Media release- MTN/Telkom transaction. [Online]. Available at: http://www.compcom.co.za/wp-content/uploads/2015/01/Commission-recommends-prohibition-of-MTN-and-Telkom-merger.pdf [Accessed on 10 February 2019]
19 United States Department of Justice and Federal Trade Commission. Horizontal merger guidelines, 2010. Para.

challenger MNOs cut prices and increased volumes, they would incur higher costs since they must pay more roaming charges. Therefore, price cuts decrease the profits of challenger MNOs more than they would for an incumbent that owns the infrastructure. Lastly, roaming agreements also excluded new data service lines such as LTE, which has precluded challenger MNOs from proving these services in areas where they rely on roaming on an incumbent's network.

27. In 2018 Cell C and Telkom concluded new roaming agreements with MTN and Vodacom respectively. The new agreements have sought to address some of the issues that constrained Cell C and Telkom under their previous agreements. For example, Cell C will be provided with seamless handover under the new agreements and roaming services will be provided on a non-discriminatory basis. Similar terms are also included in the agreement between Telkom and Vodacom. Both agreements also include access to LTE technology on their respective carriers' networks. However, both agreements also include a minimum fee and volume based to be paid by the roaming network. This suggests that Cell C and Telkom were willing to accept this term while resolving the issues regarding seamless handover and access to LTE.

28. International roaming agreements are typically negotiated on a volume basis between MNOs who try to balance traffic as much as possible with price being a secondary consideration.[20] The desire to balance traffic results in different wholesale level incentive structures for MNOs depending on their size. Commentators have suggested that balancing traffic distorts price signals at the wholesale level as it reduces the net payment to zero as traffic tends towards the perfect balance. As such, when the traffic is perfectly balanced and net payments are zero, the price per minute could be high or low. Since customers aren't usually interested in roaming prices when selecting an MNO, they have low price elasticity.[21] Therefore, prices tend to be higher than they otherwise could be.

29. The centrality of traffic in concluding international roaming agreements is biased against small operators who do not have traffic to send back to operators in other countries. Small operators are rendered price takers by their position. Therefore, they cannot put lower prices into the market (retail prices) since they don't have access to lower wholesale prices.

30. With respect to South African MNOs, Vodacom and MTN are in a stronger bargaining position when it comes to international roaming agreements. As the largest MNOs in South Africa, they can offer more traffic for achieving a balance. South African traffic can be further bolstered by traffic from the other African countries where they operate. Telkom and Cell C are in the opposite position as they don't have as many customers in South Africa and cannot benefit from the volumes granted by a pan-African presence. This likely means that their roaming prices are more expensive than Vodacom and MTN's. Further, they may also have less roaming coverage because of their position.

31. The problematic bargaining dynamics have resulted in persistent concentration and soft price competition at the retail level. By degrading the quality of the experience on challenger MNO's network, it is more difficult for challengers to attract new subscribers based on price cuts. Consumers also face less choice as the barriers to entry at the wholesale level (discussed further) are replicated at the retail level and exacerbate existing retail level barriers to entry and expansion.

20 OECD (2013), "International Mobile Roaming Agreements", OECD Digital Economy Papers, No. 223, OECD Publishing, Paris http://dx.doi.org/10.1787/5k-4559fzbn5l-en

21 OECD (2013), "International Mobile Roaming Agreements", OECD Digital Economy Papers, No. 223, OECD Publishing, Paris http://dx.doi.org/10.1787/5k-4559fzbn5l-en

BARRIERS TO ENTRY

32. As discussed above, new entry into the South African mobile market has been relatively limited. This suggests that there are high barriers to entry, which have contributed to the observed levels of concentration. The same challenges that may impede new entry by challenger MNOs may also limit the degree to which new and existing MNOs can offer roaming services. Previous research has found that challenger MNOs face barriers to entry posed by the cost of entry; spectrum allocations; access to customers; strategic responses by incumbents; and regulatory barriers.[22] These are discussed in turn below.

32.1 Cost of entry: Building a national network is capital intensive for a challenger MNO but is necessary in order to offer similar coverage rates as incumbents. However, unlike the incumbents, challenger MNOs do not have the benefit of exclusive access to consumers (which the incumbents previously enjoyed) that would allow for the faster recoupment of the capital investment by way of higher prices and large volumes. Furthermore, lead times for acquiring permission to build network infrastructure are long. Ultimately customers will not switch if doing so will compromise the level and quality of service, even in the case of a lower price. A new entrant would also be required to invest in call centres, and sales and billing platforms. Other costs include license fees and advertising.[23] Like customers, foreign MNOs on the lookout for roaming partners prefer nationwide coverage when entering into roaming agreements. As such, MNOs without nationwide coverage may struggle to become roaming partners or will have to add international roaming in their domestic roaming agreements, which may increase their costs.

32.2 Spectrum: Spectrum is what is required for transmission from the base station or tower to a customer's mobile device. MNOs use different bands of spectrum to offer services such as 3G and 4G. However, spectrum can also be re-farmed to offer new services. In South Africa, 4G spectrum has been identified but has not been released. As a result, MNOs that already have spectrum have been re-farming it to provide 4G services. However, this can keep new entrants out of the market. The regulator, ICASA, plans to begin the spectrum auction in the first quarter of 2022, but this may be delayed due to court challenges.[24]

32.3 Access to customers: Due to high mobile penetration levels, market share in South Africa is largely acquired through customer switching. As such, MNOs grow their customer base by hiring and incentivising sales staff, subsidizing the latest handsets and offering other promotions to entice customers such as contract buyouts that buy customers out of long-term contracts.[25] Research has also noted that late entrants to the mobile sector and, by extension, international roaming often struggle to capture roaming revenues. This is largely because they are often reliant on prepaid customers and non-business customers, who are less likely to use roaming services.

32.4 Incumbents' strategic response: Incumbent MNOs have the financial resources and customer relationships to effectively ward against challengers. The mechanisms that they can use include advertising, and increasing switching costs among others.[26]

32.5 Regulatory and policy barriers: Lastly, the lack of effective regulatory and policy enforcement has been raised as a concern in the South African mobile market. Challengers have noted that non-enforcement of the facilities leasing regulations of the ECA has hampered their ability to grow. Where access has been granted, it has been expensive, which increases the challengers' marginal costs.[27]

22 Hawthorne, R.; Mondliwa, P;. Paramoer, T.; Robb, G. (2016) Competition, barriers to entry and inclusive growth: telecommunications sector study. CCRED Working Paper 2/2016. Available at: https://static1.squarespace.com/static/52246331e4b0a46e5f1b8ce5/t/576916b3e58c62969208f300/1466504893026/CCRED+Working+Paper+2_2016_BTE_Telecommunication+Sector.pdf. [Last accessed on 14 January 2022]
23 Ibid.
24 Ibid.
25 Ibid.
26Ibid.
27 Hawthorne, R.; Mondliwa, P;. Paramoer, T.; Robb, G. (2016) Competition, barriers to entry and inclusive growth: telecommunications sector study. CCRED Working Paper 2/2016. Available at: https://static1.squarespace.com/static/52246331e4b0a46e5f1b8ce5/t/576916b3e58c62969208f300/1466504893026/CCRED+Working+Paper+2_2016_BTE_Telecommunication+Sector.pdf. [Last accessed on 14 January 2022]

DESCRIPTION OF ROAMING AND INTERNATIONAL EXPERIENCES

33. Roaming allows the customer to access mobile services outside of the geographical coverage of their subscribed network.[28] International roaming specifically applies when the geographic coverage of the subscribed network is a country, and the access is provided in another country.[29] This coverage extension is facilitated by a wholesale roaming agreement entered into between the subscribed network operator and the network operator in the visited country.[30] As soon as a mobile phone is active in a visited country, it will automatically detect the available networks in the vicinity.[31] It will connect to one of the available networks only if there is an existing roaming agreement between the available network and the customer's home network and if the customer is a roaming customer.[32] Often the customer's home network will have multiple agreements in the visited country and it is possible for the customer to override the automatically selected network and choose another such network.[33] [34]

VOICE

34. When the roaming customer initiates a call to the home country, the connected visited network will convey the call to the customer's home network using an international carrier.[35] The customer's home network will then convey the call to the receiver's home network, which then transfers the call to the receiver.[36]

35. There are several cost components associated with conveying a call back home from a roaming customer. Figure 63 graphically illustrates what these cost components are and indicates where the burden of these costs lies and to whom they are paid. We discuss these costs here in more detail:

35.1 Call origination. This cost is a notional internal cost that a network incurs for initiating and carrying the call – the cost of which is, in principle, approximately equal to the cost of terminating a call.[37]

35.2 Roaming overheads. These consist of a variety of network components and administrative costs required to maintain a roaming service for both the home and visited network operator.[38] This commonly includes a variety of operational and maintenance expenditure ("OPEX"), such as accounting costs; payment overheads (such as currency exchange losses); revenue assurance; fraud prevention costs; dedicated staff costs; and software and system costs.[39] In addition, there are a variety of setup costs (for the negotiation of roaming agreements and testing roaming connections) and (data and financial) clearing costs.[40]

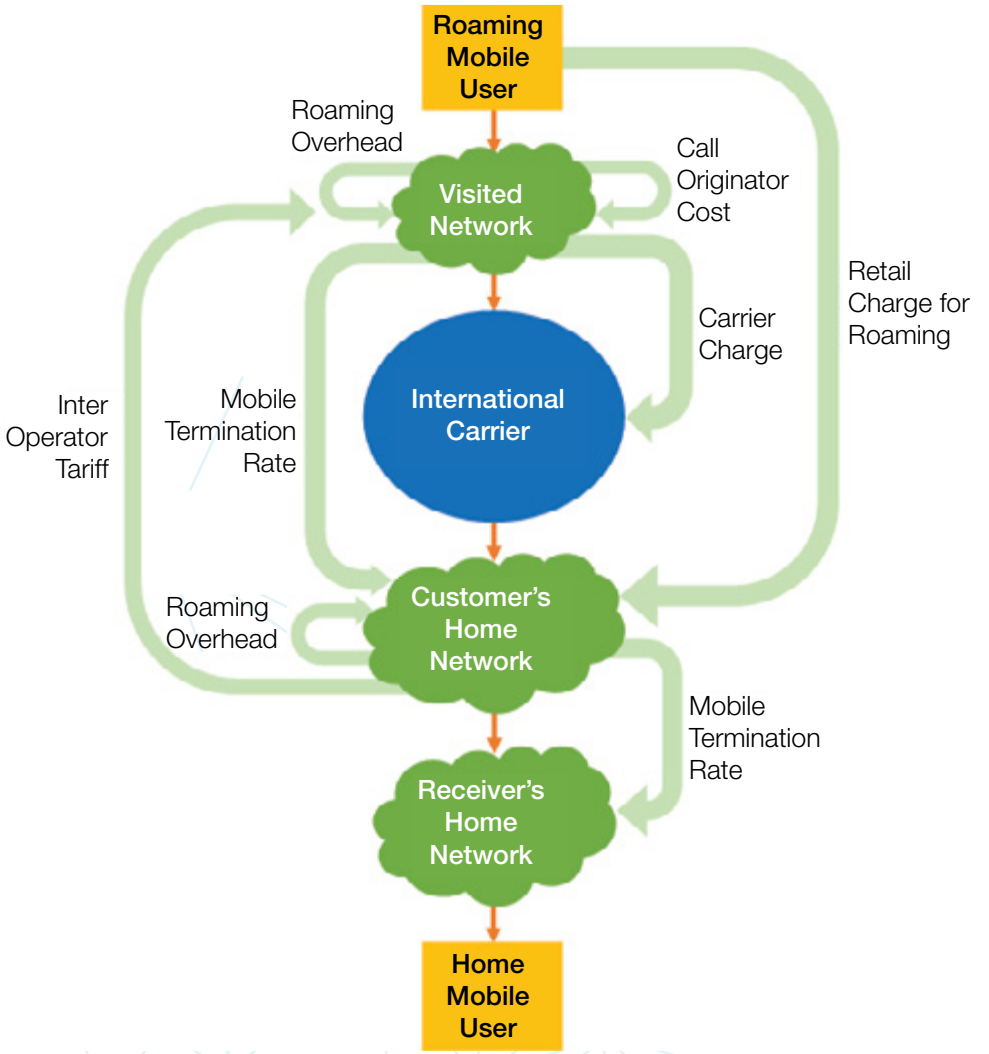
35.3 Carrier charge. This cost is a payment made to an international carrier to convey the call from one country to another.

35.4 Mobile termination rate (MTR). The MTR is the charge borne by the network from whom the call is initially transmitted for use of the receiving network's infrastructure to terminate the call. In the case of a call made by a roaming customer, this cost would be borne by the visited network and paid to the roaming customer's home network. However, often this mobile termination rate will be included in the carrier charge and paid by the international carrier to the home network. If the home mobile user who is receiving the call is on another network, then the roaming customer's home network would also incur an MTR charge for terminating the call on the other network.

28 Analysys Mason (2010) 'Regulatory impact assessment study on the SADC Home and Away roaming', CRASA, 23 April 2010.
29 GSMA (2012) 'International Roaming Explained: Africa'. P. 1. Available at: http://www.gsma.com/publicpolicy/wp-content/uploads/2012/09/Africa-International-roaming-explained-English.pdf [Last accessed on 17 February 2017]
30 Ibid.
31 Sutherland, E (2001). 'International roaming charges: over-charging and competition law'. Telecommunications Policy, 25 (1), 5-20
32 GSMA (2012) 'International Roaming Explained: Africa'. P. 2. Available at: http://www.gsma.com/publicpolicy/wp-content/uploads/2012/09/Africa-International-roaming-explained-English.pdf [Last accessed on 17 February 2017]
33 GSMA (2012) 'International Roaming Explained: Africa'. P. 2. Available at: http://www.gsma.com/publicpolicy/wp-content/uploads/2012/09/Africa-International-roaming-explained-English.pdf [Last accessed on 17 February 2017]
34 Sutherland, E (2001). 'International roaming charges: over-charging and competition law'. Telecommunications Policy, 25 (1), 5-20
35 Analysys Mason (2010) 'Regulatory impact assessment study on the SADC Home and Away roaming', p. 23. CRASA, 23 April 2010
36 GSMA (2012) 'International Roaming Explained: Africa'. P. 2. Available at: http://www.gsma.com/publicpolicy/wp-content/uploads/2012/09/Africa-International-roaming-explained-English.pdf [Last accessed on 17 February 2017]

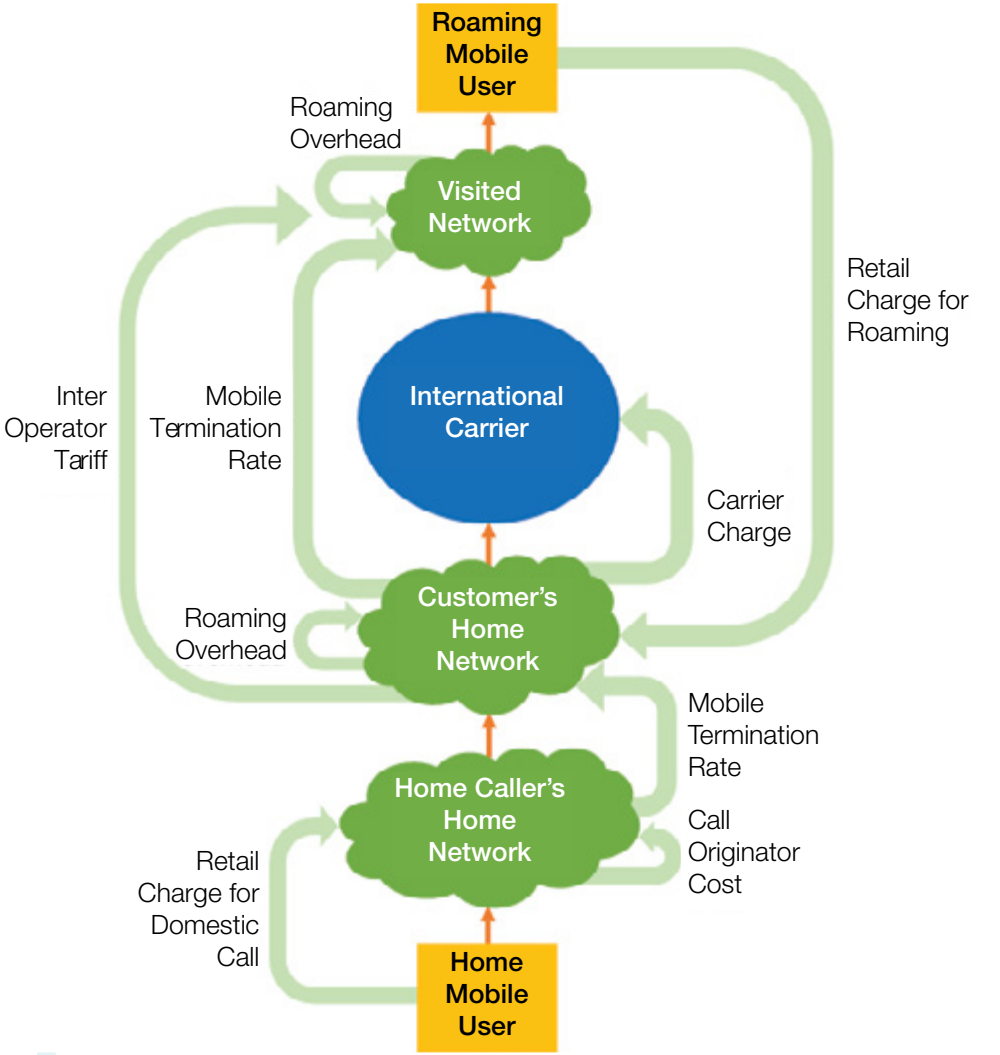
37 Analysys Mason (2010) 'Regulatory impact assessment study on the SADC Home and Away roaming', p. 24. CRASA, 23 April 2010
38 Marcus, J. S. and Petropoulos, G. (2016) 'Challenging prospects for roam like at home'. Bruegel, Working Paper 2016, Issue 3. Available at: http://bruegel.org/wp-content/uploads/2016/06/WP-2016_03-Final.pdf [Last accessed on 21 October 2016]
39 Analysys Mason (2010) 'Regulatory impact assessment study on the SADC Home and Away roaming', p. 55-57. CRASA, 23 April 2010
40 Marcus, J. S. and Petropoulos, G. (2016) 'Challenging prospects for roam like at home'. Bruegel, Working Paper 2016, Issue 3, p. 5-6. Available at: http://bruegel.org/wp-content/uploads/2016/06/WP-2016_03-Final.pdf [Last accessed on 21 October 2016]

Figure 63: The conveyance of a call initiated by a roaming customer



Source: Commission team

Figure 64: The conveyance of a call received by a roaming customer



Source: Commission team

36. The visited network recovers the costs it bears for providing access to the roaming customer by charging the home network an inter-operator tariff. The roaming customer's home network will, in turn, charge the roaming customer a retail charge for roaming, which will cover the inter operator tariff as well as roaming overhead costs incurred by the home network and call termination costs.[41] Figure 63 below provides a schematic illustration of the process described above.

41 Call termination costs will either consist of a notional internal cost to the home network for terminating the roaming call on its own network, or the MTR cost for terminating the roaming call on a different network in the home country.

37. Ordinarily in South Africa, the Calling Party Pays principle applies; but in a roaming context, the traveling party will cover some of the cost of received calls as well.[42] The party in the home country that initiates the call will pay a retail charge for a domestic call to their own network. The cost of conveying the call internationally is borne by the roaming customer receiving the call, which is paid to the roaming customer's home network. Figure 64 illustrates this retail split, as well as the different cost components and the flow of payments.

38. The roaming customer may also choose to make local calls in the visited country while roaming. In this scenario, the international carrier is still responsible for the delivery of the call to the destination network.[43] This may be the same visited network that the roaming customer is connected to in the visited country, or it may a different network in the visited country. The visited network that the roaming customer is connected to will pay the international carrier for carrying the call and handing over the call to the receiving network on which the receiver of the call is connected.[44] The international carrier pays the receiving network a termination rate for terminating the call on its network.

DATA

39. Data roaming operates on the same broad principles that support voice roaming. When travelling abroad, the handset will communicate with the network and connected to the home network's preferred roaming or provide the user with a selection of network from which they can select their preferred network. The visited network detects the connection attempt and if there is a valid roaming agreement between the home network and the visited network allows the user to roam and access data roaming services.[45] Essentially, the connection is established by the visited operator's network back to the user's home network, which connects the user to the internet.

40. Data roaming is not negotiated separately by MNOs, but form part of the negotiation for all roaming volumes. As such, international data roaming rates are first negotiated with the preferred partners for voice traffic. However, should the preferred partner's network not offer sufficient speed and capacity, negotiations and agreements may be concluded with non-preferred partners. There are two models that MNOs use to determine the inter-operator tariffs (IOTs) for data usage:[46]

    40.1 Flat rate per MB combined with billing increments on a per KB basis.

    40.2 Step-based pricing per MB where the volume of a data session is divided in steps that are rated at different rates per steps. Under this model, higher volume session generally being priced at lower rates.

41. There are also incremental costs to providing international data roaming services over and the IOT. For the home operator, the cost component used for providing national data service are also used to provide roaming data service. The main difference, however, between national service and international roaming is that some of the components (for example the radio network) are used in the visited network instead of the home network. While additional radio or core network capacity may be required to service large amount of roaming data, these will not necessarily be different to doing the same for national data services.[47]

42. Nonetheless, MNOs also incur costs that are specific to providing data roaming services. The costs may include:[48]

    42.1 Extension of components in existing roaming inter-operator process: these are costs that incurred with data roaming is first implemented by extending the inter-operator roaming process for voice and SMS roaming.

42 Sutherland, E (2001). 'International roaming charges: over-charging and competition law'. Telecommunications Policy, 25 (1), 5-20
43 Mauro, I. and Raval, V. (2012). Africa International Roaming Explained. GSMA, September 2012. Available at: https://www.gsma.com/publicpolicy/wp-content/uploads/2012/09/Africa-International-roaming-explained-English.pdf [Last accessed on 20 July 2022]
44 Mauro, I. and Raval, V. (2012). Asia International Roaming Explained. GSMA, September 2012. Available at: https://www.gsma.com/latinamerica/wp-content/uploads/2012/08/GSMA-Mobile-roaming-web-English.pdf [Last accessed on 20 July 2022]
45 GSMA (2012) Mobile SMS and Data Roaming Explained. Available online: https://www.gsma.com/aboutus/wp-content/uploads/2012/03/smsdataroamingexplained.pdf

46 Vrolijk, E. & Bouwman, R. (2008) Study 'Roaming Data Services'. Available online: http://ec.europa.eu/information_society/activities/roaming/docs/study_data_roaming.pdf
47 Vrolijk, E. & Bouwman, R. (2008) Study 'Roaming Data Services'. Available online: http://ec.europa.eu/information_society/activities/roaming/docs/study_data_roaming.pdf
48 Vrolijk, E. & Bouwman, R. (2008) Study 'Roaming Data Services'. Available online: http://ec.europa.eu/information_society/activities/roaming/docs/study_data_roaming.pdf

42.2 New components for the roaming inter-operator process: these costs cover all new systems and processes that must be implemented to enable data roaming in the existing voice and SMS roaming.

42.3 Home operator new components: These are the new systems, process for the home operator.

42.4 Home operator extension of existing components: These are the incremental costs for existing systems and process that the home operator must incur when implementing data roaming.

42.5 Roaming operator new components: There are the new process and systems that the visited operator must implement and maintain.

42.6 Roaming operator extension of existing components: These are the costs for enabling existing systems and processes to support the implementation of data roaming.

43. Based on the above, it is evident that the retail price paid by the customer includes the wholesale charge between MNOs (IOT) and a cost component that is sufficient for the home operator providing the roaming service to the customer.

ROAMING CHARGES

44. It is important to note that the costs attributable to different components of the provision of roaming services may be significantly different from the wholesale prices that are actually charged to the different providers of these services and, ultimately, the retail roaming price charged to the roaming customer for the different services.

45. The gap between international roaming costs and wholesale roaming charges levied between MNOs in different countries is likely to be large even when these MNOs are of similar scale, due to double marginalisation where each operator adds its own mark-up to its perceived marginal cost of providing the roaming service.[49] The double marginalisation problem is sustainable because these MNOs are not competing for the same subscribers.[50] Wholesale prices would not only be inflated above costs to reflect oligopolistic prices dictated by the degree of market power at the wholesale level in the visited country but would also be inflated by the practical limitations on the home network in steering its roaming customers to use the network services of a particular visited operator network.[51]

46. The inflation of wholesale roaming charges above costs is further exacerbated by bargaining power imbalances between the MNOs in the different countries. MNOs that belong to multinational groups are able to hold a substantial advantage over standalone MNOs due to their ability to internalise their costs and pool international roaming traffic volumes.[52] However, even standalone MNOs with substantial market power in their domestic market also exert a strong degree of bargaining power relative to smaller MNOs, as their large networks can attract the largest share of visitor roaming.[53] As such, MNOs that are a part of multinational groups and MNOs with a substantial degree of market power in their domestic markets are able to incorporate larger mark-ups in their negotiated wholesale roaming prices with domestic MNOs that do not hold these bargaining advantages.

47. Retail roaming prices charged by the home network to its roaming subscribers will, at a minimum, be set at a level that allows the home network to recover the wholesale charges that it needs to pay the visited network and the international carrier. Furthermore, the equilibrium retail roaming price will necessarily reflect the state of competition between domestic MNOs at the retail level. However, subscribers tend to make use of international roaming services occasionally if at all and these services

49 Laffont, J. J., et al. (2000). Multiple Bottlenecks and Two-Way Access. In: J. Tirole and J.J. Laffont, Competition in Telecommunications. UK, MIT Press.

50 Marcus, J. S. and Petropoulos, G. (2016) Challenging prospects for roam like at home. Bruegel, working paper issue 3, March 2016. Available at: https://www.bruegel.org/sites/default/files/wp-content/uploads/2016/06/WP-2016_03-Final.pdf [Last accessed on 20 July 2022]

51 Marcus, J. S. and Petropoulos, G. (2016) Challenging prospects for roam like at home. Bruegel, working paper issue 3, March 2016. Available at: https://www.bruegel.org/sites/default/files/wp-content/uploads/2016/06/WP-2016_03-Final.pdf [Last accessed on 20 July 2022]

52 Analysys Mason (2010). Regulatory impact assessment study on SADC Home and Away roaming. Final report for CRASA, 23 April 2010. Available at: https://www.wto.org/english/tratop_e/serv_e/sym_march12_e/doc_safrica_crasa.pdf [Last accessed on 20 July 2022]

53 Analysys Mason (2010). Regulatory impact assessment study on SADC Home and Away roaming. Final report for CRASA, 23 April 2010. Available at: https://www.wto.org/english/tratop_e/serv_e/sym_march12_e/doc_safrica_crasa.pdf [Last accessed on 20 July 2022]

are unlikely to be viewed as an important component of the overall expenditure by the subscriber on the full suite of mobile network services, which are generally purchased as a package of services. There is likely to be muted switching response from subscribers to changes in retail roaming prices, which provides greater scope for MNOs to inflate margins on these prices.

48. As such, both wholesale roaming prices and retail roaming prices are likely to be dually dependent on both the extent of competition in the home market and the margin strategy employed by the roaming customer's MNO. There is great potential for earning large returns on mobile roaming for any MNO regardless of size due to the inelasticity of demand at the retail level and the market power an MNO holds over voice termination to their users at the wholesale level. However, maximising the absolute profit potential of international roaming incentivises the creation of expanded levels of service coverage and high levels of traffic, which has a dampening effect on the size of the profit margin imposed by MNOs at both the wholesale and retail level.[54]

49. The evolution of South African MNOs retail margin strategy can partially be observed from publicly available information. In 2014, it is apparent that visitor roaming revenue was an important source of Vodacom's overall revenue growth.[55] However, by 2016, it is apparent that Vodacom's focus shifted towards expanding its level of service coverage for roaming services, when the company extended its international roaming product, dubbed "Travel Saver", from 27 to 180 countries[56] and expanded its international prepaid data roaming footprint from 10 to 64 countries[57]. This was followed by the introduction of new "cost-effective data bundles" and daily fee international roaming options in 2018.[58] Vodacom attributed, at least in part, the 5% growth in its customer base and 2% growth in its market shares in 2019 toits seamless international roaming offering.[59] In 2021, Vodacom reduced its out-of-bundle data roaming prices by up to 88%.[60] This progression illustrates Vodacom's shift from earning large returns from roaming in initial periods to expanding the base of mobile roaming customers through lower roaming prices in the later periods.

50. While MTN is more reticent on discussing international mobile roaming in its annual reports, it is apparent that MTN began launching enhanced international roaming offerings[61] in 2016 to drive its global value proposition.[62] Furthermore, in 2021, MTN announced that it had reduced its international roaming data price from R2.50 per MB to R0.99 per MB.[63] This behaviour by MTN also suggests that it has moved towards a roaming retail margin strategy that promotes expanded usage rather than extracting the full extent of the profit margin.

51. Publicly available information on Cell C's international roaming price strategy is sparsely available; but as is apparent in the forthcoming assessment of price trends in the section on international roaming costs, Cell C's international roaming prices have generally increased from 2014 to 2021 or decreased only marginally with respect to mobile data roaming prices. Indeed, by early 2021, the market had already picked up on the fact that Cell C's roaming prices were higher than Vodacom and MTN's roaming prices.[64] This is a stark change from Cell C's position on roaming prices in 2014, as will be demonstrated in the forthcoming analysis, when Cell C's roaming prices were the lowest available in the market. This behaviour may be indicative of an initial strategy to expand the base of mobile roaming traffic for Cell C at the expense of extracting retail margins, but as Cell C's financial position worsened over the ensuing period, it may have become more imperative for Cell C to extract higher margins down the line as its market share decreased over the period, particularly in the last two years.

52. Conversely, Telkom Mobile's mobile roaming prices have consistently tended to track

54 Acevedo, A. O. ***Roaming service quality and interoperability: keys for the business model***. Population, 28, p. 565-145. Available at: http://www.iirsa.org/admin_iirsa_web/Uploads/Documents/taller_roaming_pp_calidad_eng.pdf [Last accessed on 11 August 2022]

55 ***"The return to growth was driven by a 23.6% rise in data revenue growth and an increase in other service revenue of 23.0%, contributed by growth in business managed services and visitor roaming revenue."*** Vodacom Integrated Annual Report 2014

56 Vodacom Integrated Annual Report 2016

57 Vodacom Integrated Annual Report 2017

58 Vodacom Integrated Annual Report 2018

59 Vodacom Integrated Annual Report 2019

60 MyBroadband (2021) ***Vodacom slashes international roaming data prices***. 7 December 2021. Available at: https://mybroadband.co.za/news/cellular/426462-vodacom-slashes-international-roaming-data-prices.html [Last accessed on 12 August 2022]

61 For example, MTN HelloWorld

62 MTN Integrated Annual Report 2016

63 BizCommunity (2021) ***MTN reduces its international roaming prices***. 1 December 2021. Available at: https://www.bizcommunity.com/Article/196/663/222823.html [Last accessed on 12 August 2022]

64 Labuschagne, H. (2021). ***The cheapest mobile network for international roaming***. MyBroadband, 10 February 2021. Available at: https://mybroadband.co.za/news/cellular/382288-the-cheapest-mobile-network-for-international-roaming.html [Last accessed on 21 August 2022]

on the high end across the period until 2021, when roaming prices sharply decreased in 2021 for calls back home, calls received, and mobile data usage, as demonstrated in the forthcoming section. Telkom mobile only introduced mobile roaming for its prepaid and top-up customers in 2021.[65] However, the market has perceived Telkom's prices to be very high relative to other MNOs[66] with some commentators attributing the high prices to Telkom's unfavourable IOT agreements[67]. This implies that Telkom may have been unwilling to sacrifice retail margins on international roaming for the sake of attracting volumes to its network, or it may merely have been a victim of higher inter-operator tariffs due to diminished bargaining power.

REGIONAL INITIATIVES

SADC ROAMING POLICY

53. In 2007, SADC ministers for communications issued a directive to initiate the SADC Roaming Project to develop a policy and regulatory framework for affordable mobile roaming across member states. Within this project, the ministers launched the SADC Home and Away Roaming initiative to enable the development of a service similar to the European Union's (EU) Roam-Like-At-Home initiative, which harmonized the cost and price of roaming within the EU. In 2008, the SADC Ministers established the Regional Alliance Task Team (RATT) to investigate how roaming costs could be reduced. As part of their work, the RATT commission a partial Regulatory Impact Assessment (RIA), which found the following:

    53.1 Roaming was an important revenue stream for visited MNOs in countries that are reliant on tourism for revenue. Thus, reducing inter-operator tariffs (IOTs) could reduce the inflows of foreign currency into these countries.

    53.2 The main cost components were IOTs and international gateway charges to both home and visited networks. However, these were the lowest for larger operators in the region.

    53.3 Small operators in the visited country could not build roaming volume to take advantage of roaming revenues.

    53.4 IOTs levied by visited networks were above costs, translating into high roaming tariffs.

    53.5 There was significant variation in retail margins across home operators, compounded by poor transparency and customer awareness.

    53.6 Lastly, there was poor and incomplete information on the status of roaming in each SADC country.

54. Based on these findings, the SADC Roaming Policy was launched in 2015 with the recognition that national regulators acting alone cannot effectively regulate roaming services (including voice, SMS, data and any other roaming service) due to their cross-border nature. Therefore, a coordinated regional response is required to ensure that lower prices are experienced throughout the region.[68] The objectives of the SADC Roaming Policy are:

    54.1 To address the high charges on roaming services in the region.

    54.2 To develop a roaming cost model for determining the cost of roaming within the region.

    54.3 To harmonize the costing and pricing of roaming services within the region.

    54.4 To provide minimum safeguards for consumers of roaming services, to empower them to make informed decisions.

*65 Independent Online (2021) **Mobile operator Telkom Mobile has announced that it is offering full international roaming services to its prepaid and top-up customers**. 21 May 2021. Available at: https://www.iol.co.za/business-report/companies/telkom-launches-full-prepaid-international-roaming-services-9854bac5-1f32-4943-8d9c-c8ef67aed6c1 [Last accessed on 12 August 2022]*

*66 MyBroadband (2021). **Telkom customers charged R300,000 for a product which costs R30**. 20 May 2021. Available at: https://mybroadband.co.za/news/cellular/397907-telkom-customers-charged-r300000-for-a-product-which-costs-r30.html [Last accessed on 12 August 2022]*

*67 Gadget (2021). **Telkom finally goes global, but watch those costs**. 20 May 2021. Available at: https://gadget.co.za/telkom-finally-goes-global-but-watch-those-costs/ [Last accessed on 12 August 2021]*

68 Nsomba, G (2021) The regulation of interconnection and regulatory alignment in the Southern African Development Community. WIDER Working Paper 2021/126. Available at: https://sa-tied.wider.unu.edu/article/regulation-interconnection-and-regulatory-alignment-southern-african-development-community [Last accessed on 14 January 2021]

55. The SADC Roaming Regulations were drafted to give effect to the roaming policy by providing a coordinated regional response to the formulation of roaming regulations; facilitating the development of regionally acceptable roaming standards and ensuring regional-level consumer protections regarding roaming.[69] Crucially, these regulations propose a glide-path to transition from the roaming prices at the time to cost-based roaming prices over three years for wholesale roaming tariffs and five years for retail roaming prices. The wholesale price formula for roaming tariffs is based on Inter-operator Tariffs (IOTs) which are wholesale roaming prices charged to the home country MNO by the visiting country MNO and weighted average tariff (WTA).[70]

Table 45: Wholesale price ceiling and glide path formulae

Effective date	Price determination
21 October 2014	Existing IOT prices
1 October 2015	WTA + ((IOT – WTA) * 0.67) * 1.05
1 October 2016	WTA + ((IOT – WTA) * 0.33) * 1.05
1 October 2017	WTA * 1.05

Source: Nsomba, G. The regulation of interconnection and regulatory alignment in the Southern African Development Community

56. The retail glide path formula is based on Roam-Like-At-Home (RLAH) and eventually cost-based pricing. Under RLAH, the pricing and charges are made up of the roaming customers' home country retail rates[71] (the RLAH portion) and a premium. The premium is the difference between roaming rates as of 1 October 2014 (ROAM) and RLAH. The glide path envisaged that after 1 October 2017, retail roaming prices would then be based on RLAH and COST and that by 1 October 2020, they would only be based on COST.[72] The COST is to be derived by a harmonised regional cost model that takes into account all the underlying cost elements for the various use cases for roaming services.[73]

69Ibid.

70 WTA is the weighted average of domestic MTRs within the SADC region.

71 RLAH is to be determined as the traffic weighted average of existing current domestic prepaid headline retail charges for each of the different services offered by each MNO in the region

72 Nsomba, G (2021) The regulation of interconnection and regulatory alignment in the Southern African Development Community. WIDER Working Paper 2021/126. Available at: https://sa-tied.wider.unu.edu/article/regulation-interconnection-and-regulatory-alignment-southern-african-development-community [Last accessed on 14 January 2021]

73 SADC (2015). SADC Roaming Policy. Walvis Bay: SADC. Available at: www.itu.int/en/ITUD/RegulatoryMarket/Documents/Roaming/SADC%20POLICY%20ON%20ROAMING%20APPROVED .pdf (accessed 20 July 2022).

THE EAST AFRICAN COMMUNITY AND THE ONE NETWORK AREA

57. In 2014, the members of the East African Community (EAC) proposed the implementation of a joint initiative on Roaming called the One Network Area (ONA) roaming initiative74 with the agreement officially beginning in January 2015.

58. The aim of the ONA is to promote regional integration through the reduction of roaming costs on voice calls in the region by allowing any roaming customer in participating countries to face the same costs for all calls in the visited country as a local customer of that country.

59. The key features of the ONA are that customers could use the same SIM cards and cell phone numbers across participating countries, incoming local calls would be free, outgoing calls and SMSs would be charged at local rates, prepaid customers would be charged and billed in their local currency, postpaid customers would be charged in local rates and converted to their home currency at billing, and prepaid customers can top-up their airtime using local means in the country visited.

60. The specific interventions that took place in the EAC included the removal of charges for incoming calls, the wavering of any taxes and surcharges on incoming voice traffic in the region, implementation of a wholesale price cap set at US$7 per minute, and requiring MNOs to renegotiate roaming contracts on the basis of the wholesale price cap.

CENTRAL AFRICAN ECONOMIC AND MONETARY COMMUNITY (CEMAC)

61. In February 2020 the Communications Ministers of CEMAC Member States (Cameroon, Central African Republic, Congo-Brazzaville, Gabon, Equatorial Guinea, and Chad) validated a draft community regulation to eliminate roaming surcharge. In August 2020, Cemac Regulation No. 04/20-UEAC-CM-35 on mobile electronic communication was adopted by the UEAC council of ministers and became effective on September 8, 2020.

74 https://www.itu.int/dms_pub/itu-d/opb/pref/D-PREF-EF.ONA-2016-PDF-E.pdf

Initially, it was expected that roaming surcharges would be eliminated from 01 January 2021. However, this was delayed until November 2021, when telecommunications regulators of the CEMAC Countries concluded bilateral agreements for the elimination of roaming charges across their countries. The agreements also provide for the national rates for voice, SMS, and data across the CEMAC community.

BROADER POLICIES BY THE AFRICAN UNION

62. In 2011, the African Union undertook a pre-feasibility study for a programme to establish affordable roaming rates in Africa, which identified a number of issues with international roaming in Africa, including a lack of transparency on retail pricing, bill shock, a lack of alternatives to international roaming, and a need to address high retail prices.75

63. Following engagements between member states in Nairobi in 2013, the AU released a set of guidelines for international mobile roaming urging local regulators to undertake the following:

    63.1 To increase price transparency for consumers by having a dedicated page on their website for the provision of retail international mobile roaming-related information for consumers, including a simple (yet effective) description of international roaming services, a notification that roaming charges may apply for the use of mobile services while travelling internationally, advisement to consumers to obtain information from their mobile operators on the applicable roaming charges or any special promotions are plans that are available, provide links to individual operators' webpages containing dedicated international mobile roaming related information, and information on alternatives services to international mobile roaming.

    63.2 Address mobile bill shock by engaging with MNOs to adopt the following minimum measures:

    63.3 Allowing postpaid and prepaid customers to opt-out of services while roaming

    63.4 Allowing postpaid users to implement a pre-determined spending limit

    63.5 Send notifications to postpaid consumers when their spending limit is being reached.

    63.6 To investigate the feasibility of introducing alternatives and substitutes to international roaming, examining if there are any regulatory or market barriers hindering the introduction of these alternatives and substitutes and how these barriers may be removed, and educating consumers on the available alternatives and substitutes.

    63.7 Explore the feasibility and appropriateness of regional arrangements to address high international roaming prices by conducting detailed and robust analyses of pricing and levels of competition, engaging with stakeholders when commencing price regulation discussions, gathering detailed pricing and market data to conduct quantitative impact assessments on consumers, considering the overall impact of price regulation on the mobile industry, assessing the feasibility and impact of different forms of price regulation, and show that the benefits of price regulation outweigh its costs and that price regulation is a proportionate and reasonable response.

EUROPEAN UNION "ROAM LIKE AT HOME" REGULATIONS

64. October 2015 saw the adoption of Regulation 2015/2120 by the European Parliament and Council, which instituted the road to the abolishment of retail roaming surcharges by 15 June 2017 – the so-called "Roam like At Home" ("RLAH") regulations.76 The road leading to this development in Europe has been paved by a number of smaller intermediate regulatory steps:77

    64.1 In 2007, the European Parliament introduced regulations instituting a price cap on both wholesale and retail outgoing roaming voice services and requiring

75 African Union International Roaming Guides 2013 updated in June 2014

76 European Commission (2016) 'Report from the Commission to the European Parliament and Council on the review of the wholesale roaming market'. Commission Staff Working Document, COM(2016) 398, 15 June 2016, Brussels. Available at: https://ec.europa.eu/transparency/regdoc/rep/1/2016/EN/1-2016-398-EN-F1-1.PDF [Last accessed on 26 October 2016]

77 Ibid., p. 19-21

service providers to send a free-of-charge SMS notification to retail customers regarding retail roaming charges.

64.2 In 2009, the European Parliament introduced regulations lowering the price cap on wholesale and retail outgoing roaming voice services, applying a price cap on wholesale and retail outgoing roaming SMS, applying a price cap on wholesale data roaming, and applying a maximum bill threshold for retail data roaming.

64.3 In 2012, the European Parliament introduced regulations which lowered the price cap on wholesale and retail outgoing roaming voice services, wholesale and retail outgoing roaming SMS, and wholesale data roaming. A price cap was introduced for retail data roaming, the maximum bill threshold which had been in place for retail data roaming was then applied to roaming outside of the European Economic Area (EEA).

64.4 In 2016, the European Parliament introduced regulations implementing a RLAH+ pricing formula for retail outgoing roaming voice services, retail outgoing roaming SMS, and retail data roaming. The formula consists of the domestic price plus the wholesale cap set in the 2012 regulations. Furthermore, the tariff on an incoming call to the roaming customer was capped at the weighted average of the highest mobile termination rates across all European Union members.

64.5 The main aim of the sliding scale in regulation was to abolish retail roaming surcharges over domestic service charges subject to fair usage and sustainability. Given that there are a number of roaming-specific costs incurred in the provision of roaming services, achieving RLAH retail roaming charges in a sustainable manner requires wholesale roaming charges to be managed in such a way as to cover these costs. Thus, wholesale roaming price caps have also been implemented in the regulations. To assist in reaching the goal of RLAH by June 2017, an assessment of the costs of providing wholesale roaming services in the EU was conducted in 2016. The assessment found that wholesale roaming costs are appreciably above costs.78 However, it is important to note that the specific aim of the regulations was to eliminate the surplus on roaming services over domestic services. The cost element is considered only to verify the sustainability of the proposed decrease in roaming charges.

64.6 On 15 June 2017, all surcharges were abolished on mobile voice and data services for consumers using networks in all foreign countries in the European Economic Area.79

Table 46: Retail price ceiling and glide path formulae

Effective date	Price determination
2014	ROAM
1 October 2015	RLAH + (ROAM – RLAH) * 0.67
1 October 2016	RLAH + (ROAM – RLAH) * 0.33
1 October 2017	RLAH * 1.05
1 October 2018	COST + (RLAH – COST) * 0.67
1 October 2019	COST + (RLAH – COST) * 0.33
1 October 2020	COST * 1.05

Source: Nsomba, G. The regulation of interconnection and regulatory alignment in the Southern African Development Community

65. It is important to note that the intention of these regulations is for wholesale roaming tariffs to be cost-based prior to the regulation of retail roaming tariffs on the basis of COST. The retail roaming tariffs that were intended to be implemented on 1 October 2017 would reflect a 5% premium on home country retail tariffs. As a retail price based on headline rates that do not factor in promotional or bundled offers that incorporates a retail level margin, the RLAH portion is likely to be substantially greater than COST.

78 Ibid. p. 107

79 Martin Quinn, Miguel Godinho de Matos, Christian Peukert (2022) The Welfare Effects of Mobile Internet Access – Evidence from Roam-Like-at-Home. CESifo Working Paper, No. 9612, Center for Economic Studies and ifo Institute (CESifo), Munich. Available at: https://www.cesifo.org/DocDL/cesifo1_wp9612.pdf [Last accessed on 10 August 2022]

The retail roaming tariffs that were scheduled to be implemented on 1 October 2018 allow MNOs to still earn a portion of this difference (67%) once COST-based pricing is introduced into the formula with the glide-path reducing this premium to zero by 1 October 2020.

66. In October 2015, Botswana, Namibia, Zambia and Zimbabwe adopted the principle and more recently Lesotho, Mozambique and Swaziland have also begun implementing the glide-path. South Africa has not yet initiated the implementation of the glide path, but ICASA promulgated regulations in April 2016 to increase transparency for roaming customers. Specifically, the regulations require that MNOs inform customers once they have begun roaming of the relevant charges applicable, the local MNOs available for roaming, opt-in/opt-out functionality, and regular usage update.

67. Recent research has found that despite the directives from the SADC Secretariat and Communicators Regulator' Association of Southern Africa (CRASA), approaches to the regulation, costing and pricing of international mobile roaming in the region continue to vary across member states.[80] Specifically, only 7 of the 16 member states regulate wholesale or retail international roaming prices. Data collection efforts are similarly varied; while all regulators collect voice and SMS tariff data, only 7 gather data on inter-operator tariffs (IOTs) at the wholesale level. [81] As IOTs are a key variable in the glide path formulas, understanding their level will help effective price regulation.[82]

80 Nsomba, G (2021) The regulation of interconnection and regulatory alignment in the Southern African Development Community. WIDER Working Paper 2021/126. Available at: https://sa-tied.wider.unu.edu/article/regulation-interconnection-and-regulatory-alignment-southern-african-development-community [Last accessed on 14 January 2021]

81 Nsomba, G (2021) The regulation of interconnection and regulatory alignment in the Southern African Development Community. WIDER Working Paper 2021/126. Available at: https://sa-tied.wider.unu.edu/article/regulation-interconnection-and-regulatory-alignment-southern-african-development-community [Last accessed on 14 January 2021]

82 Nsomba, G (2021) The regulation of interconnection and regulatory alignment in the Southern African Development Community. WIDER Working Paper 2021/126. Available at: https://sa-tied.wider.unu.edu/article/regulation-interconnection-and-regulatory-alignment-southern-african-development-community [Last accessed on 14 January 2021]

INTERNATIONAL ROAMING COSTS

METHODOLOGY FOR THE ANALYSIS OF INTERNATIONAL ROAMING COSTS

68. The dataset used for the analysis was procured from Tarifica, a global provider of telecoms pricing, plan, and device data. For all 54 African countries, Tarifica collected publicly available roaming prices for all MNOs for the month of December 2021. The roaming prices relate to voice, data and SMS roaming which will be analysed in the following sections.

69. These prices were collected in local currencies and converted to South African Rand using the average exchange rate prevailing in December 2021. To assess trends over time, this dataset was merged with an earlier dataset commissioned by the Commission and compiled by Tarifica. The older dataset was merged with December 2021 to create a master data set covering roaming prices in 2014, 2015, 2016 and 2021. As the scope of the old data set was different to the 2021 dataset, several countries are not represented in the old set.

70. The cost of roaming for each of the South African MNOs is assessed concerning voice, SMS, and data. The cost of roaming for voice products is broken down into i) calling from the roaming destination to the home country; ii) calling within the roaming destination; and iii) incoming calls.

71. For purposes of this report, for each service, we examine the following questions that are of importance to South African consumers:

    71.1 How have roaming prices changed over time? Due to data constraints, this analysis will be limited to countries for which the Commission has previously collected data on international roaming prices.[83] This will ensure that 2021 figures are not skewed by roaming agreements for new countries that the MNOs may have entered into between 2016 and 2021.

83 Angola, Botswana, Cameroon, DRC, Egypt, Ethiopia, Gabon, Ghana, Kenya, Mauritius, Mozambique, Namibia, Nigeria, Seychelles, Eswatini, Tanzania, Uganda, Zambia, Zimbabwe.

71.2 Do the customers of the large MNOs, MTN and Vodacom, pay less than those of Cell C and Telkom when roaming? Alternatively, is there a penalty associated with roaming customers who belong to small MNOs? This analysis is limited to South African customers roaming within the SADC region and a selection of African countries participating in the study.

71.3 Does an MNOs presence in the roaming country translate to lower roaming prices for consumers? To what extent does this explain the overall variation in the roaming prices charged by MNOs.

VOICE

72. Mobile phone customers who use voice roaming services when they are abroad typically make calls to their home, within the visited country and receive calls from abroad or within the visited country. As described above, the different calling options have implications on the costs of terminating the call and the price charged to the customer by their MNO.

73. To determine the trend of roaming voice calling rates, a simple average for the following countries was utilised Angola, Botswana, Cameroon, DRC, Egypt, Ethiopia, Eswatini, Gabon, and Ghana. Kenya, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Nigeria, Seychelles, Swaziland, Tanzania, Uganda, Zambia, and Zimbabwe. These countries reflect the most significant trading partners of South Africa, and some are participants in the cross-country roaming study.

PRICE TRENDS

74. The graphs below show how the price of each of these calls changed from 2014 to 2021.

75. As reflected in Figure 65, except for Cell C, there has been a general decline in the average price of a call to South Africa from selected African countries. The average fell from R 31.98 per minute in 2014 to R 18.81 in 2021, which is a 41% drop. Telkom witnessed a significant price drop from R 57.82 per minute to R 18.92 per minute in 2021. Telkom was a significant outlier in 2014 and this decline has brought it more in line with the other MNOs and thus made it more competitive than Cell C. Of the MNOs whose prices declined, Vodacom had the smallest decrease going from R 17.11 to R 14.71. Vodacom was already the cheapest of the four MNOs and the smaller decline may reflect that it had less space to reduce prices than the others. However, this cannot be concluded absent an assessment of costs and the extent to which Vodacom's (and indeed the other's MNOs) prices are at the competitive level. It is interesting to note that while Vodacom and MTN seem to have an advantage, which may be explained by the size of South Africa and their continental presence. Vodacom and MTN respectively have the lowest and second lowest prices. In 2014, MTN was the second most expensive. However, on average, MTN is only marginally cheaper than Telkom, which suggests that there may be other drivers of its price for calling to South Africa.

76. As with calling to South Africa (home country) when roaming, there has also been a general decline in the average price of calling within the roaming country. For all MNOs, the price of calling within the roaming country is cheaper than for calling to South Africa. Interestingly, there is also less spread in the price of calling within the roaming country than in that of calling to South Africa. In 2014, Cell C's price for a call within the roaming country was the cheapest of all the MNOs at R 9.80 followed by Vodacom at R 10.18. This is surprising given that Cell C is a small network and didn't enjoy the scale that MTN and Vodacom do. However, from 2014 to 2021, Cell C and Telkom's average prices increased, while Vodacom and MTN's declined. This may indicate a competitive response from Vodacom and MTN to meet Cell C's price or changes in market conditions that they face.

77. The average price of receiving an incoming call fell overall and for all networks apart from Cell C. In 2014, the average price of an incoming call was R 10.76 and declined to R 5.73 in 2021. The change in the relative positions of the MNOs over the period is notable. In 2014, Cell C was the cheapest (R7.23), yet in 2021 it was the most expensive (R 10.88). Telkom was the most expensive in 2014 (R 15.34) and became the cheapest in 2021 (R 1.94). Vodacom and MTN switched from 2nd and 3rd respectively in 2014 to being 3rd and 2nd. The ranks would suggest that their scale

and continental presence do not grant MTN and Vodacom an insuperable advantage in terms of the price of roaming. Further, as a smaller MNO, Telkom also has less bargaining power with MNOs in roaming countries since it necessarily has less traffic. Therefore, Telkom's relative position may be explained by factors that are specific to its roaming agreements with MNOs in roaming countries.

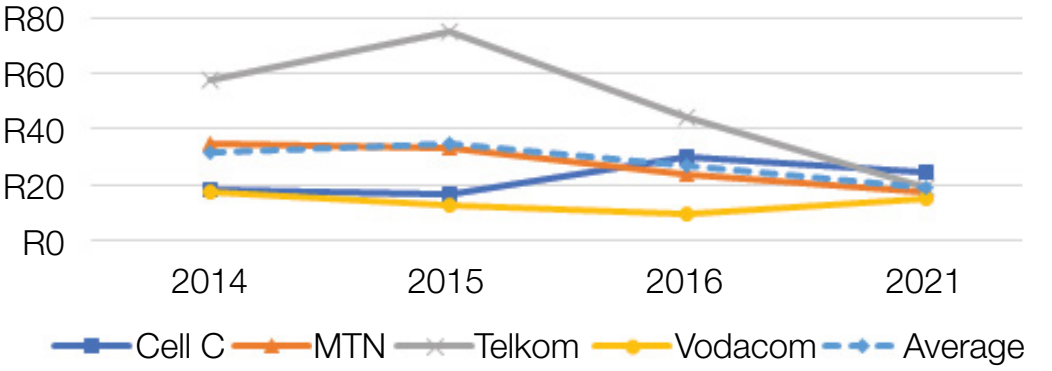
AVERAGE ROAMING PRICES AND PRICE DISTRIBUTION BY MNO

78. On average, South Africans pay R 28.02 per minute when calling South Africa (home country) from another African country. Vodacom and Cell C clients pay the most on average followed by Telkom and MTN respectively. An international call to South Africa from a sample of countries in Africa[84] costs, on average, R6.86 per minute. For the same sample of countries, the average roaming tariff for a call back home to South Africa is R26.15 per minute. Thus, the surcharge on the cost of calling back to South Africa using roaming as compared to using a local SIM in the destination country to call South Africa is estimated to be a factor of 3.81.

79. With respect to calling within the visiting country, South Africans pay R11.62 on average. For a sample of African countries for which local voice tariffs were available,[85]

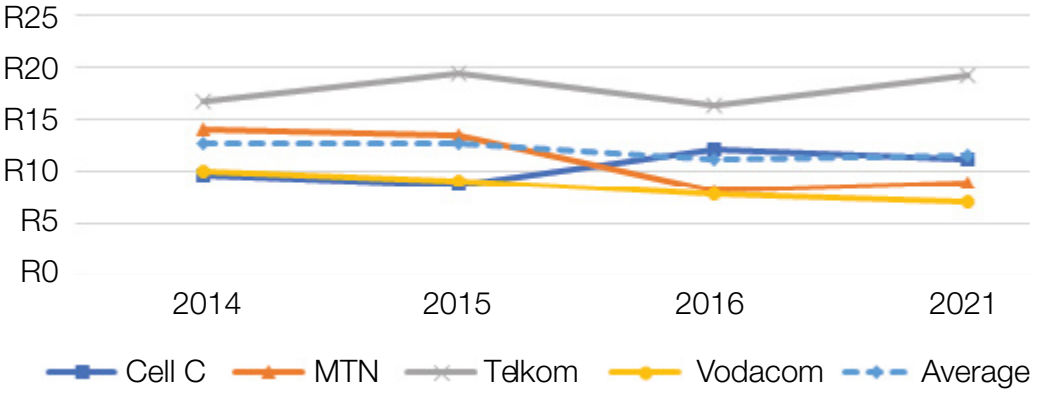
84 International long-distance tariffs for calls to South Africa were available for MNOs in Algeria, Angola, Benin, Burkina Faso, Burundi, Cape Verda, Chad, Democratic Republic of the Congo, Egypt, Ethiopia, Gabon, Ghana, Cote D'Ivoire, Kenya, Lesotho, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome & Principe, Senegal, Seychelles, Sierra Leone, Eswatini, Tanzania, Togo, Tunisia, Uganda, Zambia, and Zimbabwe. As such, the comparison of roaming calls made back to South Africa relative to international long-distance calls to South Africa was conducted for this sample of countries.
85 Local postpaid tariffs were available for Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Central African Republic, Chad, Egypt, Equatorial Guinea, Ethiopia,

Figure 65: Average price of calling to South Africa for a selection of African countries from 2014 to 2021



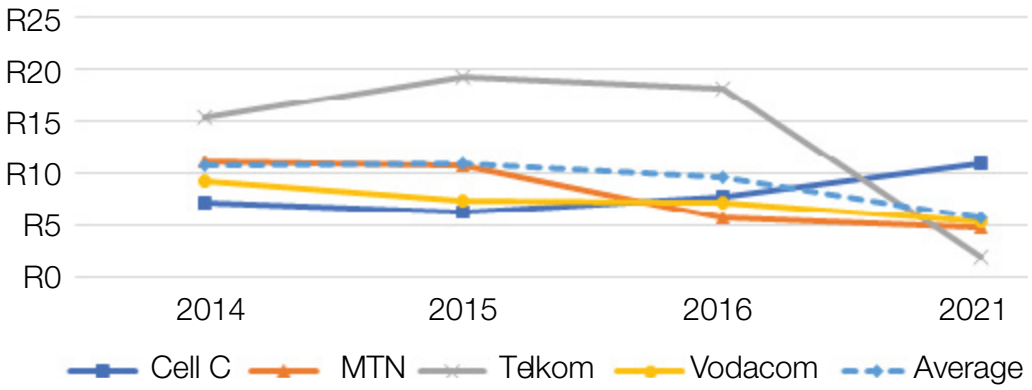
Source: Commission rendition using data from Tarifica.

Figure 66: Average price of calling within the roaming country for a selection of African countries from 2014 to 2021



Source: Commission rendition using data from Tarifica.

Figure 67: Average price of receiving an incoming call in a selection of African countries from 2014 to 2021



Source: Commission rendition using data from Tarifica.

roaming tariffs for local calls are 21 times the cost of making a local call using a local SIM. In this instance, Telkom clients pay the most on average followed by Cell C, MTN, and Vodacom respectively. Lastly, for incoming calls, South Africans pay R6.35 on average. Cell C customers pay the most followed by MTN, Vodacom and Telkom respectively.

Table 46: Average price of voice roaming per call type for each MNO

	Average of Calling to South African per minute (Rank)	Average of Calling Price within the Visited Country per minute	Average of an Incoming Call per minute
MTN	R 19.05 (1)	R 8.92 (2)	R 5.82 (3)
Vodacom	R 35.65 (4)	R 7.26 (1)	R 5.72 (2)
Cell C	R 34.86 (3)	R 11.79 (3)	R 12.87 (4)
Telkom	R 22.52 (2)	R 18.53 (4)	R 1.00 (1)
Average	R 28.02	R 11.62	R 6.35

Source: Commission Analysis using data provided by Tarifica I Notes: Averages are a simple average across all countries for which price data was available for each respective MNO. Rank is 1 is the lowest and 4 highest.

Gabon, Gambia, Ghana, Guinea, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Sao Tome & Principe, Senegal, Seychelles, Sierra Leone, Sudan, Eswatini, Tanzania, Togo, Tunisia, Uganda, Zambia, and Zimbabwe

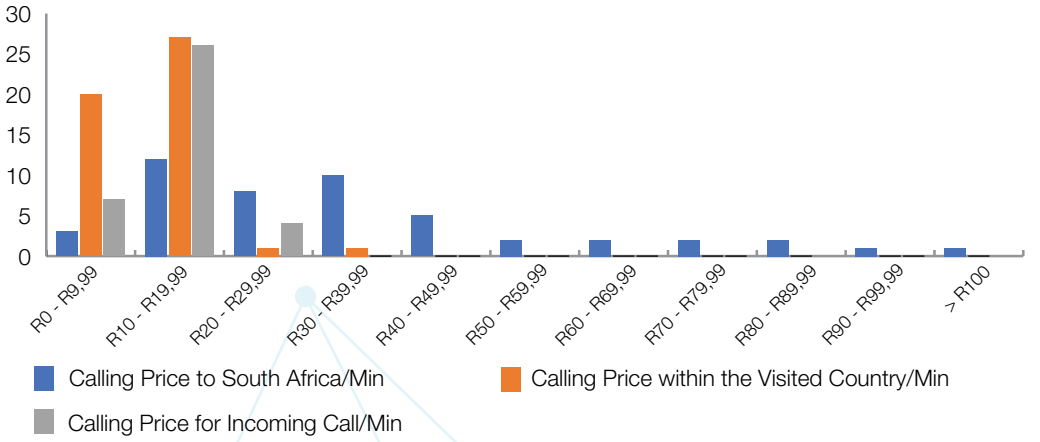
80. Cell C's voice roaming prices are more spread out for placing a call to South Africa while those for placing a call within the visited countries and an incoming call are more clustered. In none of the countries where Cell C customers can roam does the price of placing a call within the country exceed R 39.99. Similarly, there isn't a country where an incoming call costs customers more than R 29.99.

81. MTN's voice roaming prices are generally clustered in the R 0.00 – R9.99 range for all types of calls. There aren't any countries where MTN customers pay more than R19.99 for an incoming call and there aren't anywhere they pay more than R 29.99 for a call within the visited country. Egypt, where placing a call to South Africa costs customers R 100.00 is a significant outlier.

82. Telkom is interesting to note as it does not charge customers for receiving an incoming call in most countries. Where it does, the charge is below R 9.99. However, the other prices are generally more spread out up to R 59.99. There are four outliers where calling South Africa costs customers more than R 100.00 (Cape Verde, Burundi, Senegal, and Morocco). Burundi is the only country where Telkom customers pay more than R 59.99 per minute (R 100.00) to call within the country.

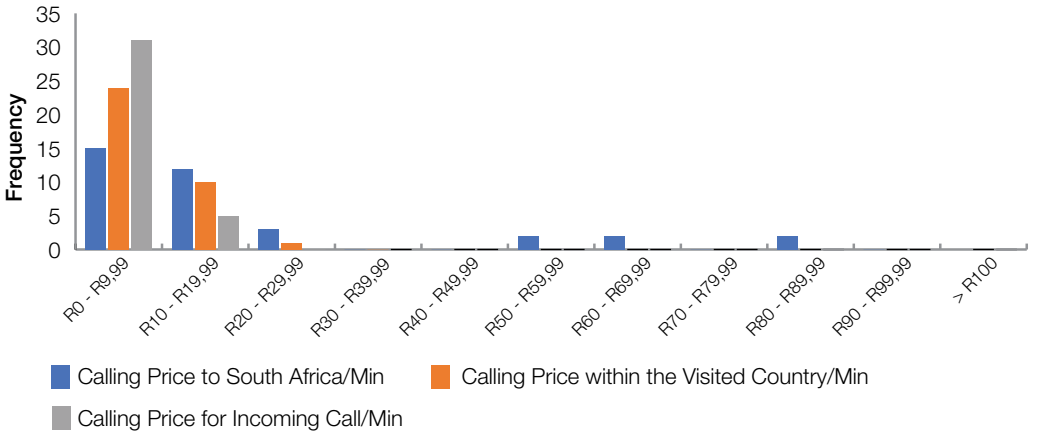
83. It is interesting to note that all calls with the visited country and all incoming calls for Vodacom cost between R 0.00 and R9.99. However, the spread for placing a call to South Africa is significantly wide, which is driven by five countries that are outliers: Morocco, Ethiopia, Guinea-Bissau, Gambia, and Senegal.

Figure 68: Distribution of Cell C call prices



Source: Commission rendition using data from Tarifica

Figure 69: Distribution of MTN call prices



Source: Commission rendition using data from Tarifica

84. Regardless of which one of the voice prices is considered, the distribution of prices across the MNOs is similar. Only Cell C's prices for calling to South Africa are smooth across the distribution, but the majority are nonetheless clustered at the lower end. This suggests that most countries are clustered at the lower end of the spectrum with a few outliers at the higher end of the spectrum. Therefore, there may be some countries that are systematically more expensive than others regardless of the MNO that a customer uses.

85. For most of the countries in the sample, the lowest roaming prices available are offered by either Vodacom or MTN.

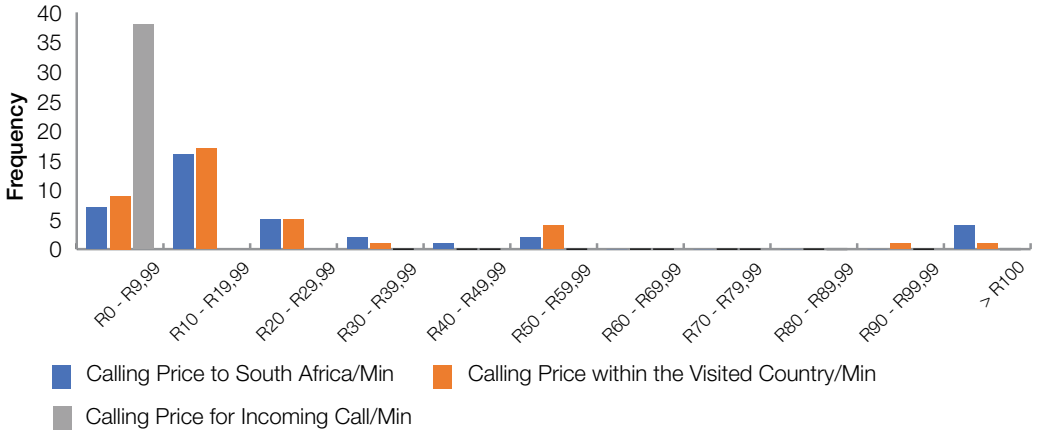
85.1 Vodacom offers the lowest price for calls back home in Algeria, Cape Verde, the DRC, Egypt, Equatorial Guinea, Ghana, Kenya, Lesotho, Libya, Mali, Mauritania, Mauritius, Mozambique, Namibia, the Seychelles, Sierra Leone, Sudan, Tanzania, Togo, Tunisia, Uganda, and Zimbabwe. MTN offers the lowest price for calls back home in Angola, Benin, Botswana, Cameroon, Congo, Cote D'Ivoire, Eswatini, Guinea-Bissau, Liberia, Madagascar, Morocco, Nigeria, Senegal, South Sudan, and Zambia. Telkom offers the lowest price for calls back home from Chad, Ethiopia, Gabon, the Gambia, Guinea, Malawi, Niger, and Rwanda. Cell C only offers the lowest price for calls back home in the Central African Republic. In many countries in the sample, the price for calls back home for subscribers on MTN and Vodacom tend to be closer to one another at the low end with much higher prices for Telkom and Cell C subscribers, such as in Angola, Benin, Burundi, Kenya, Lesotho, Madagascar, Mauritius, Mozambique, and Zimbabwe. However, in some other countries, the least expensive MNO for calls back home is unmatched by a significant degree by the other MNOs prices, such as in Algeria, Ethiopia, the Gambia, Guinea-Bissau, Morocco, Senegal, the Seychelles, Sierra Leone, Tanzania, Tunisia, Uganda, and Zambia. An overview of the MNO variation in roaming prices for calls back home by country is graphically presented in Figure 12 below.

85.2 Vodacom offers the lowest price for local calls while roaming in Algeria, Angola, Burkina Faso, the Central African Republic, the DRC, Djibouti, Egypt, Equatorial Guinea, Ethiopia, the Gambia, Ghana, Guinea, Kenya, Lesotho, Libya, Madagascar, Mali, Mauritania, Mauritius, Morocco, Mozambique, the Seychelles, Sierra Leone, Sudan, Tanzania, Togo, Tunisia, and Zimbabwe. MTN offers the lowest price for local calls while roaming in Benin, Botswana, Burundi, Cameroon, Congo, Cote D'Ivoire, Guinea-Bissau, Nigeria, Rwanda,

Senegal, South Sudan, Uganda, and Zambia. Telkom offers the lowest price for local calls while roaming in Cape Verde, Chad, Gabon, Malawi, and Niger. The countries where MTN and Vodacom tend to offer closely related lower prices for local calls while roaming compared to Telkom and Cell C include Cote D'Ivoire, Eswatini, Ghana, Guinea-Bissau, Kenya, Mauritius, Mozambique, Namibia, Senegal, South Sudan, and Zambia. The countries in which the least expensive MNO for local roaming calls is unmatched by a significant degree by the other MNOs prices include Benin, Cameroon, Chad, the DRC, Egypt, Ethiopia, the Gambia, Guinea, Lesotho, Mali, Morocco, Nigeria, Rwanda, Tanzania, Tunisia, and Zimbabwe. An overview of the MNO variation in roaming prices for local calls by country is graphically presented in Figure 72 below.

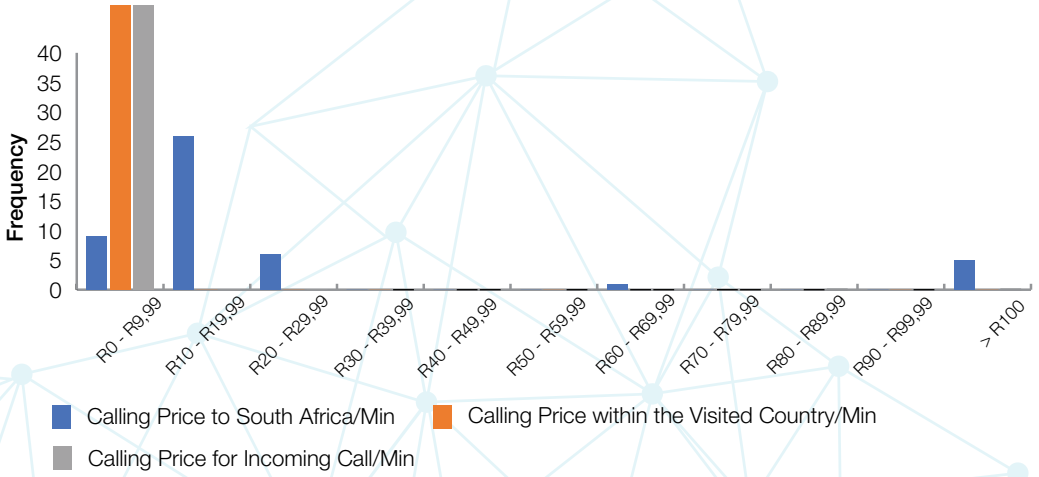
85.3 Vodacom offers the lowest price for calls received while roaming in Algeria, Djibouti, Kenya, Libya, Madagascar, Mauritania, and Sudan. MTN offers the lowest price for calls received while roaming in Angola, Congo, Guinea-Bissau, and Mauritius. Telkom offers the lowest price for calls received while roaming in Uganda and zero-rated prices are levied in Benin, Burundi, Cameroon, Cape Verde, Chad, Cote D'Ivoire, the DRC, Egypt, Eswatini, Ethiopia, Gabon, the Gambia, Ghana, Guinea, Lesotho, Liberia, Malawi, Mali, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, the Seychelles, Sierra Leone, South Sudan, Tunisia, Zambia, and Zimbabwe. An overview of the MNO variation in roaming prices for calls received by country is graphically presented in Figure 72 below.

Figure 70: Distribution of Telkom call prices



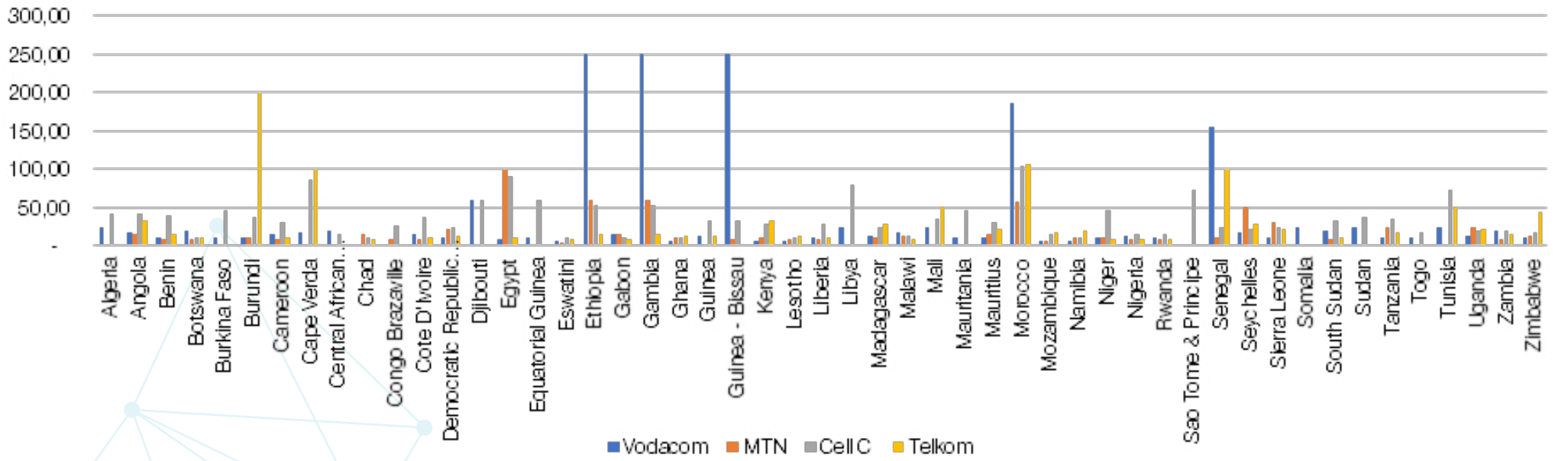
Source: Commission rendition using data from Tarifica

Figure 71: Distribution of Vodacom call prices



Source: Commission rendition using data from Tarifica

Figure 72: Roaming prices for calls back home by visited country and home country MNO



86. The analysis that follows compares the roaming prices of the MNOs within SADC compared to the rest of Africa to assess whether geography may explain price differences. This comparison is particularly pertinent in light of SADC's ongoing attempts at harmonizing roaming prices across the member states. We also compare the roaming prices of MTN and Vodacom in countries where they have subsidiaries to assess whether the prices paid by their customer in these countries are lower than those paid by Cell C and Telkom.

COMPARISON BETWEEN SADC AND NON-SADC COUNTRIES

87. The figures below show the average prices per call for each MNO for SADC and non-SADC countries. For calls back to South Africa and making callings with the roaming country, the general pattern is that it is cheaper to roam within SADC than in non-SADC countries. Across all the three prices for calls, the differences between SADC and non-SADC prices tend to be the greatest for calls back to South Africa. Vodacom has the biggest difference (R 21.34) followed by Telkom (R 16.43). MTN has the smallest difference of R 4.31.

88. With respect to calls within the roaming country, Telkom's gap is worth noting. On average, Telkom customers roaming in SADC pay R 2.19 per minute within the roaming country compared to R 20.68 when they are in a non-SADC country, a difference of R 18.49. Telkom charges the lowest for within country calls in SADC and the highest for within country calls outside of SADC. MTN and Vodacom's prices are fairly close to one another, though MTN has the largest gap (R3.63) of the two large MNO for SADC and non-SADC calls.

Figure 73: Roaming prices for local calls by visited country and home country MNO

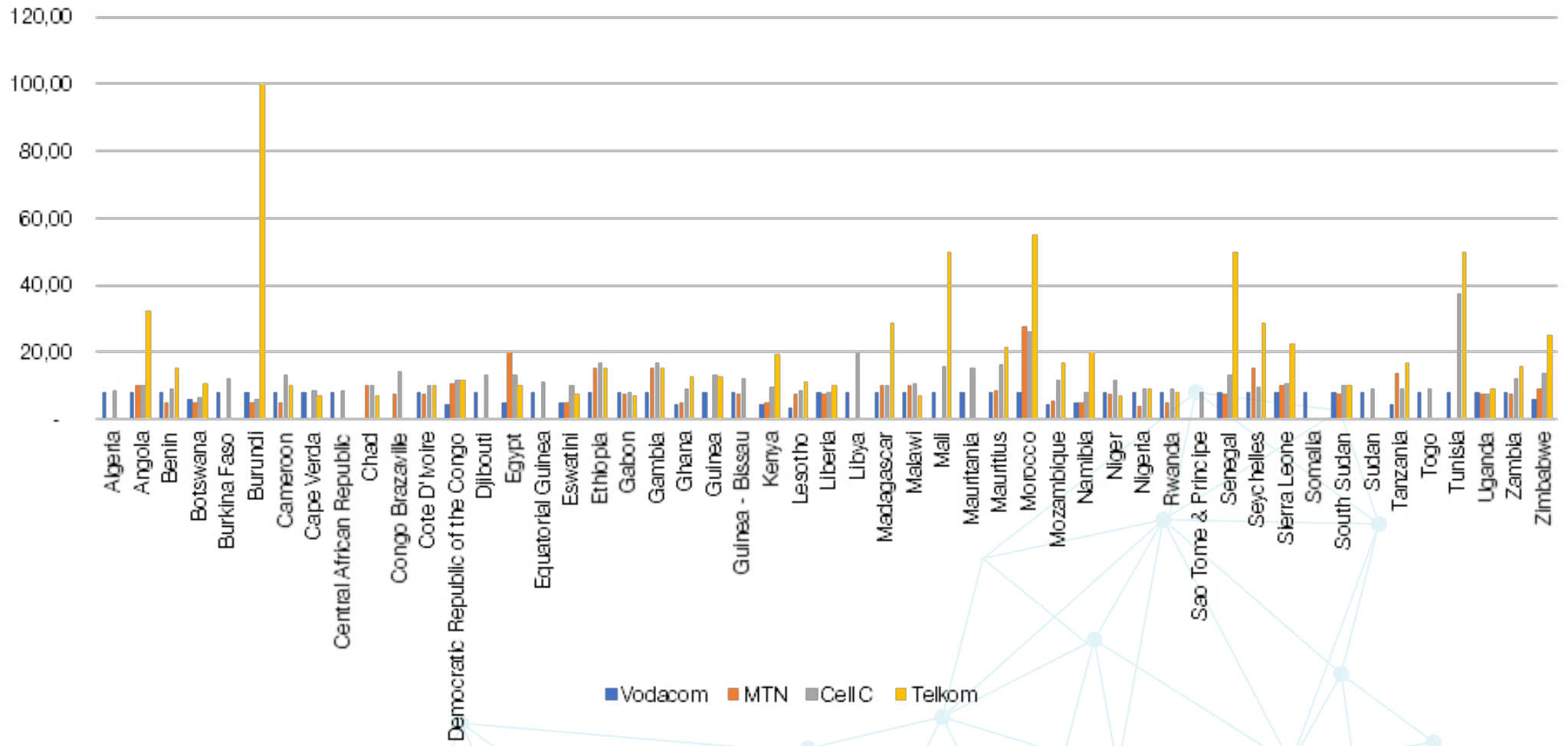


Figure 74: Roaming prices for calls received by visited country and home country MNO

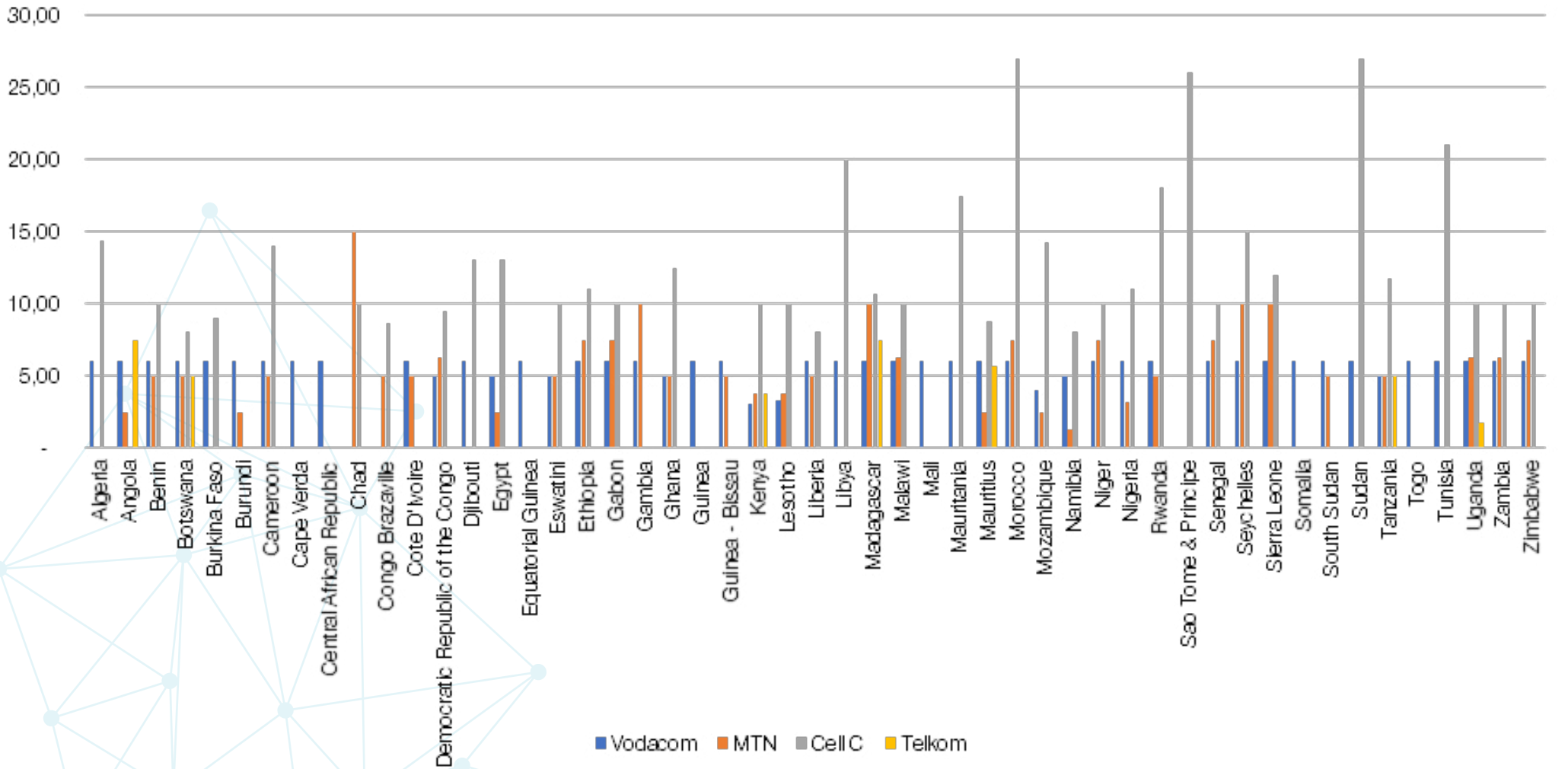
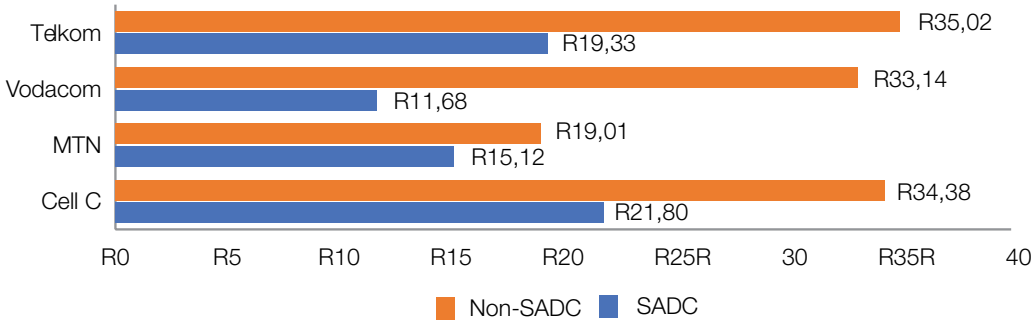
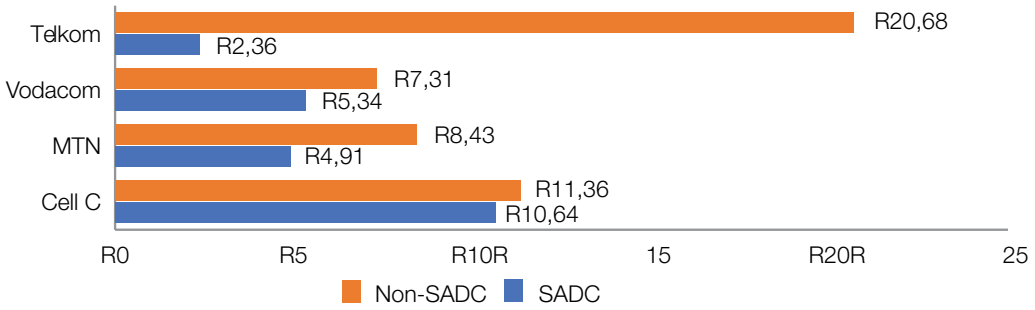


Figure 75: Comparison of SADC and non-SADC prices for calling to South Africa by MNO



Source: Commission rendition using Tarifica data. Notes: SADC includes all SADC member states excluding Comoros as data was not available.

Figure 76: Comparison of SADC and non-SADC prices for calling within the visited country by MNO



Source: Commission rendition using Tarifica data. Notes: SADC includes all SADC member states excluding the Comoros as data was not available

89. However, this pattern switches when considering the price of receiving an incoming call when roaming. Apart from Cell C, it is cheaper to receive a call in a non-SADC country than it is within a SADC country. Telkom's differential once again stands out. Whereas Telkom the average price that Telkom charges within SADC is R 17.21, it is R 0.50 in non-SADC countries; a difference of R 16.71. Vodacom and MTN once more have average prices that are close to one another. For MTN customers, incoming calls in non-SADC countries are R 3.61 on average than in SADC countries compared to R 0.56 for Vodacom.

90. At present, ten member states of SADC have partially implemented price reductions as part of the second phase of the project, including Botswana, Eswatini, Malawi, Mauritius, Mozambique, Namibia, Tanzania, Zambia, Zimbabwe, and South Africa.[86] This difference in the progress of controlling high prices for roaming in the region amongst member states is reflected in the price outcomes observed as demonstrated in the table below.

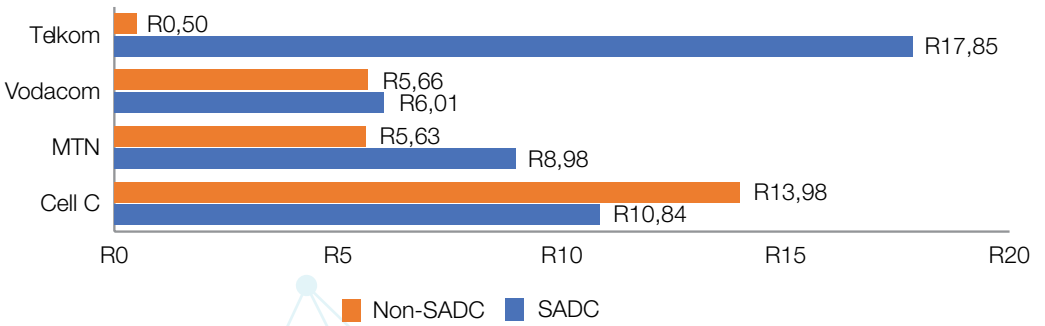
Table 47: Average roaming prices for voice calls disaggregated by SADC membership and by implementation of phase 2 of the SADC roaming agreement

	SADC (with price reductions)	SADC (no price reductions)	Non-SADC
Home country	Visited country		
Call back home			
SADC (with price reductions)	16.65	22.58	31.84
SADC (no price reductions)	393.87	535.78	487.91
Non-SADC	No data	104.21	94.63
Local call			
SADC (with price reductions)	9.03	10.29	14.07
SADC (no price reductions)	16.81	23.07	21.09
Non-SADC	No data	36.69	34.47
Call received			
SADC (with price reductions)	6.70	8.43	9.65
SADC (no price reductions)	11.37	13.77	13.88
Non-SADC	No data	18.24	15.79

91. The average roaming price for each type of voice service is lower between countries in the SADC region that have both implemented the initial price reductions of phase of the SADC roaming policy as compared to the average roaming price where one of the partner countries has not implemented the price reductions. Interestingly,

*86 SADC (2020). **SADC Regional Indicative Strategic Development Plan (RISDP) 2020–2030**. October 2020. Available at: https://www.sadc.int/sites/default/files/2021-08/RISDP_2020-2030.pdf [Last accessed on 18 August 2022]*

Figure 77: Comparison of SADC and non-SADC prices for incoming calls by MNO



Source: Commission rendition using Tarifca data. Notes: SADC includes all SADC member states excluding the Comoros as data was not available.

membership of SADC does not necessarily entail a lower average roaming price if the price reductions have not been implemented. The average roaming price for a call back home for customers from a SADC country not implementing the price reductions and roaming in a SADC country that is also not implementing the price reductions is higher than the average roaming price for a call back home when visiting a country that does not belong to SADC at all. A similar observation is apparent for local calls within the visited country.

TAXATION

92. Revenue needs have driven some governments to tax incoming international calls using a Surcharge on International Incoming Traffic (SIIT). As this is a tax on the consumption of goods, it can be considered an excise tax. From a fiscal perspective, an excise tax may be an attractive tool for governments where the administrative capacity for dealing with spectrum fees, rent taxes and corporate income taxes is weak. Further, capital intensive sectors often lag in generating taxable revenues due to up-front deductions for depreciation expenses. Therefore, excise taxes for telecoms may ensure that government receives up-front revenue from the sector.

93. It is common cause that taxing one good and not others raise its relative price which may result in a reduction of its consumption. The consumption reduction is a function of the own-price elasticity of the excised good, incoming international calls in this instance. If incoming international calls are highly inelastic, the consumption effect will be muted, and the tax will be more effective for raising revenue. Conversely, if incoming international calls are highly elastic then the consumption effect will be strong, and less revenue will be raised from the tax than what would otherwise have been the case.

94. Previous research by the Groupe Speciale Mobile Association (GSMA) identified at least 16 African countries[87] that imposed an SIIT on their mobile sectors. This study found that, despite being levied at the wholesale level, SIIT increased retail prices to consumers and estimated that this resulted in lower call volumes being placed to these countries. Further, the SIIT may have led to illegal sim boxes being used to terminate international incoming calls as well as general increase prices through operator reciprocating by increasing their charges for terminating calls that originated in SIIT countries. A more recent study identified the following countries that imposed taxes on incoming international calls, Benin, Chad, DRC, Gabon, Ghana, Guinea, Niger, Tanzania. We use this sample from a more recent paper to explore the effects of taxes on retail roaming rates.

95. The table below shows the average price of receiving an international call in the SIIT countries above compared to non-SIIT countries. From this analysis, the average price of an incoming call is cheaper in the SIIT countries for which there is data compared to non-SIIT countries. This suggests that market developments may have undone the findings of earlier research rendering this tax a less important determinant of retail prices. However, the average price of placing calls to home countries from the SIIT country is well above the average of the same call from non-SIIT countries. It is possible that the effect of SIIT has been shifted to calls from the SIIT country back home rather than being carried by the charge for receiving a call.

Table 49: Comparison of call prices for SIIT and non-SIIT countries

SIIT Country	Average of an incoming call to the SIIT country per minute	Average of call back home from the SIIT country
Non-SIIT Country Average	R 12.88	R 47.31

87 Republic of Congo, Gambia, Guinea, Chad, Niger, Malawi, Rwanda, Benin, DRC, Gabon, Ghana, Tanzania, and Uganda

SIIT County Average	R 7.61	R 18.04
Benin	R 2.00	R 9.92
Chad	N/A	N/A
DRC	R 10.27	R 33.26
Gabon	R 2.87	R 5.38
Guinea	R 4.24	R 13.97
Niger	N/A	R 7.43
Tanzania	N/A	R 10.12

Source: Commission analysis using Tarifca data

MULTI-NATIONAL MNOS

96. MTN and Vodacom have, in addition to being the largest MNOs, several subsidiaries in other African countries. This may be an additional source of variation. The respective customers of these MNOs benefit from reduced roaming prices when they are in countries where either Vodacom or MTN has a presence. Specifically, Vodacom Africa roaming offers reduced prices if customers roam on the "the Vodacom Africa Family". These networks include Vodacom Lesotho, Vodacom Mozambique, Vodacom Tanzania, Vodafone Ghana, and Kenya Safaricom. MTN has an even wider presence in Africa and is active in Benin, Botswana, Cameroon, Congo Brazzaville, Cote D'Ivoire, Eswatini, Ghana, Guinea-Bissau, Liberia, Nigeria, Rwanda, South Sudan, Uganda, and Zambia.

97. The table below compares MTN prices for voice roaming in the countries where there is an MTN subsidiary. The results are striking in several respects:

98. The average price of roaming on another MTN network is lower than MTN's roaming average

    98.1 The price of roaming is remarkably uniform across countries being either R 7.50 or R 5.00, this is at the lower end of the spectrum discussed above.

    98.2 Pricing does not appear to be related to geography. For example, Botswana, which borders South Africa has the same prices as Cameroon and Uganda which are significantly further away.

Table 49: Voice roaming prices in countries where MTN has a subsidiary

	Average of Calling Price Per Minute (to home country)	Average of Calling Price Per Minute (within roaming country)	Average of Calling Price Per Minute (incoming calling rate)
MTN Continental Average	R 19.05	R 8.92	R 5.82
MTN - MTN pairs average	R 7.18	R 6.07	R 5.00
Benin	R 7.50	R 5.00	R 5.00
Botswana	R 7.50	R 5.00	R 5.00
Cameroon	R 7.50	R 5.00	R 5.00
Congo Brazzaville	R 7.50	R 7.50	R 5.00
Cote D'Ivoire	R 7.50	R 7.50	R 5.00
Eswatini	R 2.99	R 5.00	R 5.00
Ghana	R 7.50	R 5.00	R 5.00
Guinea – Bissau	R 7.50	R 7.50	R 5.00
Liberia	R 7.50	R 7.50	R 5.00
Nigeria	R 7.50	R 5.00	R 5.00
Rwanda	R 7.50	R 5.00	R 5.00
South Sudan	R 7.50	R 7.50	R 5.00
Uganda	R 7.50	R 5.00	R 5.00
Zambia	R 7.50	R 7.50	R 5.00

Source: Commission analysis using Tarifca data

99. The results for Vodacom in the table below are similarly clear:

    99.1 Customers pay less in countries where they are roaming on the Vodacom Africa Family.

    99.2 Prices are uniform across Vodacom Africa Family networks. The price of calling South Africa is R 5.00, the price of calling within the visited country is

either R 3.95 or R 2.90 and the price of an incoming call is either R 5.00 or R 2.50.

99.3 Prices are agnostic to geography as shown by the identical pricing in Kenya and Lesotho for example.

Table 50: Voice roaming prices in countries where Vodacom has a subsidiary

	Average of Calling Price Per Minute (to home country)	Average of Calling Price Per Minute (within the roaming country)	Average of Calling Price Per Minute (incoming calling rate)
Vodacom Continental Average	R 15.25	R 11.75	R 14.25
Vodacom - Vodacom pairs	R 5.00	R 3.25	R 3.75
Democratic Republic of the Congo	R 5.00	R 3.95	R 5.00
Ghana	R 5.00	R 3.95	R 5.00
Kenya	R 5.00	R 2.90	R 2.50
Lesotho	R 5.00	R 2.90	R 2.50
Mozambique	R 5.00	R 2.90	R 2.50
Tanzania	R 5.00	R 2.90	R 5.00

Source: Commission analysis using Tarifca data

100. The findings above strongly suggest that multi-national MNOs have an incentive to offer better and more uniform prices to their customers. This is not surprising as it is within their interests to keep roaming prices low so as it increases traffic and earnings. However, what isn't as clear cut is how multi-national MNOs can charge the same prices in countries that are different geographically and probably in terms of market conditions. The implication of this homogeneity is that roaming prices are more likely the function of the relationships and bargaining positions of the MNOs party to the roaming agreements than they are of the features of the roaming countries.

SINGLE COUNTRY MNO

101. The table below explores the dynamic in pairs of MNOs that are only present in one country and have roaming agreements with Cell C or Telkom, which are only active in South Africa. The main difference between these and multi-national MNOs is that they have less traffic to send to their roaming partners and maybe in a weaker bargaining position than multi-nationals.

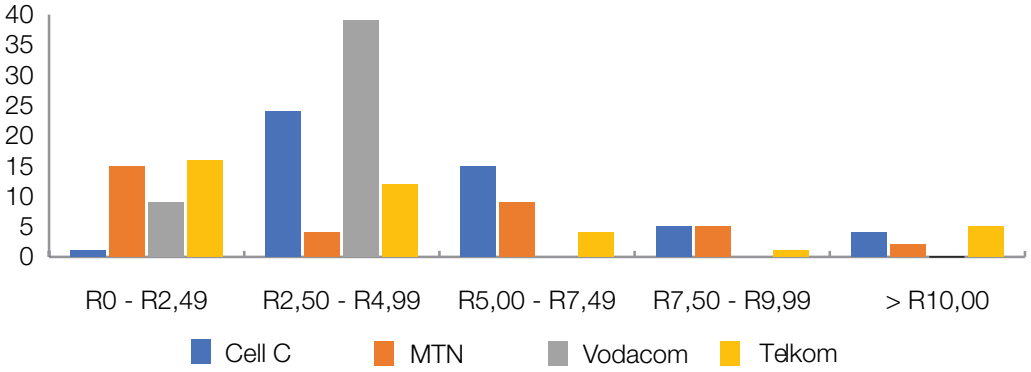
102. As the table shows, Cell C and Telkom customers roaming on these single-country MNOs pay more on average than Vodacom and MTN customers in countries where these MNOs are present. For Cell C, the average calling South Africa is R 40.75. It costs R12.75 on average for calls within the visited country and receiving an incoming call. For Telkom customers, the average price of calling South Africa is R33.00 and calling within the visited country is R32.00. The average price of an incoming call is R3.00, this is driven by Telkom not charging for these calls in most countries, as discussed above.

Table 51: Voice roaming rates of single country MNOs

	Calling price to South Africa Per Minute	Calling Price within the Visited Country Per Minute	Calling Price for Incoming Call Per Minute
Cell C	R40.75	R12.75	R12.75
Btc Mobile (Botswana)	R13.00	R8.00	R8.00
Djibouti Telecom SA	R60.00	R13.00	R13.00
Libyana Libya	R80.00	R20.00	R20.00
Mozambique Movitel	R10.00	R10.00	R10.00
Telkom	R33.00	R32.00	R3.00
Cable & Wireless Seychelles	R50.00	R50.00	R0.00
Ethio Telecoms	R15.00	R15.00	R0.00
Net One (Zimbabwe)	R20.00	R15.00	R0.00
Telma Mobile	R50.00	R50.00	R15.00
Zamtel	R30.00	R30.00	R0.00
Overall Average	R36.44	R23.44	R7.33

Source: Commission analysis using Tarifca data

Figure 78: Distribution of price per SMS of the MNOs



Source: Commission rendition using data from Tarfica.

DATA

103. Data is an increasingly important service for communicating while travelling. It also enables the use of mobile applications when one is not connected to Wi-Fi.

ROAMING SURCHARGES

104. A preliminary comparison of base roaming data prices to local South African data prices reveals that roaming data prices are significantly above the South African local price for procuring mobile data services.

Table 52: Overview of roaming surcharges

Average roaming surcharge	88.9
Highest roaming surcharge	1 333.33
Country	Burundi
MNO	Telkom
Lowest roaming surcharge	0.91
Country	Republic of Congo
MNO	Cell C

Source: Commission analysis using Tarifca data

105. The base roaming mobile data prices do not include roaming add-on packages or flagship plans with roaming. The local price that the base roaming rates are compared to are the MNO's out-of-bundle price for mobile data on prepaid plans. Base roaming rates and prepaid out-of-bundle prices share the characteristic of being the least cost-effective options in their respective contexts. Based on a simple average, roaming data prices in Africa are 88.9 times more expensive than the South African out-of-bundle price for prepaid mobile data. For comparison, the EU roaming regulations were initiated following findings that international roaming prices for roaming calls in Europe were on average four times higher than those of national mobile calls.88

106. The cheapest country for mobile data roaming is the Republic of Congo with an average roaming data surcharge of 5.28 times the local out-of-bundle prepaid mobile data price. The lowest roaming surcharge overall is 0.91 for Cell C customers roaming on Congo Libertas' network in the Republic of Congo – it is cheaper for these customers to use mobile data while roaming than at home in South Africa.

107. The most expensive country is Burundi with an average roaming data surcharge of 499 times the local out-of-bundle prepaid mobile data price. However, these simple

88 Grzybowski, L. and Muñoz-Acevedo, A. (2021) *Impact of Roaming Regulation on Revenues and Prices of Mobile Operators in the EU*. CESifo Working Paper, No. 9235, Center for Economic Studies and ifo Institute (CESifo), Munich. Available at: https://www.cesifo.org/DocDL/cesifo1_wp9235.pdf [Last accessed on 6 April 2022]

averages obfuscate the wide degree of variation between mobile operators. For example, while Burundi has the highest average roaming surcharge in the sample of 482, the lowest roaming surcharge in Burundi is 5.1 for MTN customers roaming on Econet Leo's network and the highest roaming surcharge is 1333.33 for Telkom mobile customers roaming on either Smart or Lumitel's networks (the only available options for Telkom subscribers). Telkom's roaming surcharge in Burundi is the highest surcharge in the dataset.

Table 53: Overview of surcharges by South African MNO

	Vodacom	MTN	Cell C	Telkom
Average surcharge	39.94	6.51	109.72	188.19
Highest surcharge	261.22	51.02	414.55	1 333.33
Country	Djibouti	Mauritius	Burkina Faso	Burundi
Roaming country operator	Djibouti Telecom	MTML	Onatel	Smart
Lowest surcharge	1.00	2.02	0.91	6.67
Country	Botswana	Republic of Congo	Republic of Congo	Angola
Roaming country operator	Mascom	MTN	Congo Libertis	Unitel

Source: Commission analysis using Tarifca data

108. Based on a simple average, MTN has the lowest average surcharge on mobile data roaming amongst South African MNOs. MTN also has the smallest spread in roaming surcharges between its highest surcharge (Mauritius) and lowest surcharge (Republic of Congo) roaming country. However, MTN's roaming customers in Mauritius can achieve lower mobile data surcharges by roaming on the networks of Orange (surcharge of 15.31) or Emtel (surcharge of 7.14) instead of the more expensive MTML. Telkom has the highest average surcharge and the largest spread in surcharge from its highest surcharge (Burundi) and its lowest surcharge (Angola). Vodacom's lowest surcharge is levied on its subscribers roaming in Botswana, who can expect to face the same price for using mobile data in Botswana as in South Africa.

109. Compared to local data tariffs in the visited country for a sample of African countries89, the roaming tariff for data services is on average 142 times the cost of consuming data using a local SIM.

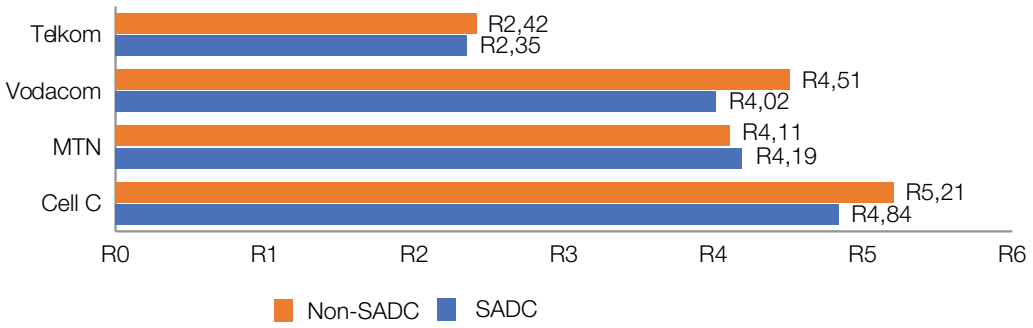
PRICE TRENDS

110. In line with the methodology utilised in the analysis of roaming voice calls, the trend of roaming data costs is based on a simple average for the following countries was utilised Angola, Botswana, Cameroon, DRC, Egypt, Ethiopia, Eswatini, Gabon, Ghana. Kenya, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Nigeria, Seychelles, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe. These countries reflect the most significant trading partners of South Africa and some are participants in the cross country roaming study.

111. From 2014 to 2021, there was a general decline in the roaming price of data per MB across all of the MNOs. On average, roaming data prices fell by R 84. 27 per MB. MTN, Vodacom, and Telkom's prices cuts were the steepest over the period at R144. 60 (97%), R 88.86 (91%), and R 86,66 (70%) respectively. Cell C's price per MB fell by only R 17.00 (14%), significantly less than the others. The fall in MTN's price per MB took it from being the most expensive MNO to being the cheapest. Cell's relatively modest price change resulted in its prices being the most expensive in 2021 whereas it was second to Vodacom in 2014.

89 Local postpaid data tariffs were available for Algeria, Angola, Benin, Burundi, Democratic Republic of the Congo, Egypt, Ethiopia, Gabon, Gambia, Ghana, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Sao Tome & Principe, Seychelles, Tanzania, Zambia, and Zimbabwe

Figure 79: Comparison of SMS prices in SADC and non-SADC countries



Source: Commission rendition using Tarifca data. Notes: SADC includes all SADC member states excluding the Comoros as data was not available.

AVERAGE ROAMING PRICES AND PRICE DISTRIBUTION BY MNO

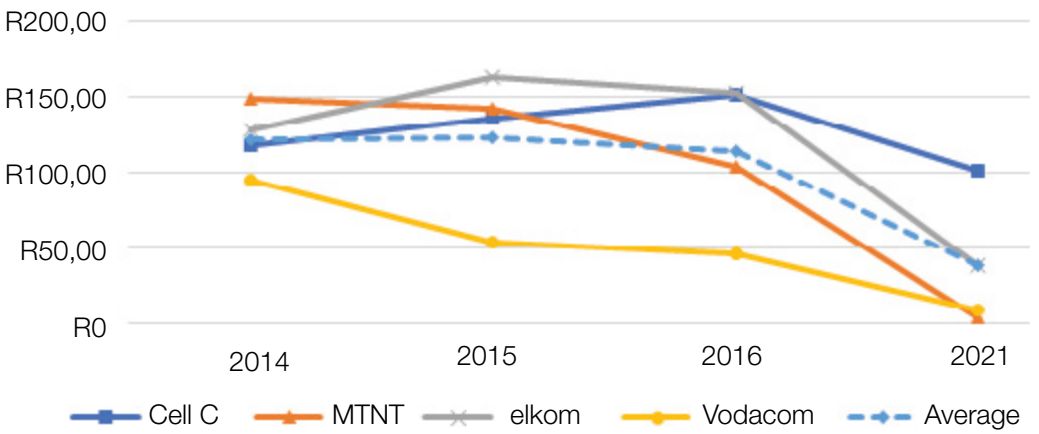
112. The table below presents the average price per MB charged by South African MNOs in all African countries. The average data price for South Africans when roaming in Africa is R 57.76. Of the four MNOs, Cell C's average rate is the highest at R 136.07 per MB and MTN's rate is the lowest at R 2.74. This reflects a wide variation, which may reflect the relative bargaining positions of the MNOs. Within MNOs, Telkom and Cell C have the largest variation in price per MB (R 2.00 – R 400.00 and R 7.00 – R 383.00 respectively) followed by Vodacom (R 0.49 – R 128.00) and MTN (R 0.99 – R 12.00), which has the smallest.

Table 54: Average price of data roaming per MB for each MNO

	Average of Price Per MB	Minimum (Country)	Maximum (Country)
Cell C	R 136.07	R 7.00 (Congo-Brazzaville)	R 383.00 (Egypt)
MTN	R 2.74	R 0.99 (20 Countries[1])	R 12.00 (Mauritius)
Vodacom	R 28.17	R 0.49 (13 Countries[2])	R 128.00 (6 Countries[3])
Telkom	R 64.07	R 2.00 (15 Countries[4])	R 400.00 (Burundi)
Average	R 57.76		

Source: Commission rendition using data from Tarifica. Notes: 1) Guinea-Bissau; Kenya; Benin; Liberia; Cameroon; Madagascar; Cote D'Ivoire; Malawi; Eswatini; Nigeria; Zambia; Rwanda; Congo-Brazzaville; Senegal; Ghana; Seychelles; Egypt; South Sudan; Botswana; Uganda. 2) Liberia; Lesotho; Morocco; Central African Republic; Mozambique; Tanzania; Seychelles; Niger; Eswatini; Rwanda; Sierra Leone; Senegal. 3) Libya; Djibouti; Tunisia; Sudan; Somalia; Gambia. 4) Liberia; Eswatini; Ethiopia; Cameroon; Gabon; Cote D'Ivoire; Ghana; Egypt; Malawi; Chad; Niger South Sudan; Nigeria; DRC; Rwanda

Figure 80: Average data prices across a selection of African countries from 2014 to 2021



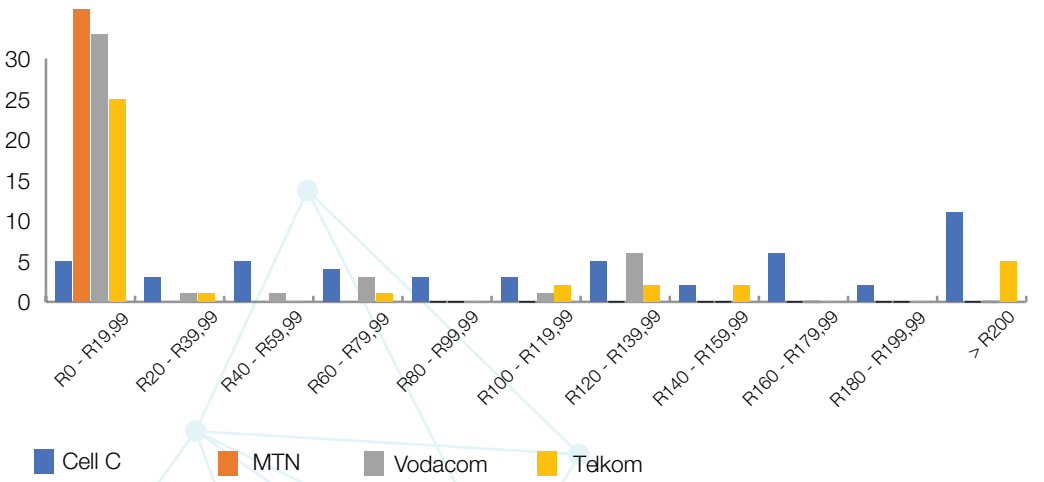
Source: Commission rendition using data from Tarifica.

113. The figure below shows the relative distribution of the roaming data prices charged by each MNO. In most countries, the price per MB is in the R 0.00 – R 19.99 range for MTN (36 countries) Vodacom (33), and Telkom (25). However, Cell C has significantly fewer (5) countries in the range and exhibit a more spread out range. . However, it is striking that there are 11 countries where Cell C customers pay more than R 200.00 per MB, making Cell C's most common price for data.

114. The tables below identify the most expensive country outliers for each MNO, except MTN. Interestingly, one might expect there to be more overlap in the expensive countries for each MNO. This would be the case if the features of the roaming country's mobile market explained most of the price variations. However, Vodacom and Telkom only have one country in common, Tunisia. Telkom and Cell C have all countries except for Burundi and Seychelles in common. Cell C customers pay R 118.33 and R 107.00 in these countries respectively. Lastly, the only countries that Vodacom and Cell C don't have in common are Djibouti, which is among Cell C's cheapest roaming countries (R38.00) and Sudan where Cell C customers pay R 189.00 per MB.

115. Vodacom's prices are mostly in the R 0.00 – R 19.99 range. However, Vodacom's prices reach the R 120.00 – R 139.99 bracket in six countries in the table below:

Figure 81: Distribution of the rate per MB of each MNO



Source: Commission's rendition using data from Tarifca

Table 55: Vodacom's most expensive countries per MB

Country	Price per MB
Libya	R 128.00
Djibouti	R 128.00
Tunisia	R 128.00
Sudan	R 128.00
Somalia	R 128.00
Gambia	R 128.00

Source: Commission analysis using Tarifca data

116. There are 9 countries where Telkom customers pay more than R 1200.00 per MB

Table 56: Telkom's most expensive countries per MB

Country	Price per MB
Madagascar	R 126.00
Seychelles	R 126.00
Morocco	R 151.00
Angola	R 151.00
Mali	R 250.00
Senegal	R 250.00
Tunisia	R 250.00
Cape Verde	R 300.00
Burundi	R 400.00

Source: Commission analysis using Tarifca data

117. Cell C's prices are more evenly spread across the range, however, in 26 countries Cell C customers will pay more than R 200.00 for a MB of data. This is highest of all of the MNOs and partially explains Cell C's high average.

Table 57: Cell C's most expensive countries per MB

Country	Price per MB
Mauritius	R 121.75
Liberia	R 126.00
Algeria	R 130.67
Madagascar	R 134.50
Niger	R 138.33
Cameroon	R 154.50
Guinea	R 157.50
Botswana	R 166.33
Mali	R 171.00
Senegal	R 173.67
South Sudan	R 177.00
Sao Tome & Principe	R 179.00
Gambia	R 179.00
Ethiopia	R 181.00
Sudan	R 189.00
Guinea – Bissau	R 200.00

Country	Price per MB
Tunisia	R 205.00
Burkina Faso	R 242.50
Cote D'Ivoire	R 244.75
Cape Verde	R 255.50
Morocco	R 257.00
Togo	R 272.50
Angola	R 276.00
Libya	R 327.00
Mauritania	R 333.50
Egypt	R 383.00

Source: Commission analysis using Tarifca data

118. For most of the countries in the sample, the lowest roaming prices available are offered by either Vodacom or MTN.

118.1 Vodacom offers the lowest price for mobile data in Algeria, Angola, Burkina Faso, Cape Verde, the Central African Republic, Eswatini, Ghana, Lesotho, Liberia, Libya, Mali, Mauritius, Morocco, Mozambique, Niger, Rwanda, Senegal, the Seychelles, Sierra Leone, Sudan, Tanzania, Togo, Tunisia, and Zimbabwe. MTN offers the lowest price for mobile data in Benin, Botswana, Burundi, Cameroon, Congo, Cote D'Ivoire, the DRC, Egypt, Guinea-Bissau, Kenya, Madagascar, Malawi, Namibia, South Sudan, Uganda, and Zambia. Telkom offers the lowest price for mobile data in Chad, Ethiopia, Gabon, and Guinea. In many countries in the sample, the price sending an SMS for subscribers on MTN and Vodacom tend to be closer to one another at the low end with much higher prices for Telkom and Cell C subscribers, such as in Angola, Botswana, Eswatini, Ghana, Kenya, Liberia, Madagascar, Mauritius, Morocco, Mozambique, Senegal, and the Seychelles. However, in some other countries, the least expensive MNO for SMS is unmatched by a significant degree by the other MNOs prices, such as in Algeria, Cape Verde, Guinea, Guinea-Bissau, Mali, Tanzania, Togo, Tunisia, Uganda, and Zambia. An overview of the MNO variation in roaming prices for calls back home by country is graphically presented in figure 80.

COMPARISON BETWEEN SADC AND NON-SADC COUNTRIES

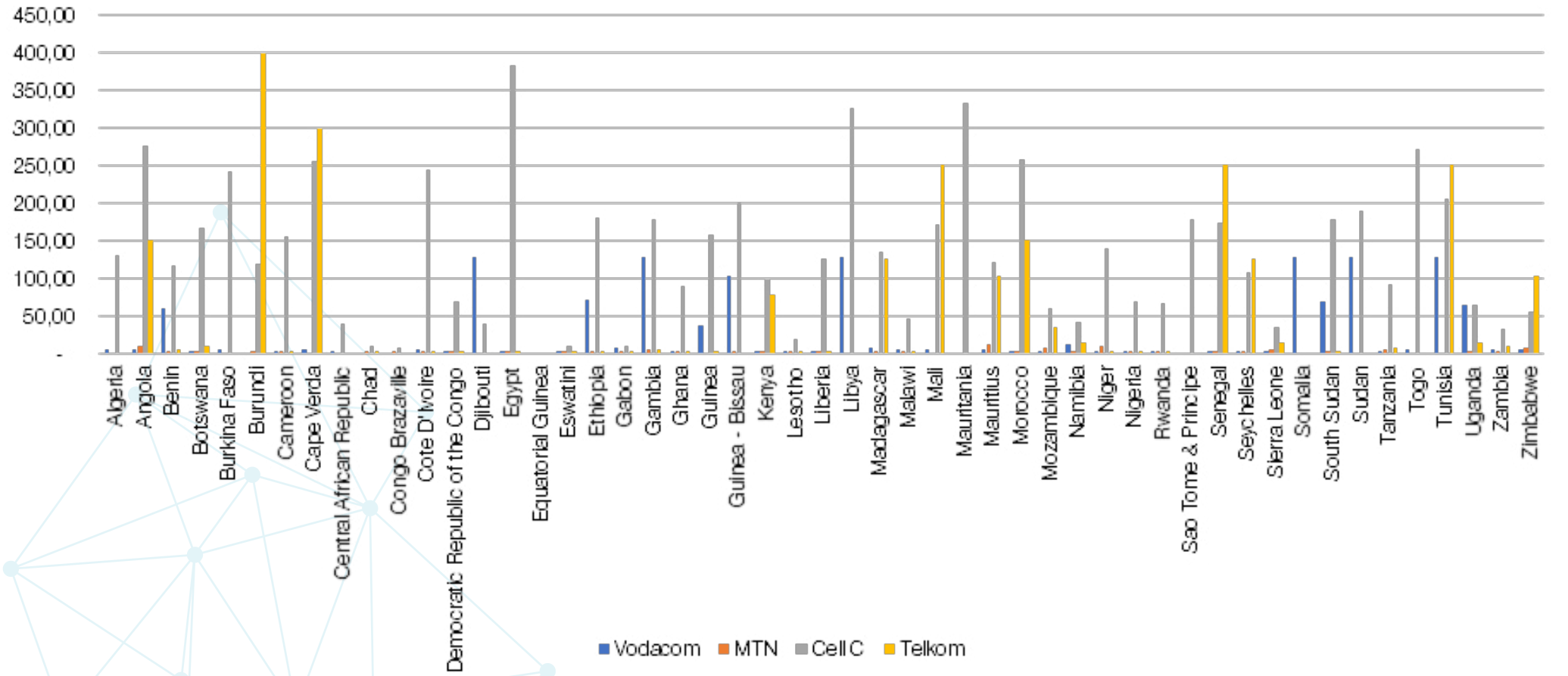
119. The graph below compares the average price per MB charged by each of the MNOs in SADC and non-SADC countries. As with voice roaming, data roaming is generally cheaper in SADC countries than it is in non-SADC countries. This may be a function of geographic proximity or similar market conditions in SADC countries. The difference between SADC and non-SADC countries is largest for Vodacom at R 22.84 and smallest for MTN where the average price for non-SADC countries at R 1.53 is lower than SADC countries. MTN is the only MNO where SADC is more expensive than non-SADC, albeit marginally. It is also notable that Cell C has average higher prices regardless of whether the roaming country is the SADC region or not. This suggests that Cell C's overall position is only marginally influenced by geography.

120. As demonstrated in the assessment of voice roaming tariffs, the price outcomes for using mobile data while roaming in the SADC region is contingent on whether the home and visited countries have implemented price reductions as part of the second phase of the SADC Roaming Policy. The table below demonstrates the difference in average roaming prices for using mobile data while roaming in SADC countries that have implemented the price reductions and those that have not.

Table 58: Average roaming prices for mobile data disaggregated by SADC membership and by implementation of phase 2 of the SADC roaming agreement

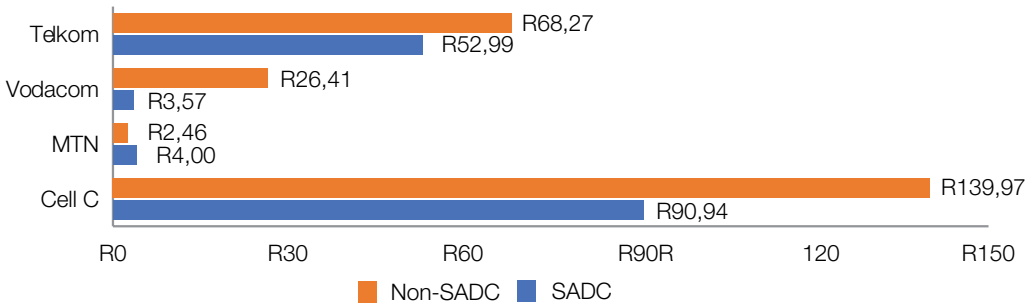
Home country	Visited country		
	SADC (with price reductions)	SADC (no price reductions)	Non-SADC
SADC (with price reductions)	42.98	72.46	159.19
SADC (no price reductions)	680.40	1 041.50	923.57
Non-SADC	No data	289.42	211.58

Figure 82: Roaming prices for mobile data by visited country and home country MNO



121. The average price per MB for using mobile data while roaming is cheaper between countries that have both implemented the initial price reductions for phase 2 of the SADC Roaming Policy. The average roaming price for data is lower if either the home or visited country (both of which are SADC member states) of the subscriber has implemented price reductions than if neither had implemented the price reductions. Indeed, if both the home and visited country are part of SADC but have not implemented the price reductions, the average roaming price per MB is higher than the average roaming price per MB if the home country was part of SADC and the visited country was not part of SADC. Mobile data roaming prices are higher for subscribers from SADC countries that have not implemented the price reductions than for those from non-SADC countries.

Figure 83: Comparison of data prices in SADC and non-SADC countries



Source: Commission rendition using Tarifca data. Notes: SADC includes all SADC member states excluding the Comoros as data was not available.

MULTI-NATIONAL MNOS

122. As discussed in the previous section, Vodacom and MTN are multi-national MNOs with a presence in several African countries including South Africa. The table below compares MTN and Vodacom's price per MB in countries where it has a presence to its continental average. As with voice roaming, it's clear that customers of these MNOs benefit from lower prices when roaming in countries where their MNO is present. The prices are also more uniform across these countries. Vodacom's price is significantly lower in Vodacom Africa countries compared to the continental average.

Table 59: Comparison of Vodacom and MTN data prices in countries where they are present

	Vodacom	MTN
Continental Average	R2.74	R65.00
Pairs Average	R0.87	R0.99
Democratic Republic of the Congo	R2.75	
Ghana	R0.49	
Kenya	R0.49	
Lesotho	R0.49	
Mozambique	R0.49	
Tanzania	R0.49	
Benin		R0.99
Botswana		R0.99
Cameroon		R0.99
Congo Brazzaville		R0.99
Cote D'Ivoire		R0.99
Eswatini		R0.99
Ghana		R0.99
Guinea - Bissau		R0.99
Liberia		R0.99
Nigeria		R0.99
Rwanda		R0.99
South Sudan		R0.99
Uganda		R0.99
Zambia		R0.99

Source: Commission analysis using Tarifica data

SINGLE COUNTRY MNOS

123. The table below shows that the average data roaming price for Cell C and Telkom customers roaming on single MNOs is R164.50 and R151.00 respectively. For both MNOs, this is more than their continental average (R136.07 for Cell C and R 64.07 for Telkom). It is significantly more than what Vodacom and MTN customers pay per MB when roaming where their MNO is present.

124. In the comparison below, it is interesting to note the variation (ranging from R10.00 – R327.00 for Cell C and R2.00 – R250.00 for Telkom) in the price per MB, which is consistent with the overall distribution of data prices explained above. This suggests that size may not fully capture how roaming data is priced.

Table 60: Data prices of single country MNOs

MNO	Price Per MB
Cell C	R164.50
Btc Mobile (Botswana)	R283.00
Djibouti Telecom SA	R38.00
Libyana Libya	R327.00
Mozambique Movitel	R10.00
Telkom	R151.40
Cable & Wireless Seychelles	R250.00
Ethio Telecoms	R2.00
Net One (Zimbabwe)	R5.00
Telma Mobile	R250.00
Zamtel	R250.00
Overall Average	R157.22

Source: Commission analysis using Tarifica data

SMS

125. With the rise of social media and messaging apps, SMS are of decreasing importance to mobile phone users. Nonetheless, there may be instances where phone users may be required to communicate by SMS, especially when roaming in remote areas. The following section analyses roaming prices for SMSs for the South African MNOs.

PRICE TRENDS

126. As the figure below shows, there has been a general decline in the price of sending an SMS when roaming. MTN price reduction was the steepest over the period going from R 9.61 to R 4.19. Cell C's prices were the only ones to increase going from R 3.54 to R 4.84. However, the declines generally aren't as deep as voice and data prices, highlighting SMS's diminishing relevance as a competitive advantage for MNOs.

AVERAGE ROAMING PRICES AND PRICE DISTRIBUTION BY MNO

127. As the table below shows the average price charged by South African MNOs for an SMS when roaming in Africa is R 4.11. Cell C has the highest average SMS price of R 5.36 and Vodacom the lowest at R 2.45. Vodacom also has the smallest range with the price of an SMS being between R 1.00 and R 2.75. Telkom has the largest range on R 1.75 to R 15.00. Vodacom also has the most uniform SMS prices across the continent with the majority, as seen in the table below, costing either R 1.00 or R 2.75. Telkom has similarly uniform prices with the cost of an SMS being R 2.00 in several countries.

Table 61: Average price of an SMS for each MNO

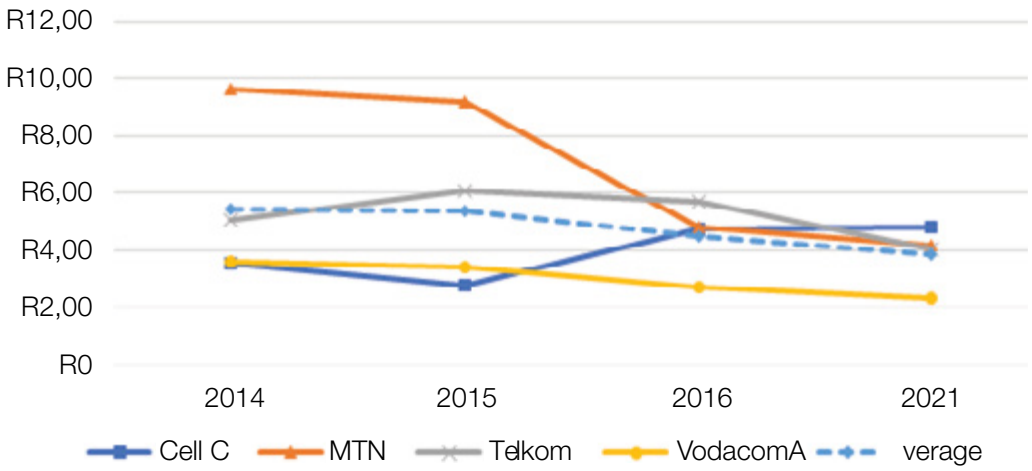
	Average of Price Per SMS	Minimum (Country)	Maximum (Country)
Cell C	R 5.36	R 2.33 (Gabon)	R 12.00 (Cape Verde)
MTN	R 4.31	R 1.20 (9 Countries)1	R 20.00 (Gambia)
Vodacom	R 2.45	R 1.00 (6 Countries)2	R 2.75 (39 Countries)3
Telkom	R 4.31	R 1.75 (Eswatini)	R 15.00 (Burundi)
Average	R 4.11		

Source: Commission rendition using data from Tarffica. Notes: Averages are a simple average across all countries for which price data was available for each respective MNO.1 – Guinea-Bissau, Benin, Liberia, Cameroon, Cote D'Ivoire, Eswatini, Congo Brazzaville, South Sudan, Botswana. 2 – Lesotho, Tanzania, Eswatini, Ghana, Kenya, DRC, Egypt. 3 – Liberia, Morocco, CAR, Seychelles, Niger, Rwanda, Sierra Leone, Senegal, Nigeria, Cameroon, Botswana, Cote D'Ivoire, Algeria, Zambia, Togo, Cape Verde, Mali, Mauritius, Angola, Burkina Faso, Malawi, Madagascar, Gabon, Guinea, Benin, Uganda, South Sudan, Ethiopia, Guinea-Bissau, Libya, Djibouti, Tunisia, Sudan. Somalia, Gambia, Burundi, Mauritania, Equatorial Guinea.

128. The figure below shows the relative distribution of the price per SMS for each of the MNOs. Most prices are at the lower end of the spectrum and are clustered in the first two bins. In most countries, MTN and Telkom customers pay R 0.00 – R 2.49 per SMS. Cell C and Vodacom customers will be R 2.50 – R 4.99 in most countries. However, Vodacom is the only MNO where customers won't pay more than R 5.00 per SMS when roaming. The other three MNOs have at least one country where customers will pay more than R 5.00 per SMS.

129. The tables below show the most expensive countries for all the MNOs except MTN. Cell C has the most countries where an SMS costs R 7.50 or more followed by Vodacom and Telkom. As with the other services, there is little overlap in the most expensive countries of each MNO. Vodacom and Telkom do not have a single country in common whereas Cell C and Vodacom only have Egypt and Gambia in common.

Figure 84: SMS prices for a selection of African countries from 2014 to 2021



Source: Commission rendition using data from Tariffica. Notes: Figures in each year a simple average for the following countries Anglo, Botswana, Cameroon, DRC, Egypt, Ethiopia, Eswatini, Gabon, Ghana. Kenya, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Nigeria, Seychelles, Swaziland, Tanzania, Uganda, Zambia, Zimbabwe

130. There are nine Cell C countries where an SMS costs R 7.50 or more.

Table 62: Countries in which subscribers of Cell C pay more than R7.50 per SMS

Country	Price
Lesotho	R 8.00
Egypt	R 8.00
Equatorial Guinea	R 8.00
Cameroon	R 9.00
Ethiopia	R 9.00
Morocco	R 10.00
Gambia	R 11.00
Tunisia	R 11.00
Cape Verde	R 12.00

Source: Commission rendition using data from Tarfica.

131. There are seven countries where Vodacom customers pay R 7.50 or more per SMS.

Table 63: Countries in which subscribers of Vodacom pay more than R7.50 per SMS

Country	Price
Seychelles	R 7.50
Egypt	R 7.50
Chad	R 7.50
Gabon	R 7.50
Niger	R 7.50
Ethiopia	R 10.00
Gambia	R 20.00

Source: Commission rendition using data from Tarfica.

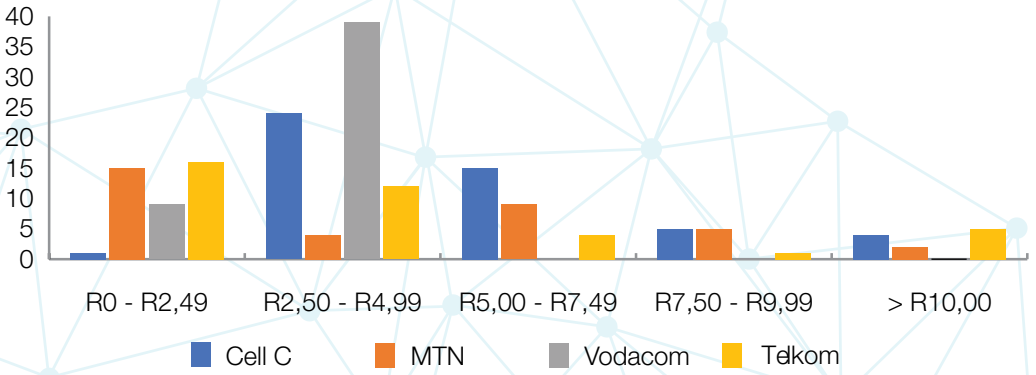
132. Lastly, in six countries, Telkom customers pay R 7.50 or more.

Table 64: Countries in which subscribers of Telkom pay more than R7.50 per SMS

Country	Price
Morocco	R 8.50
Mali	R 10.00
Senegal	R 10.00
Tunisia	R 12.00
Cape Verde	R 12.00
Burundi	R 15.00

Source: Commission rendition using data from Tarfica.

Figure 85: Distribution of price per SMS of the MNOs



Source: Commission rendition using data from Tarfica.

133. For most of the countries in the sample, the lowest roaming prices available are offered by either Vodacom or MTN.

133.1 Vodacom offers the lowest price for SMS in Algeria, Angola, Burkina Faso, Cape Verde, the Central African Republic, the DRC, Djibouti, Egypt, Equatorial Guinea, Eswatini, Ethiopia, the Gambia, Ghana, Kenya, Lesotho, Libya, Madagascar, Mali, Mauritania, Mauritius, Morocco, Mozambique, the Seychelles, Sierra Leone, Sudan, Tanzania, Togo, Tunisia, Uganda, Zambia, and Zimbabwe. MTN offers the lowest price for SMS in Benin, Botswana, Burundi, Cameroon, Congo, Cote D'Ivoire, Guinea-Bissau, Liberia, Namibia, Rwanda, Senegal, and South Sudan. Telkom offers the lowest price for SMS in Chad, Gabon, Guinea, Malawi, Niger, and Nigeria. In many countries in the sample, the price sending an SMS for subscribers on MTN and Vodacom tend to be closer to one another at the low end with much higher prices for Telkom and Cell C subscribers, such as in Burundi, Eswatini, Mozambique, Namibia, Senegal, and Uganda. However, in some other countries, the least expensive MNO for SMS is unmatched by a significant degree by the other MNOs prices, such as in Algeria, Angola, Benin, Botswana, Cape Verde, Cote D'Ivoire, the DRC, Egypt, Ethiopia, the Gambia, Ghana, Guinea-Bissau, Kenya, Lesotho, Liberia, Mali, Morocco, the Seychelles, Tanzania, and Tunisia. An overview of the MNO variation in roaming prices for calls back home by country is graphically presented in Figure 24 below.

SADC AGAINST NON-SADC

134. The figure below shows the average price of an SMS in SADC and non-SADC countries for each MNO. It is cheaper to send an SMS when roaming in a SADC country for all MNO except MTN, where the difference is a marginal R 0.08. Unlike the other services, the difference between the SADC and non-SADC averages is low across the board. This may be a function of MNOs facing similar costs for SMSs across the continent or similar SMSs volumes from roaming in SADC and non-SADC countries.

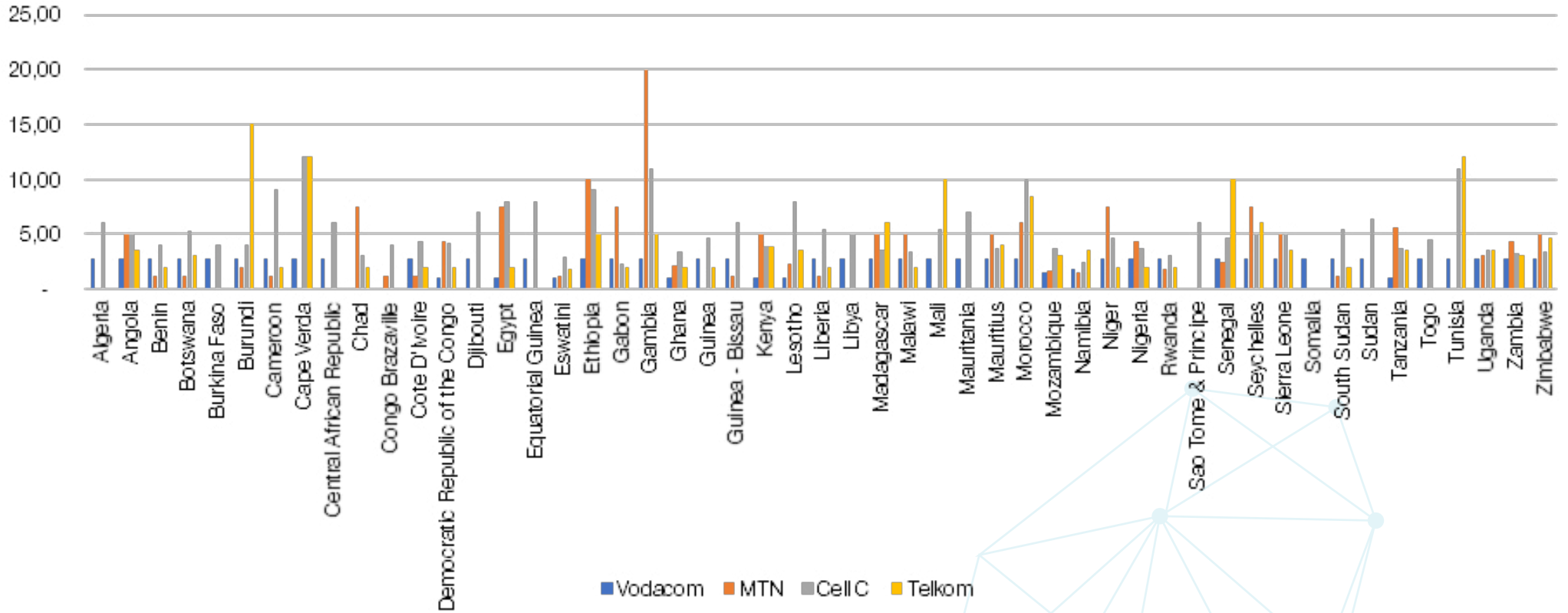
135. As with voice and data roaming, the average roaming price for sending an SMS in the SADC region is dependent on whether or not the home and visited countries have implemented the initial price reductions of phase 2 of the SADC roaming policy. The table below demonstrates the differences between the average roaming price per SMS between countries that have implemented these price reductions as compared to those that have not.

Table 65: Average roaming prices for SMS disaggregated by SADC membership and by implementation of phase 2 of the SADC roaming agreement

Home country	Visited country		
	SADC (with price reductions)	SADC (no price reductions)	Non-SADC
SADC (with price reductions)	3.39	3.93	6.28
SADC (no price reductions)	4.93	5.75	5.52
Non-SADC		10.12	10.56

136. The differences between the average roaming price for an SMS between SADC countries that have implemented price reductions and those that have not are smaller than those that were observed in the case of voice and mobile data services. Notwithstanding, it is apparent that the average roaming price per SMS is lower between countries that have both implemented price reductions versus the case when either the home country or visited country has not implemented the price reduction. A visitor to a non-SADC country from a SADC home country that has not implemented the price reductions can expect to pay a lower average roaming price than if they had visited another SADC country that has not implemented the price reduction. However, visitors from non-SADC countries can expect to pay a higher average roaming price compared to visitors from any SADC country when visiting a SADC country that has not implemented the price reductions.

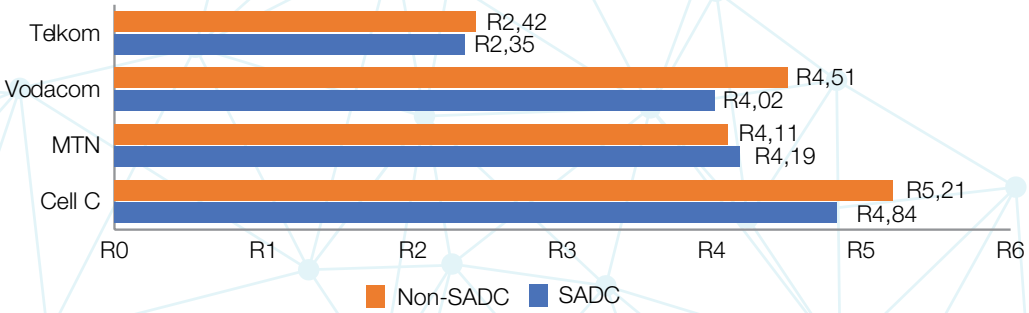
Figure 86: Roaming prices for SMS by visited country and home country MNO



MULTI-NATIONAL MNOS

137. As with voice and data roaming, there is a clear price advantage to MTN and Vodacom customers roaming in countries where their MNO has a local presence. The price of an SMS in a country with an MTN subsidiary is R 1.20 in all MTN countries compared to the continental average of R 4.31. For Vodacom, the price is R 1.00 in all Vodacom countries compared to R 3.75.

Figure 87: Comparison of SMS prices in SADC and non-SADC countries



Source: Commission rendition using Tarifca data. Notes: SADC includes all SADC member states excluding the Comoros as data was not available.

Table 66: Comparison of MTN and Vodacom Prices in countries where they have a subsidiary

	Vodacom	MTN
Continental Average	R3.75	R4.31
Pairs Average	R1.00	R1.20
Democratic Republic of the Congo	R1.00	
Ghana	R1.00	
Kenya	R1.00	
Lesotho	R1.00	
Mozambique	R1.00	
Tanzania	R1.00	
Benin		R1.20
Botswana		R1.20
Cameroon		R1.20
Congo Brazzaville		R1.20
Cote D'Ivoire		R1.20
Eswatini		R1.20
Ghana		R1.20
Guinea – Bissau		R1.20
Liberia		R1.20
Nigeria		R1.20
Rwanda		R1.20
South Sudan		R1.20
Uganda		R1.20
Zambia		R1.20

Source: Commission's analysis using Tarifca data

SINGLE-COUNTRY MNOS

138. The table below presents the SMS prices for a sample of single country MNOs that have roaming agreements with Cell C and Telkom, who are only active in South Africa. Cell C's average price in these countries is R 5.25 compared to Telkom at R 6.40. Once again this is less than the price paid by Vodacom and MTN countries where these respective MNOs are present. Telkom's average for this sample is slightly higher than the overall average (R 4.31) while Cell C is roughly the same (R 5.36).

Table 67: SMS prices of single country MNOs

MNO	Price Per SMS
Cell C	R5.25
Btc Mobile (Botswana)	R6.00
Djibouti Telecom SA	R7.00
Libyana Libya	R5.00
Mozambique Movitel	R3.00
Telkom	R6.40
Cable & Wireless Seychelles	R10.00
Ethio Telecoms	R5.00
Net One (Zimbabwe)	R2.00
Telma Mobile	R10.00
Zamtel	R5.00
Overall Average	R5.89

Source: Commission's analysis using Tarifca data

139. This section contains a brief discussion of the cost of roaming for visitors to South Africa using their home network. While the assessment of retail roaming prices levied by South Africa MNOs is instructive on the barriers faced by South African consumers and businesses when travelling in Africa, this is not the full story regarding the barriers to regional integration in Africa. A more complete story should take into account the barriers faced by other African consumers and businesses in travelling to South Africa. The forthcoming chapters prepared by other participating regulators to the study contain more in-depth discussion of the retail roaming tariffs faced by their own consumers, this section provides an overall view of the roaming cost barriers faced by visitors to South Africa from the rest of the African continent. The table below presents the average roaming prices faced by visitors to South Africa by the South African MNO that they have connected to while roaming.

Table 68: Average roaming price per service type for each MNO

Roaming Country Operator	Calling price home	Calling price local	Incoming call price	SMS	Data
Vodacom	55.52	19.31	7.86	5.87	77.14
MTN	32.02	12.38	5.85	4.13	66.37
Cell C	78.69	14.80	6.80	5.49	57.70
Telkom	77.21	29.24	488.53	5.62	40.98
Total average	60.86	18.94	127.26	5.28	60.55

140. On average, visitors to South Africa pay R60 per minute to make a call back to their home country. Visitors using Cell C and Telkom's networks pay the most on average, followed by Vodacom and MTN.

141. In the table below we focus our analysis on the role of multi-national MNOs. Earlier, we found that South African travellers using either MTN or Vodacom pay less one when travelling to a country where their MNO has a presence. We now assess whether this relationship holds for MTN and Vodacom customers roaming within South Africa.

Table 69: The average roaming price per service type for MTN and Vodacom subscribers in countries where these MNOs have local operations

Roaming Country	Calling price home	Calling price local	Incoming call price	SMS	Data
MTN					
Benin	R59,93	R8,56	N/A	R8,56	R0,19
Cameroon	R45,66	R23,97	R9,99	R17,12	R0,16
Côte d'Ivoire	R44,52	R16,67	R16,67	R10,05	R1,37
Eswatini	R0,21	R1,20	N/A	R1,00	R0,99
Ghana	R0,27	R2,40	N/A	R2,69	R0,16
Nigeria	R11,42	R3,86	R3,86	R3,86	R1,38
Rwanda	R67,12	R1,52	R1,04	R1,52	R0,16
Uganda	N/A	N/A	N/A	N/A	N/A
Average	R32,73	R8,31	R7,89	R6,40	R0,63
Vodacom					
Democratic Republic of the Congo	R0,06	R0,06	R0,03	R0,02	R0,00
Kenya	R1,71	R2,11	R4,21	R0,70	R0,70
Mozambique	R2,85	R6,30	R2,52	R1,76	R6,30
Tanzania	R16,52	R10,33	R6,20	R4,13	R10,33
Average	R5,29	R4,70	R3,24	R1,65	R4,33

142. Our analysis finds that MTN customers roaming in South Africa pay lower average rates in South Africa for local calls and data while calling back and an incoming call are more expensive than the MTN continental average. This difference is largely attributable to rates for the customer of MTN Cameroon, MTN Cote d'Ivoire, and MTN Benin which are significantly higher than other MTN countries.

143. For Vodacom customers, all services are, on average, cheaper when roaming in South Africa than other African countries. Even Tanzania, which is most expensive country comes in below the continental average. Overall, we find that the multinational MNOs have lower data roaming rates in the countries where they have a presence than their overall continental average. The same is true for the local calling price.

144. There has been a general decline in average roaming prices from 2014 to 2021 across voice services, data services, and SMS. However, the average roaming surcharges are still significant as of December 2021. The cost of calling back to South Africa using roaming services is, on average, 3.81 times the cost of calling to South Africa using a local SIM in a visited country. The roaming cost for making call within the visited country is, on average, 21 times the cost of making a local call using a local SIM card. The cost of using mobile data while roaming is, on average, 142 times the cost of consuming data using a local SIM and 88.9 times more expensive than the South African out-of-bundle price for prepaid mobile data.

145. MTN is the cheapest operator to roam with, on average, for calling back to South Africa (followed by Telkom, Cell C, and Vodacom) and for using mobile data (followed by Vodacom, Telkom, and Cell C). Vodacom is the cheapest operator to roam with, on average, for making local calls within the visited country (followed by MTN, Cell C, and Telkom). Telkom is the cheapest operator to roam with, on average, for receiving incoming calls in a visited country from South Africa (followed by Vodacom, MTN, and Cell C), due in large part to its policy of zero rating the roaming cost of receiving calls in a number of African countries.

146. Using mobile roaming services in countries in the SADC region is, on average, cheaper for consumers that using the service outside of the region. However, receiving incoming calls is more expensive for customers on all South African MNOs, except Cell C, roaming in the SADC region than those roaming in African countries outside the SADC region and MTN customers using mobile data will spend more per MB using data services while roaming in SADC countries than in other African countries. MTN's SMS services for roaming customers is also only marginally cheaper in the SADC region as compared to other African countries.

147. The relatively lower prices for most roaming services in the SADC region are likely a reflection of the implementation of the second phase of the SADC Roaming Project where the region managed to implement – albeit at a very slow pace – price regulation and achieved reciprocal price reductions of 33% or more in at least eight SADC member states by 2018.[90] Further price reductions were stalled by concerns raised by MNOs that further reductions in line with the second and third year of the glide path would result in below cost call scenarios, market distortion, and SIM boxing, which led to the decision to implement phase three of the Roaming Project to develop a cost model without further implementation of the glide path as directed in phase two.[91]

At present, ten member states of SADC have partially implemented price reductions as part of the second phase of the project, including Botswana, Eswatini, Malawi, Mauritius, Mozambique, Namibia, Tanzania, Zambia, Zimbabwe, and South Africa.[92]

148. The comparison of average roaming prices between SADC member states that have implemented price reductions and those that have not demonstrates that being up to date with the SADC Roaming Policy has a significant bearing on the level of roaming prices across all mobile services. Roaming prices for subscribers travelling to and from member states that have implemented the initial price reduction are, on average, lower than the roaming prices for subscribers travelling to and from those member states that have not.

149. It is cheaper for customers of MNOs that are part of multinational groups (namely, Vodacom and MTN) to roam on subsidiary operator networks in the visited country. Furthermore, Cell C and Telkom customers roaming on these single-country MNOs pay more on average than Vodacom and MTN customers in countries where Vodacom and MTN have local operations. It is also apparent that visitors to South Africa from African countries with MNOs that are part of the same group of companies as MTN or Vodacom can expect to face lower prices for roaming services when roaming on the South African MTN and Vodacom networks, respectively, as compared to visitors from African countries without local MNOs affiliated with these two companies. The exception to this finding is the price of making local calls, receiving calls, and sending an SMS on the MTN network in South Africa. The high prices for roaming on the MTN network in South Africa are largely driven by the high roaming prices charged by MTN Cameroon, MTN Cote d'Ivoire, and MTN Benin.

150. The double marginalisation issue that typically arises between MNOs that are unaffiliated is unlikely to arise when partner MNOs in different countries are part of the same multinational group. As such, the price of roaming services for subscribers using multinational networks are likely to reflect the actual cost of roaming services more closely than if a single country MNO were to be used. While MTN subscribers in other

*90 Mogware, M. (2018) **Address on the occasion of the official opening of the SADC Roaming Cost Model Forum**. Botswana Communications Regulatory authority. Available at: https://www.bocra.org.bw/sites/default/files/speeches/Welcome_Remarks_by_Mr_Martin_Mokgware_0.docx [Last accessed on 16 August 2022]*

*91 Mogware, M. (2018) **Address on the occasion of the official opening of the SADC Roaming Cost Model Forum**. Botswana Communications Regulatory authority. Available at: https://www.bocra.org.bw/sites/default/files/speeches/Welcome_Remarks_by_Mr_Martin_Mokgware_0.docx [Last accessed on 16 August 2022]*

*92 SADC (2020). **SADC Regional Indicative Strategic Development Plan (RISDP) 2020–2030**. October 2020. Available at: https://www.sadc.int/sites/default/files/2021-08/RISDP_2020-2030.pdf [Last accessed on 18 August 2022]*

African countries do not appear to benefit from reduced roaming costs as a result of the removal of double marginalisation, Vodacom customers from other countries roaming on the Vodacom in South Africa do appear to experience significant benefit, as summarised in the table below.

Table 70: Average roaming price on the Vodacom network in South Africa for subscribers from all MNOs and for visiting Vodacom subscribers

	Calling price home	Calling price local	Incoming call price	SMS	Data
Average price for all subscribers	55.52	19.31	7.86	5.87	77.14
Average price for Vodacom subscribers	R5.29	R4.70	R3.24	R1.65	R4.33
Implied premium (%)	949.53%	310.85%	142.59%	255.76%	1681.52%

REGIONAL AND CONTINENTAL PRIORITIES FOR SOUTH AFRICA

151. Roaming tariffs levied on South African consumers travelling across Africa are far removed from the prices experienced by these consumers at home. For instance, using mobile data while roaming in other African countries will cost South African consumers 89 times more, on average, than it would cost at home. A more granulated inspection, across countries and across different MNO networks within countries, reveals that there is a substantial degree of variation in the roaming tariffs offered by South African MNOs to their subscribers. Much of the variation in roaming tariffs is likely to reflect the bargaining power dynamics at play between South African MNOs and their counterparts in the other African countries, as evidenced by the relatively low roaming tariffs observed between local subsidiaries of multinational MNOs. Vodacom and MTN's roaming tariffs are lower when their subscribers are roaming on the networks of MNOs in that country that are part of the corporate group. This suggests that a regulatory intervention involving the application of non-discrimination rules to wholesale roaming agreements may prove effective in reducing retail roaming prices for stand-alone MNOs (namely, Cell C and Telkom) when their subscribers are roaming on the networks of local subsidiaries of multinational MNOs. Such an intervention would be particularly effective in reducing the retail roaming prices faced by South African subscribers of these independent MNOs in countries where multinational MNOs operate.

152. In certain countries, the cost of roaming is high irrespective of the subscriber's South African MNO. Sao Tome and Principe is consistently ranked as one of the most expensive African countries for South African customers to use roaming services. Roaming options are only available to customers of Cell C. Algeria, Burkina Faso, Djibouti, The Gambia, Libya, Mali, Mauritania, Somalia, and Tunisia also feature high in the rankings of minimum available prices available to South African roaming customers.

152.1 The cost of calling back to South Africa for travellers is the highest when roaming in Sao Tome and Principe where the lowest available tariff is R73 per minute. Djibouti has the second highest cost with the lowest available tariff of R60 per minute. Libya, Mali, Sudan, Tunisia, and Somalia follow with the lowest available tariff of R23.50 per minute. The lowest cost for calling back to South Africa is available to customers roaming in Eswatini at R2.99 per minute, followed by Mozambique at R3.99 per minute. A complete ranking of the calling price per minute back to South Africa by African country is presented in the table below.

Table 71: The minimum available calling price per minute back to South Africa by country ranked from highest to lowest

Country/Countries	Cheapest MNO(s)	Calling Price Per Minute (to home country)
Sao Tome & Principe	Cell C	R73
Djibouti	Vodacom and Cell C	R60
Libya, Mali, Sudan, Tunisia, and Somalia	Vodacom	R23.50
Ethiopia and The Gambia	Telkom	R15
Algeria, Angola, Burkina Faso, Burundi, Cape Verda, Central African Republic, Equatorial Guinea, Guinea, Mauritania, Mauritius, Morocco, Senegal, Sierra Leone, and Togo	Cell C (Algeria and Senegal), MTN (Senegal), Telkom (Guinea and Morocco), and Vodacom (Angola, Burkina Faso, Burundi, Cape Verda, Central African Republic, Equatorial Guinea, Guinea, Mauritania, Mauritius, Sierra Leone, and Togo)	R10
Benin, Cameroon, Congo Brazaville, Guinea - Bissau, Cote D'Ivoire, Liberia, and South Sudan	MTN	R7.50
Chad, Gabon, Madagascar, Malawi, Niger, Nigeria, Rwanda, Seychelles, Uganda, and Zambia	Cell C (Gabon) and Telkom (Chad, Gabon, Madagascar, Malawi, Niger, Nigeria, Rwanda, Seychelles, Uganda, and Zambia)	R7
Botswana and Zimbabwe	Vodacom	R6
DRC, Egypt, Ghana, Kenya, Lesotho, Namibia, and Tanzania	MTN (Ghana and Lesotho), Telkom (Lesotho), and Vodacom (DRC, Egypt, Ghana, Kenya, Lesotho, Namibia, and Tanzania)	R5
Mozambique	Vodacom	R3.99
Eswatini	MTN	R2.99

Source: Commission's analysis using Tarifca data

Table 72: The minimum available calling price per minute for calls within the visited country ranked from highest to lowest

Country/Countries	Cheapest MNO(s)	Calling Price Per Minute (within roaming country)
Algeria, Angola, Burkina Faso, Djibouti, Equatorial Guinea, Ethiopia, Gambia, Guinea, Libya, Mali, Mauritania, Morocco, Sao Tome & Principe, Sierra Leone, Somalia, and Tunisia	Cell C (Algeria, Guinea, Sao Tome & Principe, and Sierra Leone) and Vodacom (Algeria, Angola, Burkina Faso, Djibouti, Equatorial Guinea, Ethiopia, Gambia, Guinea, Libya, Mali, Mauritania, Morocco, Sierra Leone, Somalia, and Tunisia)	R8
Congo Brazaville, Guinea - Bissau, Liberia, Senegal, and South Sudan	MTN	R7.50
Cape Verda, Central African Republic, Chad, Gabon, Cote D'Ivoire, Madagascar, Malawi, Seychelles, Togo, and Zambia	Cell C (Cape Verda, Central African Republic, Cote D'Ivoire, Gabon, and Togo) and Telkom (Cape Verda, Chad, Gabon, Madagascar, Malawi, Seychelles, and Zambia)	R7
Zimbabwe	Vodacom	R6
Benin, Botswana, Cameroon, Egypt, Eswatini, Mauritius, Namibia, Niger, Rwanda, Sudan, and Eswatini	Cell C (Sudan), MTN (Benin, Botswana, Cameroon, Eswatini, Mauritius, Namibia, Niger, and Rwanda), Telkom (Eswatini) and Vodacom (Egypt, Eswatini, and Namibia)	R5
Burundi and Uganda	Cell C	R4
DRC, Ghana, Kenya, Lesotho, and Tanzania	Vodacom	R2.90
Mozambique and Nigeria	MTN	R2.50

Source: Commission's analysis using Tarifca data

152.2 The cost of calling within the country visited is highest for South African travellers roaming in Algeria, Angola, Burkina Faso, Djibouti, Equatorial Guinea, Ethiopia, Gambia, Guinea, Libya, Mali, Mauritania, Morocco, Sao Tome & Principe, Sierra Leone, Somalia, and Tunisia at R8 per minute followed by Congo Brazaville, Guinea - Bissau, Liberia, Senegal, and South Sudan at R7.50

per minute. The lowest cost for calling within the visited country is available in Mozambique and Nigeria at R2.50 per minute followed by DRC, Ghana, Kenya, Lesotho, and Tanzania at R2.90 per minute. A complete ranking of the calling price per minute for calls within the visited African country is presented in the table above.

Table 73: The minimum available calling price per minute to receive calls in the visited country ranked from highest to lowest

Country/Countries	Cheapest MNO(s)	Calling Price Per Minute (incoming calling rate)
Sao Tome & Principe	Cell C	R26
Algeria, Burkina Faso, Central African Republic, Djibouti, Equatorial Guinea, Libya, Mauritania, Sudan, Togo, and Somalia	Vodacom	R6
Congo Brazaville and Guinea - Bissau	MTN	R5
Angola, Benin, Botswana, Burundi, Cameroon, Cape Verda, Chad, Democratic Republic of the Congo, Egypt, Ethiopia, Gabon, Gambia, Ghana, Guinea, Cote D'Ivoire, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Seychelles, Sierra Leone, South Sudan, Eswatini, Tanzania, Tunisia, Uganda, Zambia, and Zimbabwe	Cell C, MTN, Telkom, and Vodacom	R0

Source: Commission's analysis using Tarifca data

152.3 Most of the countries in the sample have a minimum cost of zero fees for South African travellers receiving calls in the country. However, South Africans travelling to Sao Tome and Principe can expect to pay a minimum of R26 for receiving calls in the country. A minimum fee of R6 can be expected Algeria, Burkina Faso, Central African Republic, Djibouti, Equatorial Guinea, Libya, Mauritania, Sudan, Togo, and Somalia, while a slightly lower fee of R5 can be expected in Congo Brazaville and Guinea – Bissau. A complete ranking of the calling price per minute to receive calls by African country is presented in the table above.

152.4 The country with by far the highest minimum cost to South African roaming customers for sending an SMS is Sao Tome and Principe at R6 per SMS. The next most expensive price for SMS while roaming is much lower at R2.75 per SMS in Algeria, Burkina Faso, Cape Verda, Central African Republic, Djibouti, Equatorial Guinea, Ethiopia, Gambia, Libya, Mali, Mauritania, Sudan, Togo, Tunisia, and Somalia. The lowest cost for South African travellers to send an SMS is R1, which is available in the DRC, Egypt, Ghana, Kenya, Lesotho, Mozambique, Namibia, Eswatini, and Tanzania. A complete ranking of the price per SMS by African country is presented in the table below.

Table 74: The minimum available price per SMS in the visited country ranked from highest to lowest

Country/Countries	Cheapest MNO(s)	Price Per SMS
Sao Tome & Principe	Cell C	R6
Algeria, Burkina Faso, Cape Verda, Central African Republic, Djibouti, Equatorial Guinea, Ethiopia, Gambia, Libya, Mali, Mauritania, Sudan, Togo, Tunisia, and Somalia	Vodacom	R2.75
Senegal	MTN	R2.5
Angola, Burundi, Chad, Gabon, Guinea, Madagascar, Malawi, Mauritius, Morocco, Niger, Seychelles, Sierra Leone, and Zimbabwe	Cell C (Gabon and Mauritius), MTN (Burundi and Morocco), and Telkom (Angola, Chad, Gabon, Guinea, Madagascar, Malawi, Mauritius, Morocco, Niger, Seychelles, Sierra Leone, and Zimbabwe)	R2
Benin, Botswana, Cameroon, Congo Brazaville, Guinea - Bissau, Cote D'Ivoire, Liberia, Nigeria, Rwanda, South Sudan, Uganda, and Zambia	MTN	R1.2-
DRC, Egypt, Ghana, Kenya, Lesotho, Mozambique, Namibia, Eswatini, and Tanzania	Vodacom	R1

Source: Commission's analysis using Tarifca data

152.5 The country with the highest minimum cost for mobile data for South African roaming customers was Mauritania with cost of R327 per MB, followed by Sao Tome and Principe at R179 per MB. The countries with the lowest available cost per MB were Botswana, Cameroon, Central African Republic, Democratic Republic of the Congo, Egypt, Ghana, Cote D'Ivoire, Kenya, Lesotho, Liberia, Morocco, Mozambique, Niger, Nigeria, Rwanda, Senegal, Seychelles, Sierra Leone, South Sudan, Eswatini, and Tanzania with a minimum price per MB of R0.49. A complete ranking of the price per MB by African country is presented in the table below.

Table 75: The minimum available price per MB in the visited country ranked from highest to lowest

Country/Countries	Cheapest MNO(s)	Price per MB
Mauritania	Cell C	R327
Sao Tome & Principe	Cell C	R179
Libya, Sudan, Tunisia, and Somalia	Vodacom	R128
Djibouti	Vodacom	R38
Algeria, Burkina Faso, Cape Verda, Gambia, Mali, and Togo	MTN and Telkom (The Gambia), Vodacom (Algeria, Burkina Faso, Cape Verda, Mali, and Togo)	R5
Burundi	MTN	R2.50
Angola, Chad, Ethiopia, Gabon, Guinea, and Mauritius	Telkom	R2
Benin, Congo Brazaville, Guinea - Bissau, Madagascar, Malawi, Namibia, Uganda, Zambia, and Zimbabwe	MTN	R0.99
Botswana, Cameroon, Central African Republic, Democratic Republic of the Congo, Egypt, Ghana, Cote D'Ivoire, Kenya, Lesotho, Liberia, Morocco, Mozambique, Niger, Nigeria, Rwanda, Senegal, Seychelles, Sierra Leone, South Sudan, Eswatini, and Tanzania	Vodacom	R0.49

Source: Commission's analysis using Tarifca data

153. The excessive cost of international roaming for South African consumers indicates that the regulation of international roaming tariffs is warranted. However, the national regulator of the home country cannot regulate the wholesale prices set by an operator in a different country. While a national regulator can ensure that retail roaming prices are reflective of the costs faced by the MNOs under its jurisdiction, it cannot ensure that the costs faced by these MNOs – and, ultimately, the retail roaming prices faced by the customers of these MNOs – are efficient and reflect the actual costs of providing roaming services. Thus, to ensure that international roaming prices are efficient, it is imperative that national regulators coordinate on the regulation of wholesale and retail international roaming prices. The initiatives currently underway to curtail roaming surcharges by regional trade blocs is instructive in this regard.

154. As discussed earlier in this report, South Africa is party to the SADC Roaming Policy, which seeks to implement cost-based price regulation of international roaming in the SADC region in a phased approach. Under the Roaming Policy, SADC ministers launched the SADC Home and Away Roaming initiative, which aims to launch a roaming service similar to the EU's RLAH initiative to harmonise the cost and price of international roaming in the region.[93]

155. To date, South Africa has implemented phase 1 of the initiative in full and the Roaming Tariffs Transparency Guidelines being incorporated in the ICASA End User and Subscriber Charter Regulations of 2016 and the full compliance of all South African operators. While the implementation of phase 2 was implemented retrospectively in February 2017[94] – which entails the establishment of a glide path for wholesale and retail roaming tariffs – it should be noted that South Africa currently only regulates wholesale international roaming prices.[95] In this regard, the wholesale and retail roaming tariff ceilings have been calculated – it is not clear whether South African MNOs are in any way compliant with the glide paths.

156. ICASA has begun implementing phase 3 of the initiative, which seeks to execute cost-based wholesale and retail roaming tariffs. Phase 3 commenced with the development of a harmonised cost model to be used by all national regulatory authorities of the SADC members in regulating wholesale and retail roaming prices. The model is a generic top-down costing model that will be used to determine the price caps applicable to inter-operator tariffs for wholesale roaming services and retail charges to consumers for roaming services.

157. For the most part, it is cheaper for South African consumers to use international roaming services in SADC countries compared to non-SADC African countries. This may indicate that the SADC roaming regulations are achieving the desired result of reducing roaming costs for consumers. Expanding the SADC approach to non-SADC African countries could allow for similar gains to be achieved for South African consumers travelling to these countries.

158. Notwithstanding the existing improvements in roaming prices for South African consumers, there may be scope for more aggressive retail tariff ceilings that aim to reduce roaming prices to local or near local levels. This will require coordination amongst national regulators to reduce wholesale roaming prices across Africa to a level that would reflect the price set by an efficient operator to prevent excessive loss-making at the retail level.

159. Given the concerns raised during the consultative process in the run-up to the implementation of the EU's roaming regulations regarding overconsumption and the potential for harms to long-run profitability, it is recommended that any regional initiatives to curtail international roaming tariffs in Africa (including the SADC roaming policy) incorporate fair use policies and sustainability derogations – in consultation with mobile network operators, consumer interest groups, and other stakeholders.

93 Nsomba, G (2021) The regulation of interconnection and regulatory alignment in the Southern African Development Community. WIDER Working Paper 2021/126. Available at: https://sa-tied.wider.unu.edu/article/regulation-interconnection-and-regulatory-alignment-southern-african-development-community [Last accessed on 14 January 2021]

94 https://www.icasa.org.za/uploads/files/Council-decision-11-August-2020.pdf

95 Nsomba, G (2021) The regulation of interconnection and regulatory alignment in the Southern African Development Community. WIDER Working Paper 2021/126. Available at: https://sa-tied.wider.unu.edu/article/regulation-interconnection-and-regulatory-alignment-southern-african-development-community [Last accessed on 14 January 2021]

CHAPTER 7: ZAMBIA

INTRODUCTION AND BACKGROUND

1. Roaming is a feature of cellular networks that allows a customer of one operator to use the network of another operator, based on a wholesale inter-operator agreement. National Roaming (NR) is used to facilitate market entry and extension of coverage. International Mobile Roaming (IMR) provides incentives to operators to adopt a common technology to benefit from revenues generated by inbound roaming customers coming from foreign networks and to attract and to retain domestic customers by offering them a service for them when they travel abroad, which generates direct and indirect revenues[1].

2. International roaming allows mobile users to continue to use their mobile phones or other mobile devices to make and receive voice calls and text messages, browse the internet, and send and receive emails while visiting another country[2]. Roaming occurs once operators have agreed on the terms and conditions for accepting each other's roaming traffic. Mobile roaming has been subject to market interventions since the 1990s, first requiring operators to provide customers with roaming, then trying to limit the increasing prices that were seemingly immune to the effects of competition[3].

3. Roaming services are part of the overall mobile market proposition. Operators have an interest in setting roaming rates at a level that encourages the use of their services and distinguishes them from the competition[4]. The increased usefulness of roaming services has come about from increased regional and international travel, as they provide customers with the use of domestic mobile services abroad in what is meant to be a convenient manner. Roaming services come at an additional cost. From the perspective of operators, home providers need to contract wholesale roaming services with at least one Mobile Network Operator (MNO) in each visited country, upon which the home operators are charged wholesale roaming fees (the inter-operator tariff (IOT)[5]. Customers, on the other hand, are charged retail roaming rates that are usually more expensive than equivalent domestic rates. In some cases, MNOs conclude agreements with more than one operator in each country to increase their bargaining power[6].

4. Mobile markets have evolved rapidly over the years, but at different rates, resulting in national markets being heterogeneous and MNOs facing discrepancies in terms of roaming usage and network costs due to different travelling patterns[7]. Factors such as labour costs, inflation rates, technology platforms, economies of scale, and target customer segments typically affect roaming rates[8], and these vary across nations. As a result, retail prices for international roaming services have historically been higher than retail pricing for local services[9]. It is unclear whether the heterogeneity in national markets justifies the vast differences in prices across regions.

5. Competition has driven down prices for mobile services, such as monthly subscriptions, per-minute and per-SMS charges, with noticeable reductions in the per unit revenues earned by the operators. By comparison, IMR has been relatively resistant to this downward pressure, partly because some customers simply use the service, valuing its convenience over the costs (which they may not pay themselves), and partly because it is not properly evaluated at the time of entering into contracts. High IMR prices help generate revenues to offset other, downward pressures on Average Revenue Per User (ARPU) the indicator most favoured by financial analysts. Moreover, any blame associated with high charges could always be placed on foreign operators.

1GSMA (2012b). 'International Roaming Explained—Asia Pacific'. London: GSMA. Available at: www.gsma.com/publicpolicy/wp-content/uploads/2012/09/Asia-International-roaming-explained-English.pdf (accessed 8th December 2021).
2GSMA (2012b). 'International Roaming Explained—Asia Pacific'. London: GSMA. Available at: www.gsma.com/publicpolicy/wp-content/uploads/2012/09/Asia-International-roaming-explained-English.pdf (accessed 8th December 2021).
3Sutherland, E. (2010). 'International Mobile Roaming: Competition, Economics and Regulation'. http://dx.doi.org/10.2139/ssrn.1622759
4GSMA (2012a). 'International Roaming Explained—Africa'. London: GSMA. Available at: www.gsma.com/publicpolicy/wp-content/uploads/2012/09/Africa-International-roaming-explained-English.pdf (accessed 6th December 2021).
5 Infante, J., and I. Vallejo (2012). 'Regulation of International Roaming in the European Union—Lessons Learned'. Telecommunications Policy, 36: 736–48. https://doi.org/10.1016/j.telpol.2012.06.014
6 BEREC (2010). International Mobile Roaming Regulation: BEREC Report. Riga: BEREC. Available at: https://berec.europa.eu/eng/document_register/subject_matter/berec/reports/206-international-mobile-roaming-regulation-berec-report
7 Spruytte, J., M. Van der Wee, M. de Regt, S. Verbrugge, and D. Colle (2017). 'International Roaming in the EU: Current Overview, Challenges, Opportunities and Solutions'. Telecommunications Policy, 41: 717–30. https://doi.org/10.1016/j.telpol.2017.01.009
8 GSMA (2012b). 'International Roaming Explained—Asia Pacific'. London: GSMA. Available at: www.gsma.com/publicpolicy/wp-content/uploads/2012/09/Asia-International-roaming-explained-English.pdf (accessed 8th December 2021).
9 African Union (2013). 'International Mobile Roaming Guidelines'. Available at: www.itu.int/en/ITU-D/Regulatory-Market/Documents/Roaming/AU_IMR_Guidelines_Regulators_FINAL.pdf (accessed 7th December 2021).

6. The importance of the mobile telephony market on growth and development of other sectors in an economy and the important role it plays as a facilitating factor to economic integration cannot be underscored. Harmonisation of regulatory actions and elimination of regional surcharges on roaming is one way of achieving the broader continental objectives to strengthen economic relationships, enhance competition and deepen economic integration.

RATIONALE

7. The study sought to understand the features of roaming services in the telecommunications industry from a Zambian perspective. The study intended to explain the high variance in roaming charges and to uncover the types of competition concerns that exist regarding roaming charges. The findings of the study will be used to develop regional and continental competition policy priorities that address these concerns. Subsequently, it is expected that the harmonisation of regulatory actions and elimination of regional surcharges on roaming will have an important role to play in terms of broader continental objectives to strengthen economic relationships and deepen economic integration in Africa.[10]

STUDY OBJECTIVES

8. The study objectives were as follows:

   8.1 To understand the market structure, state involvement and the regulatory setting of the telecommunications industry in ACF member countries, with a particular focus on the determination of roaming charges that impact on continental trade and tourism.

   8.2 To get an understanding of the type of competition concerns that exist in regard to roaming charges in the different ACF member countries.

   8.3 To provide a platform for identifying regional and continental priorities in respect of the telecommunications industry.

METHODOLOGY AND SCOPE

9. The scope of the study was limited to the provision of international roaming voice and data services over SIM supported mobile telecommunications devices to consumers into Zambia that travel from abroad. The study did not consider fixed line telecommunications services and the provision of SMS over SIM-supported mobile devices.

10. International roaming markets were assessed on the basis of Mobile Network Operator ("MNO") pairs within country-to-country pairs. Thus, the study will consider voice and data services offered between all MNO pairs for each visiting home country.

11. The study made use of secondary data from key stakeholders and market players within the mobile telecommunication subsector of Zambia that includes the Zambia Information and Communications Technology Authority (ZICTA), MTN Zambia, Airtel Zambia and Zamtel among others. Prior studies and literature on the subject were also considered.

LIMITATIONS OF STUDY

12. The study only relied on secondary data procured from Tarifica (which is a global provider of telecoms pricing, plan and device data). This was a major limitation as the data set procured did not capture MTN Zambia roaming charges, and this limited the scope of the analysis conducted.

10 Agreement Establishing the African Continental Free Trade Area, 5 February 2021, A.U.T.S 36437

GENERAL STATE OF COMPETITION IN THE SECTOR

THE ZAMBIAN MOBILE INDUSTRY

13. The Zambian mobile industry has continued to play an important role in driving economic growth and digital inclusion across the country. With the total number of active mobile telephone subscriptions increasing from 17.2 million reported at the end of 2019 to 19.1 million subscriptions recorded at the end of 2020, this reflects an improvement of 10.9 percent. This performance represents a growth in the mobile penetration rate from 99.1 percent recorded at the end of 2019 to 106.8 percent in 2020.[11]

14. The increase in the number of active mobile telephone sim cards was mainly attributed to increased investments in telecommunication coverage infrastructure, the increased adoption of machine to machine (M2M) services such as point of sale machines and other data-enabled devices that utilize sim cards as well as increased demand for mobile voice and internet services as households, firms and individuals adopted various coping strategies to sustain their operations during the peak of the COVID - 19 pandemic.[12]

NATURE OF COMPETITION

15. The mobile telecommunications industry comprises of two edges that provide competitive advantage. These include the expanse of infrastructure and retail level management. MNOs are typically vertically integrated operating at both levels of the mobile value chain that is, infrastructure role out and retail level. Therefore, MNOs compete based on the prices they charge in the retail market as well as on the infrastructure that they build. Such form of infrastructure-based competition occurs in terms of the coverage, quality of signal and technology used which directly affects the quality of services they can offer in the retail market[13].

16. Infrastructure-based competition, in which each market participant invests in its own infrastructure, has delivered substantial competition and consumer benefits but comes at a high cost of capital investment. In emerging markets, and particularly in the poorest countries where infrastructure costs and associated risks are relatively higher, this model may not be the most appropriate[14].

17. Recent developments show that increasingly, MNOs have chosen to divest their passive infrastructure in preference of colocation[15] which in the case of Zambia has been supported at both legal and policy level. While this has increasing become another sector subject to different competition dynamics, the MNOs are now focusing on service offering at retail level as a source of competitive advantage.

STRUCTURE OF THE SECTOR

18. Zambia's Mobile Telecommunications Industry has three (3) Mobile Network Operators that offer telecommunications services. These include MTN Zambia Limited, Airtel Zambia Limited and Zamtel. The first two MNOs are foreign-owned, and the third MNO is wholly owned by the Government of Zambia. MTN Zambia Limited and Airtel Zambia Limited have continued to have relative dominance in market share over Zamtel, with a 45.3 percent and 35.5 percent share of the market respectively. Zamtel, the state-owned provider, maintained the least market share in mobile telephone subscriptions with 19.2 percent stake of the total number of subscriptions. The market shares of Airtel Zambia and MTN Zambia increased by 1.5 percentage points and 1.6 percentage points respectively while Zamtel lost market share of 3.2 percentage points in 2020.

19. Further, Pursuant to the Licensing Guidelines of 2017, Zambia Information and Communications Technology Authority (ZICTA) issued a call for applications for a network licence under the international market segment and a service licence under the national market segment with associated resources. The successful bidder would

11 ZICTA Annual Report 2020
12 ZICTA Annual Report 2020
13 Paelo, A., and G. Robb (2020b). 'Competitive Dynamics of Telecommunications Markets in South Africa, Tanzania, Zambia, and Zimbabwe'. WIDER Working Paper 2020/83. Helsinki: UNU-WIDER. https://doi.org/10.35188/UNU-WIDER/
14 Accelerating Digital Connectivity Through Infrastructure Sharing http://www.ifc.org/thoughtleadership
15 Collocation has allowed sharing of equipment rooms, security, masts, air conditioners, generators, and fibre cables to the facilities. The tower providers provide all the necessary equipment required for the tower site to successfully run.

function as the fourth (4th) Mobile Network Operator. The call for applications followed the failure by UZI Telecoms to launch mobile services following the award of the tender. The process of issuance of the new licence was expected to be concluded in 2021. The decision to introduce a fourth (4th) mobile operator was arrived at after conducting an analysis of the ICT sector market and one of the drivers for the new license was said to be the need to raise the levels of competition.

STATE INVOLVEMENT

20. The Zambian telecommunications (telecom) sector has seen positive and significant developments over the last three decades with reforms in 1994 which opened the Zambian telecom market to new entrants. One of the significant measures included the establishment of the National ICT Policy for regulating the Telecoms sector of Zambia. The Zambia National Information and Communications Technology ICT Policy was developed based on thirteen pillars and three core thematic areas: capacity building, effective regulatory and legal framework, and efficient and competitive ICT sector. Further, to regulate the information and communication sector, the Zambia Information and Communications Technology Authority (ZICTA) was developed.[16]

21. In addition, implementation of the Information and Communications Act in 2009 and partial privatization of the Zambia Telecommunications Company Limited (ZAMTEL), along with liberalization of the international gateway (a telephone number through which calls are routed to get cheaper rates on international long-distance calls) have helped in making the telecom sector of Zambia a profitable investment area. As a result, the capacity to communicate and access to information in Zambia have significantly increased with the provision of digital satellite, internet and mobile networks in the country. The telecoms sector of Zambia comprises of public switched telephone network (PSTN), international voice, local loop, national voice, mobile, private data networks and internet operators. All these subsectors have been liberalized.[17]

22. The Zambian telecommunications sector has been subjected to competition since 1997 when the first privately owned mobile cellular enterprise entered the market[18]. The Zambian government began the process of liberalizing the telephony in 1991 when the telecom sector was dominated by Zamtel, the state-owned company. This resulted in significant developments in mobile telephony in Zambia. By 2004, the telecom sector of Zambia opened to various private sector competitors with licensing of Celtel (now Airtel) and Telecel now MTN[19].The development of the telecommunications sector in Zambia has been driven by a degree of competition, which has resulted in greater benefits for the consumer, particularly with respect to the Internet and mobile telephony[20].

23. State involvement in the sector has been at various levels which include (i) provision of policy and legal framework, (ii) as facilitator of the mobile network expansion through universal access and (iii) as an active telecommunications player through its wholly owned mobile network operator Zamtel.

MARKET REFORMS

24. From independence and up to 1997, the telecoms industry in Zambia had been dominated by the state-owned company Zambian Post and Telecommunication Corporation (PTC)[21]. The enactment of the Telecommunications Act ("Telecommunications Act," 1994) in 1994 led to the splitting up of PTC into two separate companies: the Zambia Postal Services Corporation (Zampost), and the Zambia Telecommunications Company (Zamtel)[22].

25. Traditionally, Zamtel (PTC) had been offering landline phone services. In 1994, Zamtel was the first Zambian telecoms company to provide mobile phone services. Zamtel, a product of liberalization, remained the sole entity responsible for transmitting outbound and inbound international data

16 Zambia Telecom. https://www.zambiainvest.com/telecoms/ accessed on 06/01/2022
17 Zambia Telecom. https://www.zambiainvest.com/telecoms/ accessed on 06/01/2022

18 Thulasoni Kaira, State of Competition in Zambia's Telecommunications, the African journal of information and communication issue 11 2010/2011
19 https://www.zambiainvest.com/telecoms/ accessed on 05/01/2022
20 Thulasoni Kaira, State of Competition in Zambia's Telecommunications, the African journal of information and communication issue 11 2010/2011
21 Kaira, T. (2011). State of Competition in Zambia's Telecommunications Sector. The African Journal of Information and Communication. https://doi.org/10.23962/10539/19719
22 Kaira, T. (2011). State of Competition in Zambia's Telecommunications Sector. The African Journal of Information and Communication. https://doi.org/10.23962/10539/19719

traffic as well as being in control of the country's international gateway. This meant that all data traffic to the Internet had to go through Zamtel. This inherently gave Zamtel a monopolized competitive advantage.[23] This lack of private sector players in the international gateway system led to very high international calls and data tariffs, bottlenecks, as well as lack of investment in modern and more efficient technologies[24]. Evidently, this was hindering the steady developments in communications and ICTs.

26. It was only after 2010 that the government sought to liberalize the international gateway system, a move that saw immediate participation of private sector players and subsequently an astounding ripple effect in reduced user prices for customers[25]. The government had initially pegged the international gateway license fee at $12 million which was highly prohibitive and not reflective of the prevailing fees in the region. It was not until the reduction of the license fee from $12 million to $2 million, and finally to $350,000 that private MNOs started offering international gateway services. Since then, the telecoms sector with regards to internet and the associated technologies have been developing rapidly[26].

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27. The Zambian government has implemented a programme to roll out sites in rural areas through Zamtel. The programme began in 2017 under the Universal Access Fund and the intention was to build 1,009 towers that should achieve 100 per cent population coverage. So far, 424 of the new sites are operational, accounting for the large increase in Zamtel's coverage between 2017 and 2019. These sites are maintained by ZICTA and can be used by any operator[27].

28. The total number of communication towers in Zambia reduced marginally from 3,248 reported in 2019 to 3,225 recorded at the end of 2020 representing a reduction of 0.7 percent. Notably, Zamtel transferred the majority of its tower infrastructure assets to Infratel following the Government's decision through the Industrial Development Corporation to establish the new infrastructure company. In addition, IHS decommissioned some sites arising from its new investments as well as increased infrastructure sharing arrangements[28].

BARRIERS TO ENTRY

29. The lack of public airwaves (spectrum) in the telecommunications industry creates a high barrier to entry. The Zambia telecom market currently comprises of just three MNOs with a fourth one in sight to commence operations in 2022. Limited increase in the number of players owes to the fact that it is not easy to establish a new telecoms carrier since it requires government approval to transmit voice, data, and video on public airwaves. In addition, spectrum licenses are limited and therefore quite expensive. Moreover, the deployment of network infrastructure requires significant capital expenditure, which very few entities can afford. Thus, this barrier protects the profits of incumbents.

23 Konde, V. (2004). Internet development in Zambia: A triple helix of government-university- partners. International Journal of Technology Management. https://doi.org/10.1504/IJTM.2004.004280

24 Zambia Competition Commission. (2008). In Liberalisation of the International Gateway. Lusaka, Zambia.

25 Sumbwanyambe, M., & Nel, A. L. (2011). Liberalization, regulation and privatization (LRP): Telecommunication reform challenges in Zambia. 2011 15th International Conference on Intelligence in Next Generation Networks, ICIN 2011. https://doi.org/10.1109/ICIN.2011.6081075

26 Alden, J. (2008). International sharing: International Gateway Liberalisation. In Trends in Telecommunication Reform 2008 (pp. 1–30). Virginia: Freedom Technologies.

27https://sa-tied.wider.unu.edu/sites/default/files/pdf/SA-TIED-WP-122.pdf

28 https://itweb.africa/content/wbrpOMgYoRrvDLZn

REGULATORY AND LEGISLATIVE FRAMEWORK

REGULATORY SETTING

30. The main objective of mobile roaming regulation is to maximize the benefits of customers delivered at reasonable and competitive prices. It is evident that high international roaming tariffs can impair the ability of customers to enjoy ubiquitous connectivity, hamper the adoption of new business models and discourage investments. International Mobile Roaming (IMR) is a unique electronic communication service that is offered to mobile customers when they travel to any country outside their home country. There are broadly two main segments to consider for IMR: the wholesale segment and the retail segment.

31. The Information and Communications (Tariff) Regulations of 2018 as well as the Code of Conduct for ICT Service Providers are the major legal instruments used at the retail segment of the mobile roaming market in Zambia. In order to facilitate this service, there is need for Zambian mobile operators to establish bilateral and/or multilateral roaming agreements with mobile network operators in other countries. This is considered part of the wholesale segment of IMR where inter-operator tariffs or charges for the various services are determined. Owing to the fact that the wholesale segment involves operators in other international jurisdiction, the Zambia Information and Communications Technology Authority (ZICTA) does not regulate the wholesale segment. In the retail segment, the Zambian operators take into account all the wholesale roaming costs that are paid to a visited network and establish a retail charge for roaming that Zambian consumers then pay. This forms part of the tariffs for electronic communications services that are regulated by ZICTA. In this regard, a Zambian mobile operator cannot set or vary a retail roaming charge without the prior approval of the Authority. The retail segment of the mobile roaming market is regulated in the same way that the domestic mobile sector is regulated.

32. In regulating the retail aspects of IMR, ZICTA also endeavours to ensure that there is transparency in the way that roaming services are offered in order to avoid "bill shock" by mandating the publishing of roaming prices as well as the dissemination of relevant roaming information via Short Message Sending (SMS) when a customer travels.

33. At wholesale level, ZICTA is involved with a number or regional and international initiatives at Southern African Development Community (SADC) and International Telecommunications Union (ITU) level to promote affordable roaming. At SADC level, ZICTA has further been involved with a project dubbed "Roaming Like at Home" which aims to promote transparency and lower roaming charges through multilateral engagement of regulators and mobile operators within the region. Zambia has completed both phase I and Phase II of the project just like eight other Member States namely, Botswana, Eswatini, Mauritius, Mozambique, Namibia, South Africa, Tanzania, and Zimbabwe[29].

34. Zambia is also a signatory to the SADC Roaming Regulations of 2015 which were drafted to provide a coordinated regional response to the formulation of roaming regulations, facilitate the development of regionally acceptable standards of roaming, and ensure consumer protection on a regional level with regard to roaming[30]. The regulations direct member states regarding the role that national regulator should play in regulating for transparency, the costing of roaming services, and the monitoring and enforcement of compliance with the regulations. For instance, the regulations direct member states to ensure that mobile operators provide information on the availability of roaming services and applicable charges, with the minimum information on applicable charges for roaming services being the tariff per minute of incoming and outgoing calls, the tariff per SMS sent or received, and the tariff per megabyte of data used.

29 SADC Regional Indicative Strategic Development Plan (RISDP) 2020-2030 published in October, 2020

30 SADC (2015a). 'SADC Roaming Policy'. Walvis Bay: SADC. Available at: www.itu.int/en/ITU-D/Regulatory-Market/Documents/Roaming/SADC%20POLICY%20ON%20ROAMING%20APPROVED.pdf

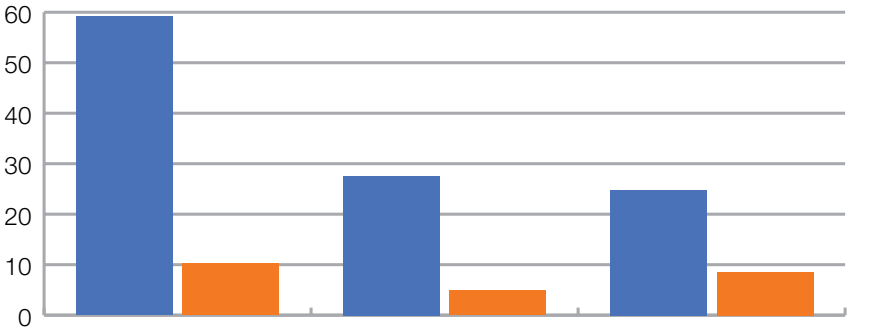
COST OF ROAMING

PRICE BENCHMARKING

35. Each Mobile Network Operator (MNO) is responsible for setting the retail price for IMRs for its customers. To be able to offer IMRs, an operator needs to enter into an agreement with a foreign network operator. Once an agreement is reached between the two MNOs, the necessary technical arrangements and tests are then undertaken. In most cases operators will agree to roaming arrangements on a bilateral basis. In other words, even if a group of operators share common ownership, an operator wishing to enter into a roaming agreement, with one or more of those operators, will negotiate individually with each of them. Some operators also use their own roaming contracts to enable entities called 'roaming brokers' to resell those roaming relationships. This can allow roaming between two networks which have no direct contractual relationship. Recently, some operator groups and intermediaries have set up roaming hubs.

36. The aim of these hubs is to enable participants to enter into multiple roaming arrangements, through a single standard agreement across different countries, and thereby reduce the time and cost of creating roaming agreements. Roaming agreements with mobile operators provides for agreements on price for the exchange of roaming traffic. Once the wholesale roaming rates have been established both operators will apply their own margin to the services they offer to their customers, to create retail prices. Operators have a tremendous incentive to find a roaming partner in every market in which their users are likely to travel and in which their competitors have agreements. Not being able to offer service in one or more countries in which a competitor is active would be a clear competitive disadvantage. At the same time, by not having roaming agreements operators would forego the opportunity to make revenue from the customers of other operators roaming in their country of operation.

Figure 88: Airtel and ZAMTEL Average calling rates in ZMW



	Calling Home Country/Min	Calling within Roaming Country/Min	Incoming Call Rate/Min
Airtel Average	59,11	27,57	24,8
Zamtel Average	10,21	4,94	8,58

37. There have been concerns of international voice roaming charges which despite numerous interventions have remained sticky. Competition intervention have not addressed with concerns while price caps by some jurisdictions may have contributed to market distortions. The agreements due to their nature equally imply fixing of wholesale rates at the time of negotiations. These prices may not be subject to the benefits of changing market dynamics and have in large been detrimental to roaming consumers. Alternatives of flexible roaming wholesale rates may need to be considered to fully reflect market conditions.

PRICE TRENDS

38. Mobile operators in Zambia publish rates for international calls and roaming services in varying ways, including for prepaid (pay-as-you-go (PAYG) rates and bundle rates), post-paid, and contract subscribers. The discussion that follows focuses on prepaid PAYG rates for roaming services.

39. International roaming is a service that allows mobile users to continue to use their mobile phones or other mobile devices to make and receive voice calls and text messages, browse the internet, and send and receive emails while visiting another country. In this section, we compare rates for international roaming services charged by operators in Botswana, Malawi, Mozambique, South Africa, Tanzania, Zambia, and Zimbabwe. The study takes into account the efforts taken by SADC to harmonize roaming rates in the region by implementing the SADC roaming project. Thus, the comparator countries were selected on the basis of being part of the roaming project which is in its last stretch to deliver the highest impact towards reducing the SADC Roaming Tariffs for voice, SMS, and data.

VOICE CALLING SEGMENT

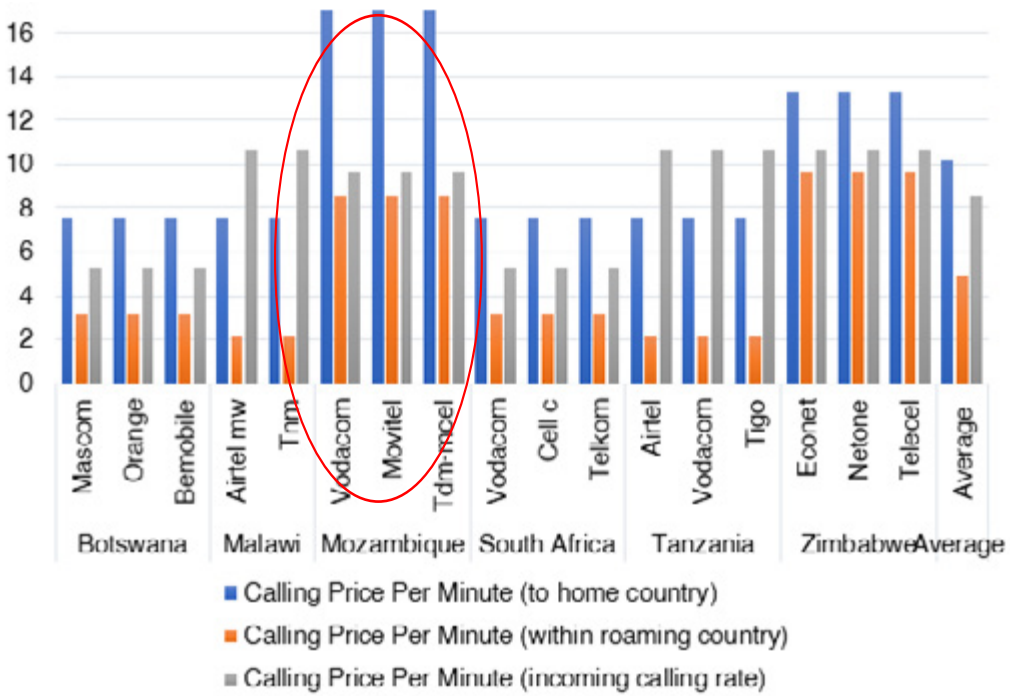
CALLING RATES PER MINUTE IN A VISITING COUNTRY

40. Roaming rates per minute among MNOs from selected SADC member states were considered for a Zambian subscriber roaming in that country. Figure 81 shows the calling rates per minute charged by Airtel and ZAMTEL on a Zambian subscriber roaming in a visiting country. Note that the data set does not include MTN roaming rates hence, the analysis does not take MTN Zambia into account as this data was not available at the time of this study.

41. Data shows that there is a significant difference in price between Airtel and ZAMTEL for a Zambian roaming in a visiting country when making a call to Zambia. On average, it cost a subscriber K59.11 to call Zambia on the ZAMTEL network as compared to K10.21 on the Airtel network. The difference in calling rates between the two MNOs represents an 83% gap. On average it costs a subscriber K27.57to make a call within a roaming country on the ZAMTEL as compared to K4.94 on the Airtel network. This represents an 85% gap. On average it costs a subscriber K24.80 to receive an incoming call on the ZAMTEL network as compared to K8.58 on the Airtel network. This represents a 66% gap.

42. The significant differences in roaming rates between Airtel Zambia and ZAMTEL may be explained by the varying sizes of the operators. For instance, the Zambian mobile telecommunications market comprises three operators but is dominated by Airtel and MTN which have the largest market share of subscriptions with 42.3 percent and 39.7 percent respectively. On the other hand, Zamtel maintained the least market share in mobile network subscriptions of 17.9 percent. MTN and Airtel are also Multinational MNOs with a presence in other SADC member states therefore, ZAMTEL as a single country MNO does not enjoy the scale that MTN and Airtel do.

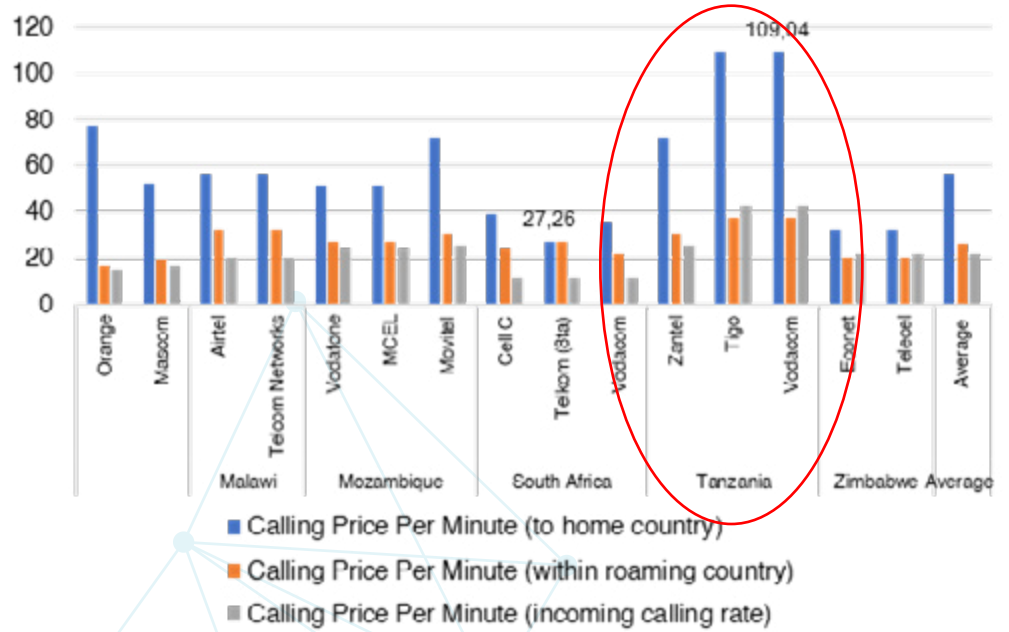
Figure 89: Airtel Roaming Rates Across Selected SADC Countries



Source: Tarifica, Competition and Consumer Protection Commission of Zambia calculations

43. The lower rates for larger multi-country MNOs may be due to the operators having more traffic on their network and therefore more bargaining power when negotiating rates with operators within the region. MNOs typically have to negotiate individual contracts and rates with MNOs in countries where they wish to provide roaming services.

Figure 90: ZAMTEL Roaming Rates Across Selected SADC Countries



Source: Tarifica, Competition and Consumer Protection Commission of Zambia calculations

44. The wholesale rates that MNOs agree on are for the most part dependent on the amount of traffic that will be put through into the country. The greater the traffic, the easier it is to negotiate lower roaming rates. Therefore, larger operators with greater traffic will have more bargaining power in negotiating roaming rates. Airtel has a presence in other African countries and is a useful example of how multi-country MNOs can provide the same offering to subscribers in various countries, possibly as a result of their bargaining power.

45. Figure 82 shows that Airtel Zambia charges a uniform roaming rate of K7.5 on its subscribers across eleven (11) mobile operators (MNOs) in four visiting SADC countries that include Botswana, Malawi, South Africa, and Tanzania. Airtel has an advantage of being one of the largest MNO with fourteen (14) subsidiaries in other African countries. The respective customers of Airtel benefit from reduced roaming prices when they are in countries where Airtel has a presence. Nevertheless, this means some countries may not experience the full measure of the roaming charges as negotiations are done as a block and not per individual country within the Airtel family. It is therefore likely that countries contributing more volumes to the block are subsidising those that are contributing less.

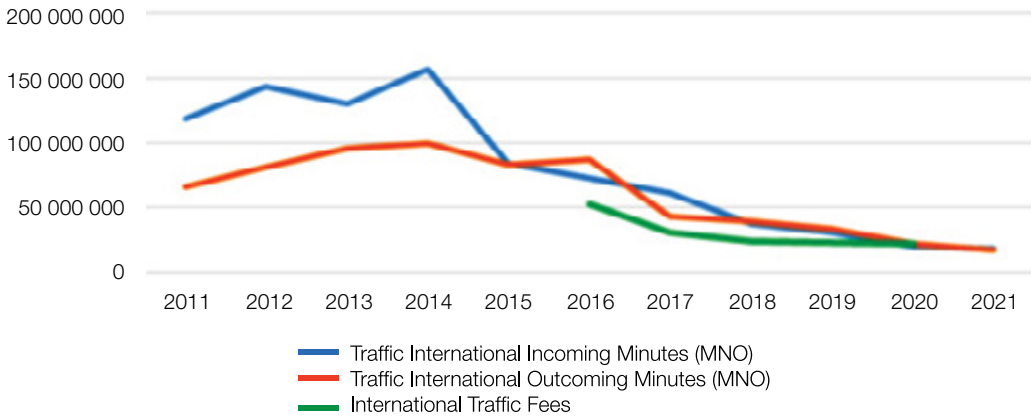
46. Mozambique and Zimbabwe are outliers, the calling price per minute (to home country) across all MNOs in Mozambique is K17.0. While the calling price per minute (to home country) in Zimbabwe is K13.3 across all MNOs in Zimbabwe. The implication of this variation is that roaming prices are more likely to be the function of the relationships and bargaining positions of the MNOs than they are of the features of the roaming countries.

47. Figure 83 shows that the roaming rates for ZAMTEL in the five SADC visiting countries were fluctuating across varying networks. The lowest calling price per minute for a ZAMTEL subscriber was K27.26 by Telkom South Africa. While the highest calling price per minute for a Zamtel subscriber was K109.04 by Vodacom and Tigo Tanzania. The main difference between ZAMTEL and multi-national MNOs like Airtel and MTN is that it has less traffic to send to their roaming partners and maybe even has weaker bargaining power than the two multi-nationals. Multinational MNOS are usually more aggressive in negotiating agreements, and it is within their interests to keep roaming prices low so as it increases traffic and earnings. On average subscribers roaming on a single-country MNO like ZAMTEL pay more on average than Airtel and MTN customers in countries where these MNOs are present.

48. In the event where smaller operators have been able to increase their number of subscribers, such as in Tanzania and Zambia, they still need to have increased their portion of subscribers to use cross-border services in order to negotiate favourable rates[31]. Therefore, it has been found that that larger multinational MNOs find themselves at an advantage when negotiating rates through bilateral agreements compared with smaller players, such as ZAMTEL, South Africa's Cell C and Malawi's TNM. In order to address this, CRASA has opted to encourage national regulators to assist smaller and entrant MNOs when it comes to agreements by coordinating with their regulatory counterparts in other member states[32].

31 The regulation of interconnection and regulatory alignment in the Southern African Development Community
32 The regulation of interconnection and regulatory alignment in the Southern African Development Community

Figure 91: Traffic for International Incoming and Outgoing Calls for Zambia

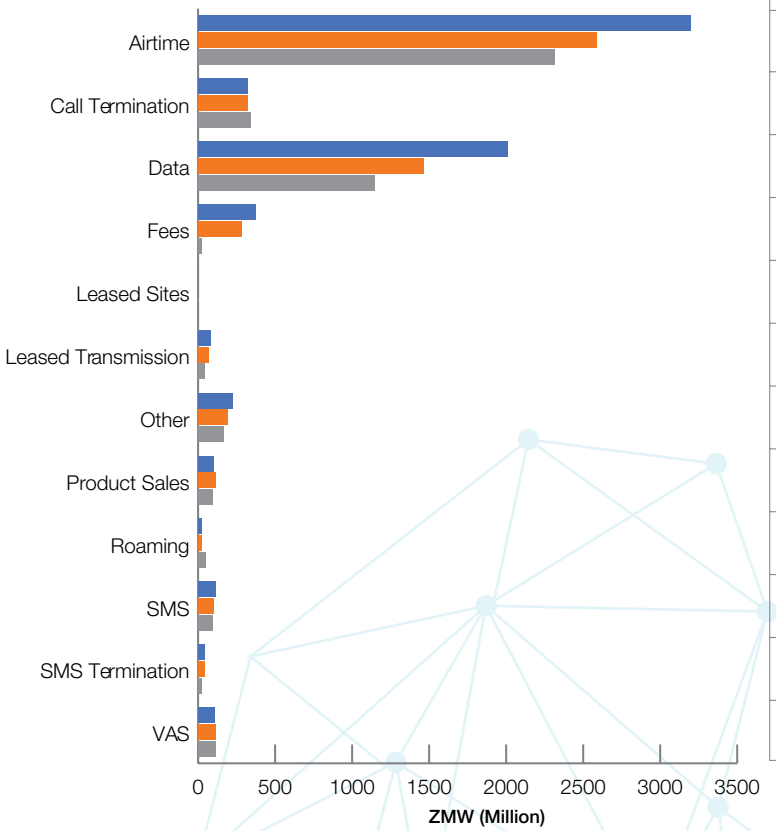


Source: https://www.pwc.hr/en/poslovno-savjetovanje/assets/publikacije/comms-review-mar-2014-new-metrics- for-a-changing-industry-final-hr.pdf

49. Zambian international voice traffic volumes have consistently been on the decline as seen in the figure above and this trend is anticipated to continue in the subsequent periods. This performance could partly be attributed to the increasing adoption of Over the Top (OTT) applications such as WhatsApp, facetime, Skype, and Viber to make international voice calls. In addition, adverse practices such as SIM boxing, a consequence of least cost routing could also explain the decline in international incoming traffic.[33]

50. On the other hand, mobile voice revenue has also declined over years due to an ongoing decline in international voice traffic resulting from the popularisation of OTT applications[34]. The increased use of OTT applications has caused MNOs to spread 3G and 4G coverage to majority of the population in order to improve data service offering and keep up with increasing data traffic. In addition, all three MNOs are modernising their networks with an objective to enhance performance and prepare their networks for next generation 5G and IoT services.

Figure 92: Mobile Telephone Revenue by service 2019 to 2021

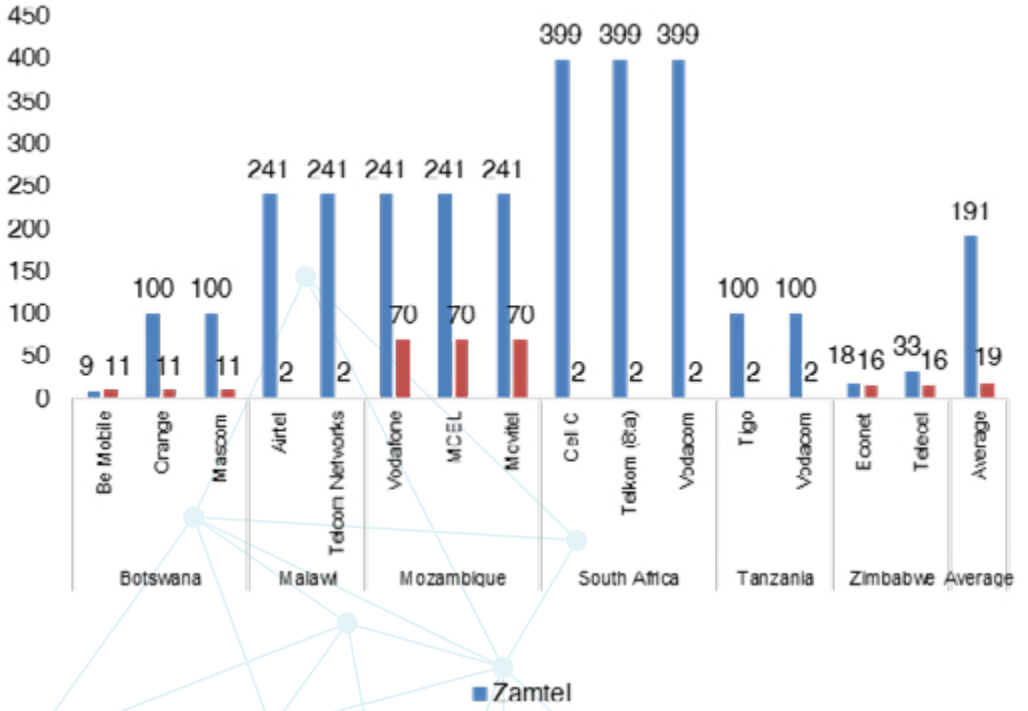


	2021	2020	2019
Airtime	3197,14	2584,64	2313,93
Call Termination	318,73	319,48	337,68
Data	2009,78	1460,8	1148,88
Fees	372,29	283,72	22,11
Leased Sites	0,56	0,56	0,19
Leased Transmission	78,15	67,8	42,19
Other	223,43	189,81	168,47
Product Sales	101,09	111,77	93,4
Roaming	25,18	24,55	47,76
SMS	112,56	102,31	91,92
SMS Termination	43,6	41,95	22,57
VAS	107,68	115,44	113,77

Source: ZICTA Annual Market Report 2022

33 ZICTA Mid-year Market Report
34 ZICTA 2021 Annual Market Report

Figure 93: Data rates per Megabyte in a visiting country 2021

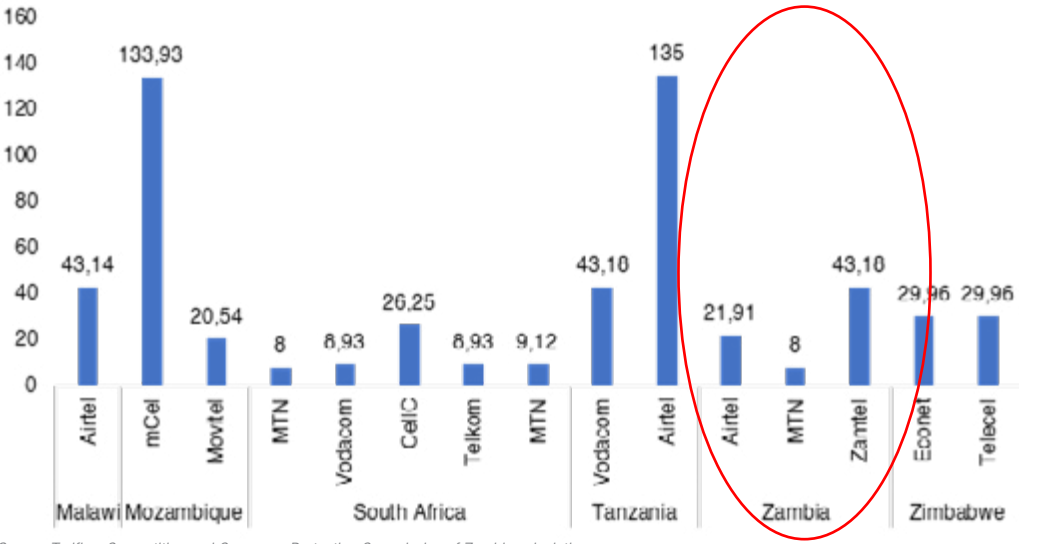


Source: Tarifica, Competition and Consumer Protection Commission of Zambia calculations

DATA MARKET

51. The mobile industry is amid a major paradigm shift. Customers are demanding voice services less and data services more, and the transition appears rapid[35]. Globally mobile data services have gradually taken the part of traditional voice services to become the main revenue growth point. In Zambia mobile data revenue has seen growth due to the increased demand for mobile data service. Data services accounted for a significant proportion of the revenue constituting 28 percent of the total revenue in 2021[36].

Figure 94: Botswana Mascom Price per MB



Source: Tarifica, Competition and Consumer Protection Commission of Zambia calculations

PROFITABILITY

52. As at the year 2021, it was noted that there was a decline in the revenue collected on voice roaming by the three MNOs in Zambia. The MNOs recorded a decline of 17.5% in revenue collected on mobile roaming (Figure 84). This could be attributed to the fact most people have resolved to using cheaper alternatives of communicating when in a foreign state such as data which is used to operate message and voice applications such as WhatsApp. Therefore, the profits being derived from international roaming have drastically declined over the years.

35 https://www.pwc.hr/en/poslovno-savjetovanje/assets/publikacije/comms-review-mar-2014-new-metrics for-a-changing-industry-final-hr.pdf
36 ZICTA Mid-year

DATA SEGMENT

DATA RATES PER MEGABYTE (MB) IN A VISITING COUNTRY

53. Data roaming rates for a Zambian subscriber roaming in a visiting country were considered with Botswana, Malawi, Mozambique, South Africa, Tanzania, Zambia, and Zimbabwe chosen as comparator countries. Figure 86 below shows the data roaming rates for different MNOs in the seven selected countries. Observations indicate that data prices per megabyte on average were relatively high as compared to the calling rates per minute for both Airtel Zambia and ZAMTEL in Figure 85. Airtel Zambia has consistently low data roaming rates on average K19 as compared to ZAMTEL K191. The most expensive price per MB for a Zamtel subscriber was in South Africa on all the MNOS at K399 and the cheapest price per MB for a Zamtel subscriber was in Botswana on Bemobile at K9. This reflects a wide variation, which may reflect the relative bargaining positions of the MNOs.

54. In addition, the extensive investments in fibre that Airtel Zambia has made, including links to Namibia, South Africa, and Tanzania could be another reason why Airtel is cheaper than ZAMTEL[37].

55. Landlocked countries have relatively high rates for mobile data roaming. This is partly explained by the fact that landlocked countries are relatively limited in terms of bandwidth. This is because access to the internet is provided by operators being able to connect to fibre-optic submarine cables located in oceans. Fibre-optic cables are generally more accessible for coastal countries than for landlocked countries because of the relative distances to the ocean. Therefore, up until recent years, when operators in landlocked countries have started investing in their own fibre, these countries would traditionally develop internet access by connecting to the landlines of coastal countries, which would provide bandwidth at a given cost.

56. Figure 87 above shows that ZAMTEL has the highest price per MB for a Mascom subscriber among all the three MNOs in Zambia. Since Mascom is a subsidiary of MTN it is expected that a Mascom subscriber will enjoy cheaper rates while roaming on MTN. A Mascom subscriber will pay more on Airtel but not as compared to the ZAMTEL rate. Again, this may be a reflection of the relative bargaining positions of the MNOs.

DRIVERS OF COMPETITION

57. The increasing trend for MNOs to adopt a variety of infrastructure models has changed the competition dynamic. In Zambia, the regulatory and legal policy considerations appear to be to be driving MNOs towards colocation. MNOs are taking the opportunity to reduce capital and operational expenditure by sharing infrastructure from the start of the build-out. This is technically more attractive than joining existing 2G networks since operators, in many markets, are seeking to use 3G to differentiate their products and services, rather than networks. Sharing a new network removes the complexity and cost associated with re-planning existing networks but requires commercial agreement on operations and upgrade costs[38].

TECHNOLOGICAL INVESTMENT

58. The Zambia Information Communication and Technology Authority (ZICTA) strategic plan 2017-2021 had set an objective to enhance infrastructure sharing regulations and conduct reviews of access activities. The planned review on access regulation was to promote effective infrastructure sharing. The Authority also planned to develop cost models for co-location, access, and interconnection for determination of prices in the event of dispute or unfair pricing. ZICTA's aim was to promote access, co-location, and interconnection among licensees in the period 2017-2021[39].

59. In 2021 the total number of telecommunication towers in the country increased from 3,309 reported at the end of the 2020 to 3,417, representing an overall increase of 3.3 percent. This overall increase in the total number of towers was mostly attributed

37 Nsomba, (2021). The regulation of interconnection and regulatory alignment in the Southern African Development Community. https://www.researchgate.net/publication/355096237

38 Mobile Infrastructure Sharing (GSMA)

39 ZICTA 2017-2021 Strategic Plan

to IHS Zambia, Infratel, Airtel Zambia and ZICTA whose tower ownership increased by 1.1 percent, 3.6 percent, 235 percent and 1.8 percent respectively. Particularly, Airtel's tower ownership increased from 17 at the end of 2020 to 57 at the end of 2021 representing a two-fold increase over the review period. The overall increase in the number of telecommunication towers is expected to increase access to mobile networks as well as the quality of that network[40].

60. Colocation directives has seen Airtel and MTN reducing their towers to the current stock with most towers sold to HIS and Infratel. MNOs are offloading towers to tower companies and then leasing space on them. Tower companies are then allowing network providers to share towers passively allowing MNOs to concentrate on their core business such as innovative delivery of services in demand on the market. Their focus has shifted to the provision of new innovative mobile services such as broadband, and fourth generation (4G) mobile ultra-broadband internet access that satisfies the high-speed data demand. Passive infrastructure sharing is said to have the following benefits; reduction of capital and operation expenses by 40 – 60%, allowing the service providers to free up management time and allocate them to their core business and marketing, and improve quality of service[41].

COMPETITION CONCERNS

ENFORCEMENT

61. The telecommunications sector has had enforcement interventions particularly due to competition concerns. Increased competition resulted in vertically integrated operators being reported to have engaged in underpricing of services especially those providing wholesale data as well as infrastructure and retail data services. This was seen to be anti-competitive prompting the Zambia Information Communication and Technology to intervene[42].

62. The Competition and Consumer Protection Commission has equally intervened in the market due to alleged discrimination, excessive pricing, and denial of access to markets. Allegations were against the tower company holding a dominant position whose contractual arrangement tied its service consumers to long service periods with punitive measures of disengagement. Similar arrangement of service provisions was also priced differently based on prior relations that did not have an economic connection to the contracts. The Commissions intervention ensured that the contracts were restructured to allow for fair access to the services offered by the tower company.

REGIONAL AND CONTINENTAL PRIORITIES

SADC REGIONAL INDICATIVE STRATEGIC DEVELOPMENT PLAN 2020-2030

63. Roaming represents sizable revenue streams for several SADC operators. For instance, the islands of Mauritius and the Seychelles have significant tourist trade from Europe and Asia, and their mobile operators rely heavily on roaming as a source of foreign exchange[43]. Thus, the economic transformation of the SADC region will require adequate and functioning infrastructure that will guide the region towards front-loading industrialisation in the context of evolving technologies. This means that the Infrastructure Development in support of Regional Integration pillar will aim towards interconnected, integrated, and quality seamless infrastructure and networks, including cross-border infrastructure, which will be pivotal in facilitating the movement of people, goods, services, and knowledge.

64. As a result, priority is also placed on ensuring harmonised policies, strategies, and initiatives in support of cross-border infrastructure and services[44]. Therefore, SADC has developed a regional Roaming Cost Model in order to aid in the implementation of the third phase of the SADC Roaming Project which seeks to reduce mobile tariffs throughout the region. Ten Member states have already completed the implementation

40 ICT Sector Report — Annual Market Report 2022
41 Nepal Telecommunications Authority, "Consultation Paper on Infrastructure Sharing," Nepal Telecommunications Authority, Kathmandu, 2010.
42 ICT Sector Report — Annual Market Report 2022
43 Africa-International-roaming
44 https://www.sadc.int/files/4716/1434/6113/RISDP_2020-2030_F.pdf

of the first two phases of the SADC Roaming Project and the remaining six states will be supported in order to bring them to a similar level. SADC also intends to develop a robust M&E System to monitor the implementation of Phase III (Cost-based Pricing for SADC wholesale and retail tariffs for voice, data and SMS) of the SADC Mobile Roaming Project. SADC further intends to develop a mechanism to harmonise the SADC International Termination Rates (ITRs) leading to a harmonised roaming mobile retail rates in SADC[45].

CONCLUSION

65. Zambia has seen a decline in the revenue collected on voice roaming by the three MNOs. The MNOs recorded a decline of 17.5% in revenue collected on mobile roaming in 2021. This could be attributed to the fact most people have resolved to using cheaper alternatives of communicating when in a foreign state such as data which is used to operate message and voice applications such as WhatsApp. Therefore, the profits being derived from international roaming have drastically declined over the years.

66. Zambian international voice traffic volumes have consistently been on the decline and this trend is anticipated to continue in the subsequent periods. This performance could partly be attributed to the increasing adoption of Over the Top (OTT) applications such as WhatsApp, facetime, Skype, and Viber to make international voice calls. In addition, advances in technology have meant increases in demand for broadband and data services, resulting from a surge in demand for OTT services. The shift in consumer behaviour towards the increased use of internet-related services is a strong indication that attention needs to be paid to the harmonization of regulation regarding internet-related services.

67. Recent developments show that increasingly, MNOs have chosen to divest their passive infrastructure in preference of colocation which in the case of Zambia has been supported at both legal and policy level. Colocation directives have seen Airtel Zambia and MTN Zambia reducing their towers to the current stock with most towers sold to IHS and Infratel. MNOs are offloading towers to tower companies and then leasing space on them. Their focus has shifted to the provision of new innovative mobile services such as broadband, and fourth generation (4G) mobile ultra-broadband internet access that satisfies the high-speed data demand.

68. Multi-national MNOs like Airtel and MTN have an incentive to offer better and more uniform prices to their customers. The respective customers of multinational MNOs benefit from reduced roaming prices when they are in countries where they have a presence. This is not surprising as larger multinational MNOs find themselves at an advantage when negotiating rates through bilateral agreements compared with single country MNOs like ZAMTEL in Zambia. What is not as clear is how multi-national MNOs can charge the same prices in countries that are different geographically and probably in terms of market conditions. In essence, this may mean countries with large subscribers and favourable economic conditions end up subsidizing those with small populations. Consumers may thus not be subjected to objective country specific prices.

69. Competition interventions have not addressed concerns of high roaming charges while price caps by some jurisdictions may have contributed to market distortions. The agreements due to their nature equally imply fixing of wholesale rates at the time of negotiations. These prices may not be subject to the benefits of changing market dynamics and have in large been detrimental to roaming consumers. Alternatives of flexible roaming wholesale rates may need to be considered to fully reflect market conditions.

RECOMMENDATION

70. The promotion of competition and harmonizing of roaming rates across SADC member states remains paramount as it stands to benefits consumers and cross boarder integration. To make roaming markets work for Zambian consumers and markets, the following recommendations are made;

45 4th Draft RISDP 2020-2030 Blueprints

Issue	Concern	Recommendation	Expected Impact	Key Actors
Increasing price competition among MNOs	Roaming charges should not be agreed by fixed charges but price ceilings.	MNOs should charge flexible rates within boundaries.	Flexible rates are expected to create price competition.	ICT Regulators
ICT/ Competition regulators do not review wholesale agreements for mobile roaming	There could be anti-competitive clauses in the agreements that disadvantage other players during the bargaining process.	Wholesale agreements for roaming should be subject for review by ICT and Competition agencies to ensure that they are procompetitive in nature.	There will be no anti-competitive clause in the wholesale agreements that may limit/prevent competition in the market	ICT/ Competition regulators

CHAPTER 8: ZIMBABWE

BACKGROUND

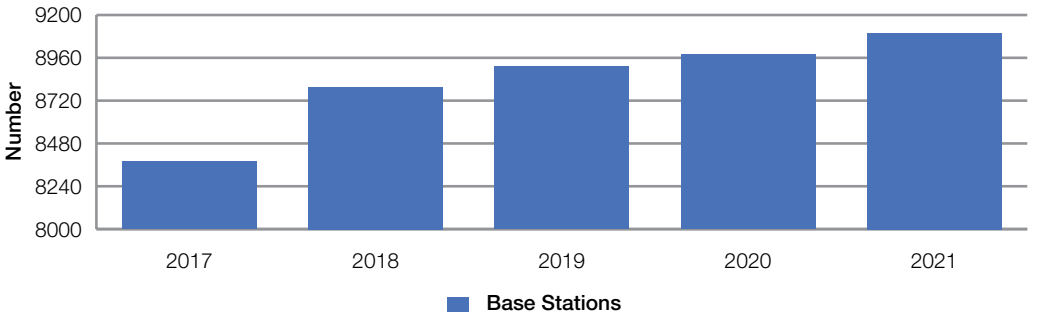
1. The telecommunications industry plays a significant role in the development process of economies globally given that information transmission anchors the process. Thus, ability of a country's telecommunications sector to provide network at competitive rates has a significant bearing on its development trajectory. Countries that can provide telecommunication networks competitively and efficiently are more likely to grow faster than those with an uncompetitive and inefficient telecommunications sector.

2. Given this central importance highlighted above, historically the sector has been heavily regulated as governments sought to control movement of information. In most countries, government used to be the sole provider of telecommunications services. However, this has changed in recent years as the sector has been deregulated in many countries, breaking governments monopolies in the provision of telecommunication services. The outcome of deregulation has been positive resulting in increased competition and innovation as more private players entered the market and compete for customers.

3. In the case of Zimbabwe, the Postal and Telecommunications Corporation (PTC), a statutory board formed in 1968, was the sole provider of post and telecommunications services (Munyaradzi, 2016) at one time. It was operationalised following promulgation of the Posts Telecommunications Services Act [Chapter 250] and the Posts and Telecommunications Corporation Act [Chapter 251]. The sector was then deregulated in the '90s post the adoption of the International Monetary Fund Economic Structural Adjustment Program 1991-95 (ESAP) which advocated for economic liberalisation and deregulation.

4. The PTC monopoly in the telecommunications sector officially ended following the licensing of NetOne (although it was formed following the unbundling of PTC) in 1996. PTC was unbundled to form the regulator - Postal and Telecommunications Regulatory Authority (POTRAZ) and state-owned companies namely NetOne, TelOne and ZimPost. This then paved the way for two more mobile network operators to be licenced namely Telecel and Econet Wireless in 1997 and 1998 respectively.

Figure 95: Mobile Base stations in Zimbabwe



Source: POTRAZ Annual Reports and Quarterly Sector performance reports

5. Post the sector deregulation, coupled with developments in information communication technology, the telecommunications sector in Zimbabwe like in other countries has grown rapidly attributable to investments by players in the sector. For instance, mobile base stations increased by 8.6% between 2017 and 2021 (See Figure 88). Importantly, investment in base station has been led by Econet Wireless accounting for 55.4% of total investment in base stations in Zimbabwe.

6. In terms of the sector's growth, mobile subscriptions marginally decreased from 14 million in 2017 to 13.6 million in 2021. The decline was a result of Telecel losing customers over the period under review. Mobile penetration rate also decreased from 102.7% in 2017 to 93.5% in the third quarter of 2021. Despite this performance, the data indicates that on average, almost every Zimbabwean citizen has access to mobile network services.

7. Voice traffic increased from 3.85 billion minutes in 2017 to 5.71 billion minutes in 2020. Data also shows a decrease in roaming traffic over the five-year period. Inbound roaming decreased from 6.97 million minutes in 2017 to 2.86 million minutes in 2020. Outbound roaming also decreased from 2.29 million minutes in 2017 to 582 thousand minutes in 2020. The decline in roaming minutes in 2020 is attributable to the coronavirus induced lockdowns which restricted traveling global. Extending the period under review to 2015 shows that both inbound and outbound roaming minutes were on an increasing trend up to 2019.

8. Mobile data usage in Zimbabwe has increased by 363% between 2017 and the 2021 (data provided up to third quarter). Data usage has grown significantly since the outbreak of the coronavirus to date. This is driven by increased usage of data and internet services as lockdown restrictions were enforced globally with people working from home and therefore the need to meet virtually.

9. The increase in the usage of roaming services in Zimbabwe, characterising the period prior to the Covid-19 pandemic, is likely to continue post the pandemic period as economies recover. As countries relax restrictions, Covid-19 related travel restrictions, business is more likely to boom leading to increased travelling, as businesses seek new markets and as people travel for tourism and trade. This calls for the need to understand competition dynamics in the provision of roaming services given that communication will play an important role as Zimbabwe and the world recover from the pandemic. The purpose of this study is therefore to understand competition dynamics in the provision of roaming services.

STUDY OBJECTIVES

10. This study sets out to understand the nature and level of competition in the provision of roaming services in Zimbabwe. The objectives are: -

    10.1 To assess the market structure, bargaining dynamics and the impact of regulation in the determination of roaming charges;

    10.2 To identify specific competition issues such as barriers to entry and the impact of national regulations and legislation guiding the operation of Mobile Network Operators (MNO) that provide roaming services in Zimbabwe; and

    10.3 To provide a platform for identifying regional and continental priorities in respect of the telecommunications industry.

METHODOLOGY

11. This study focuses on the provision of international roaming services on voice calls and data service by MNO to their customers in the following countries namely, South Africa and Botswana. The study employed both quantitative and qualitative methodologies. Desk research was used to critically assess existing literature, regulatory and legislative framework. Interviews with key stakeholders such as POTRAZ, Econet, NetOne and Telecel were conducted using a structured questionnaire.

12. International roaming markets were assessed on the basis of MNO pairs within the country-to-country pairs. Thus, the study considered voice and data services offered between all MNO pairs for each home country-visited country pair, where the home countries were restricted to countries participating in this study. Visited countries were restricted to the major trading partners and members of regional trading blocs.

13. Roaming charges assessed are those rates that prevailed during December 2021. To further ensure consistency between the country chapters, roaming price data used was that procured collectively from the same source for all participating countries.

GENERAL STATE OF COMPETITION

MARKET STRUCTURE

14. Zimbabwe currently has three (3) MNOs. Netone was the first company to enter the market in 1996 following the deregulation of the telecommunications sector in the late 90s. It is wholly owned by the Government of Zimbabwe following the unbundling of the former Postal Telecommunications Corporation (Munyaradzi, 2016). Telecel became the second operator and the first private MNO service provider after being licensed in 1997, ending government monopoly in the provision of telecommunication services. Econet Wireless was the last MNO to be granted a license in 1998 following a protracted legal battle challenging government's monopoly in the telecommunications sector. This ended with the Supreme Court

ordering government to issue a license to the MNO. While Telecel initially entered the market as a private company, government acquired 60% shares in the company in 2016 thereby becoming the largest shareholder. This therefore means that the Zimbabwean MNO market has only one private player, Econet Wireless.

15. Despite that Econet Wireless was the last to be issued with a license, it currently dominates the Zimbabwean mobile network services (MNS) market. It controls 65% of the market share while the remainder is shared between NetOne and Telecel (POTRAZ, 2021). NetOne had a market share of 31% while Telecel had the smallest with 4% of the market share. Econet Wireless' dominance in the MNS market was acquired over long period of time. Table 71 shows market shares of the three MNOs in Zimbabwe.

Table 76: Market Shares of Zimbabwe MNOs

	2018		2019		2020	
	Subscriptions (millions)	Market Share	Subscriptions (millions)	Market Share	Subscriptions (millions)	Market Share
Econet Wireless	8.6	66%	9.1	69%	8.8	67%
Netone	3.3	25%	3.2	24%	3.7	28%
Telecel	1.1	9%	0.9	7%	0.7	6%
Total	12.9	100%	13.2	100 %	13.2	100 %
HHI	5098	5398	5236			

Source: POTRAZ Sector Performance Reports

16. Since entry in 1999, the company grew its market share from 63,286 subscribers to 9 million in the third quarter of 2021. This trend has been obtaining in the market since 2009 when Zimbabwe was emerging from a hyperinflation period. This growth is attributed to its ability to invest in infrastructure post-dollarization of the economy. NetOne initially struggled with raising financial resources to re-invest in critical infrastructure given that its key shareholder (government) was struggling financially following a period of hyperinflation environment that the country experienced between 2000-2008. Telecel initially maintained its position as the third largest MNO prior to the acquisition of 60% controlling stake by government in 2016. Subsequent boardroom squabbles manifested in the company gradually losing its market share from 4.6 million subscribers to 582 000 in 2021. NetOne has also lost market share between 2018 and 2019. During this time Netone was having boardroom problems as well.

17. Effectively, it can be concluded that Econet Wireless currently enjoys a near monopoly position as it does not have an efficient competitor in the market. To try and encourage competition, government announced its plans to sell its shareholding in NetOne in 2019 but these remain undisposed to date.

BARGAINING DYNAMICS

18. Bargaining plays an important role in determining the final price in any given market. Bargaining power of buyers and sellers can determine the level of prices prevailing in any given market. In the roaming services market, bargaining is key given that roaming charges the two parties involved as there is both the visited and home MNOs. Therefore, it is important to understand these bargaining dynamics in the Zimbabwean market.

19. It is crucial to understand how roaming works in Zimbabwe. As will be discussed in greater detail below, POTRAZ is the sole regulator of the telecommunications sector and therefore mandated to regulate roaming services. POTRAZ requires that all MNOs display their roaming charges to their customers so that they can make informed decisions when deciding on which network to use for roaming. Unlike in the case of domestic tariffs where POTRAZ regulates tariffs, it does not regulate roaming tariffs.

20. In Zimbabwe, the roaming service is provided by three key players namely local MNOs, foreign MNOs and an International Career (IC). The local and foreign MNOs have roaming customers on their network. The IC provides the platform on which both the local and foreign MNOs ride on when their customer uses the roaming services at an agreed tariff. Therefore, bargaining dynamics in the roaming market in Zimbabwe are determined by the process of choosing a roaming partner and the IC.

21. The market for the provision of IC services has a number of international players providing the service. ICs are mainly international companies headquartered in Europe in countries such as France and India. These companies charge local MNOs a wholesale tariff or Inter Operator Tariff for the use of their services. Thus, the Inter Operator Tariff becomes a very important determinant used by a foreign MNO when choosing an IC for purposes of providing roaming services in Zimbabwe. POTRAZ bemoans the lack of regional careers as one of the leading causes of high roaming charges in the regions as all MNOs seeks the services of IC. The ability of a local MNO to secure services of a cheaper IC implies that they will increase their chance of being chosen by a foreign MNO as a roaming partner.

22. The wholesale tariff is not the only determinant used when choosing a roaming partner. Foreign MNOs also consider whether the host MNO has countrywide network coverage and ability to offer similar services of the foreign MNO. Given the market structure in Zimbabwe discussed earlier, it is clear that a significant number of foreign MNOs prefer partnering with Econet Wireless given that it has the widest coverage and market share.

BARRIERS TO ENTRY

23. The mere existence of only three MNOs in the market indicate that the sector has high barriers to entry into the provision of MNS in Zimbabwe. The greatest barrier to entry pertains to access to spectrum by new entrants. Spectrum is a subset of the electromagnetic waves lying between the frequencies from 8.3 kilohertz (kHz - thousands of cycles per second) to 3000 gigahertz (GHz - billions of cycles per second) (POTRAZ, 2021b). MNOs require access to spectrum for them to be able to provide network service to their customers. Spectrum is finite and therefore can only accommodate a limited number of operators which currently stands at three (3) operators in Zimbabwe as discussed earlier. There are two ways normally used internationally when determining the ultimate users of spectrum namely the auction system or allocation system. POTRAZ uses the allocation system and divides the spectrum among the players. This ensures that competition prevails in the sector since the auction system can result in one player getting all the spectrum thereby monopolising the sector.

24. POTRAZ issues a national license which obligates any licensed player to provide its service countrywide. Given this, new entrants must be able to make a substantial initial investment in infrastructure such as base stations in order to start operating. There is also a need to secure a license from the Postal and Telecommunications Regulatory Authority of Zimbabwe (POTRAZ) which comes at a huge cost and currently pegged at US$137.5 million for 20 years. Additionally the following must also be met by the prospective licensees: -

    24.1 the applicant must-

    24.2 be a locally registered company

    24.3 prove beyond doubt the capability to roll out services - Business plan and project proposals required

    24.4 provide strong financial capability – Proof of funds and cash flow analysis for 5 years required

    24.5 have technical capabilities to rollout services – CVs for top project team/ management required.[1]

25. Network effects also act as another barrier to entry for new entrants into the market as they favour incumbents. Network effects refer to the benefit that customers derive from using a platform that has many users (Robb et al, 2014). This arises from the fact that it is usually cheaper to make calls on the same network than on two different networks. Therefore, when subscribers choose a network to use, they first consider the number of subscribers and how many people they frequently call are available on that particular network. It then gives incumbents an advantage over new entrants into the market.

1POTRAZ website.

26. However, recently government introduced Statutory Instrument 12 of 2021, which brought into effect a number of changes to the operation of the telecommunications sector. POTRAZ has introduced a tiered licensing regime in the sector. The tier system differentiates between telecommunications service infrastructure providers from network service providers. The change introduced a telecommunication licence for providers of network facilities services, which allows the licensee to invest in passive infrastructure that it can lease or resell to other operators but it prohibits the licensee from providing the service to end users. It also has Telecommunication Licence for Network Services who operate transmission network, core network and access network and offer wholesale services to other licensees through network facilities offered by a network facilities provider.

27. The new system reduces the cost of entry in that new entrants will not necessarily have to invest in telecommunications infrastructure. It creates the room for entry for Mobile Virtual Network Operators (MVNOs). However, it is too early to assess the impact since the current status quo prevail, but POTRAZ claims that it has received new applications for Mobile Virtual Network Operators licence (MVNOs). If it becomes successful, then this will become a game changing development in the Zimbabwe market as new entrants at the mobile network service level will be anticipated.

REGULATORY AND LEGISLATIVE FRAMEWORK

28. The principal legal framework that guides operations of MNOs in Zimbabwe is the Postal and Telecommunication Act [Chapter 12:05] of 2000. The Postal and Telecommunication Act [Chapter 12:05] 2000 is a successor to the Broadcasting Act [Chapter 12:01], Postal and Telecommunication Services Act [Chapter 12:02], the Posts and Telecommunications Corporation Act [Chapter 12:03] and the Radiocommunication Services Act [Chapter 12:04]. The Act was enacted in 2001 following government's decision to unbundle the then Postal and Telecommunications Corporation (PTC) which had a monopoly in the provision of postal and telecommunications services in Zimbabwe.

29. The unbundling of PTC led to the formation the industry regulator Postal and Telecommunications Regulatory Authority of Zimbabwe (POTRAZ) in year 2000. POTRAZ assumed enforcing the Postal and Telecommunication Act [Chapter 12:05] of 2000 in 2001. POTRAZ is therefore the sole regulator of the telecommunications market in Zimbabwe. In accordance with the provisions of the Postal and Telecommunication Act [Chapter 12:05] of 2000, it criminalizes operation of a cellular telecommunication service or system without a licensed. Not only does the Act criminalize operation of telecommunications without a license, it also empowers POTRAZ to forfeit the equipment to the State.

30. Among the many several regulatory functions performed by POTRAZ includes an obligation to promote and maintain effective competition between persons engaged in the provision of postal and telecommunication services in Zimbabwe. Notwithstanding this, the Competition and Tariff Commission (Commission) has the overall responsibility to maintain and promote competition in all sectors of the economy. In performing this function, POTRAZ has a working relationship with the Commission in ensuring that fair competition prevails in the sector.

31. POTRAZ also has a regulatory responsibility to monitor tariffs charged by cellular telecommunication, postal and telecommunication licensees with a view to eliminating unfair business practices among such licensees. Through exercise of this function, POTRAZ approves tariffs price increases by MNOs. POTRAZ, has, on several occasions, approved price increases and decreases to MNOs. Important to note is that POTRAZ only sets maximum prices for tariffs and MNOs can then set their tariffs depending on their operational advantages. POTRAZ is also mandated to regulate roaming through promoting and controlling the provision of international transit services by persons providing telecommunication services in Zimbabwe.

COST OF ROAMING

32. International mobile roaming is a service whereby a user subscribing to mobile telecommunications services in one country can use his or her mobile device in other countries to make and receive voice calls, browse the internet, and send and receive emails (Marcus et al., 2019). The cost of roaming for Zimbabwean MNOs is assessed both for voice and data. The voice section is differentiated into calling from Botswana, South Africa and Zambia to the home country (Zimbabwe), calling within the roaming destination country and receiving calls in the selected African country. The first section discusses the determination of the cost of roaming in Zimbabwe with its critical partner countries in Africa namely South Africa, Zambia and Botswana who are its major trading partners in the region.

DETERMINATION OF COST OF ROAMING

INTER-OPERATOR TARIFF (IOT)

33. Zimbabwe mobile operators pay IOT to visited networks for example in South Africa, Zambia, and Botswana. IOT is the wholesale fee that the visited network operator charges the home network operators for allowing the customer to make calls or use data services on their network. This implies that Zimbabwean MNOs have to contract wholesale roaming services with at least one MNO in each visited country where they are then charged the IOT. In many cases, MNOs conclude agreements with all telecommunication players in a given country in order to increase their bargaining power. The IOT shows that the home network has little control over the baseline cost of roaming fees as this is determined by the visited network in a country.

SIGNALLING COSTS

34. The Zimbabwean mobile network operators also incur signalling costs which is one of the major cost components in the determination of cost for roaming in Zimbabwe. Signalling allows networks to communicate to each other through a third party connecting the two networks domiciled in two different countries. When a Zimbabwean makes a call from South Africa, the South African network only recognises the cell phone number after communicating to its Zimbabwe partners. Thus, instead of having network to network relations, there is a signalling provider who ensures connectivity, and, in many instances, mobile network operators use one signalling provider for all networks.

DATA CLEARING HOUSE PLATFORM

35. The data clearing is handled by a data clearing house which acts like a referee that authenticates calls made and data used .e.g., the Syniverse[2] based in United States of America(USA). Thus, there will be a call detail record for voice calls with details such as origin, destination, duration, time of day and amount charged for each call. Records for voice calls and data are used by roaming partners to settle accurately inter-operator settlements. Data clearing and finance clearing house costs constitutes 80% of the total cost. Thus, data clearing and settlement services have more costs than signalling costs.

MOBILE TERMINATION RATE

36. This is the fee charged to other telecommunications companies by mobile network operators to terminate a call on their mobile network. Mobile termination rates are crucial determinants of the retail roaming charges and lowering of termination rates is critical in lowering roaming charges (Nsomba, 2021)

OTHER COSTS

37. Costs such as value added tax (VAT), inflation and unstable exchange rates cannot be avoided by MNO in the current economic environment. Furthermore, these costs cannot be traced to any revenue unit of the MNO unlike operating expenses such as labour. Usage is also a cost as different individuals have different data services of voice calling needs. In relation to maintaining roaming agreements, there are costs associated with routine tests with various partners, production and storage of hard copies, shipment and human resource costs.

2 Syniverse Clearing and Settlement gives mobile operators a robust set of cloud applications to manage roaming from data collection over clearing and settlement to cash

ROAMING AGREEMENTS

38. For Zimbabwean, mobile network subscribers have access to service in foreign countries there is need for agreements with other MNOs so as to ensure continued service outside the Zimbabwean territory. Telecel has a total of 288 roaming partners while Netone currently has 195 roaming partners globally. The Table below shows the different country operators which the local mobile network operators have roaming agreements.

Table 77321: Roaming Agreements for Econet, Telecel and Netone

Partner Countries	Econet	Telecel	Netone
South Africa	MTN, Vodacom Cell C & Telkom	MTN, Vodacom & Cell C	MTN, Vodacom, Cell C & Telkom,
Zambia	Airtel, MTN and Zamtel	Airtel, MTN, Zamtel	Airtel, MTN, Zamtel
Botswana	Orange, Mascom & Be Mobile BTC	Orange, Mascom & Be Mobile BTC	Orange, Mascom & Be Mobile BTC

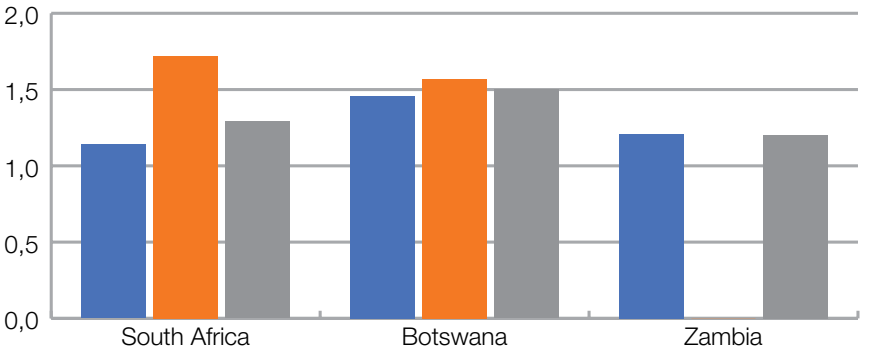
Source: Author's Compilation

39. All three MNOs in Zimbabwe have roaming agreements with all MNOs in partner countries. This is despite the earlier finding that both NetOne and Telecel are inefficient competitors to Econet. Mobile network operators select roaming partners through assessing the customer base, the subscriber base which determines how many will roam on their network, the network coverage and travel patterns of their customers to those regions. Bargaining power comes into play in such agreements as larger MNOs negotiate better deals for their subscribers.

ASSESSMENT OF ROAMING CHARGES

40. With regards to evaluating roaming charges, analysis looked into the average roaming charges for MNO in selected African countries which Zimbabwe largely trades with and tourism activities happening namely South Africa, Botswana, and Zambia.

Figure 96: Average Roaming charges for making local calls to Zimbabwe (USD per min)



	South Africa	Botswana	Zambia
Econet	1,14	1,46	1,21
Telecel	1,72	1,57	0
Netone	1,29	1,5	1,2

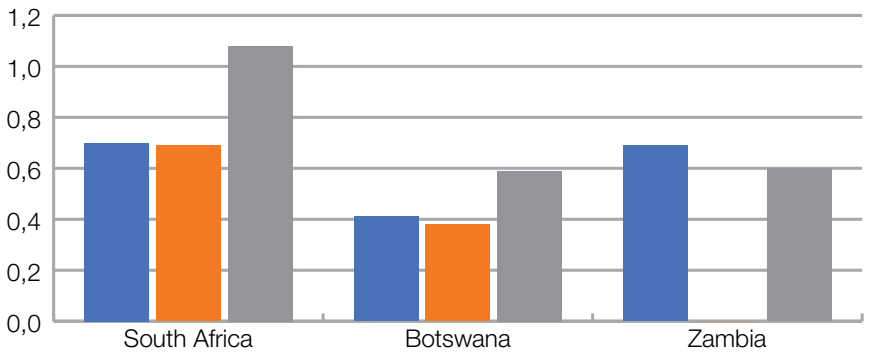
Source: Author's Compilation from MNO Websites

ROAMING CHARGES FOR MAKING LOCAL CALLS TO ZIMBABWE

41. Figure 89 indicates the average roaming charges for making local calls to Zimbabwe when roaming in the selected African countries.

42. Figure 89 shows that Econet has lower roaming charges for making local calls to Zimbabwe from South Africa and Botswana at US$1.14 and US$1.46 respectively. Netone is marginally cheaper when making local calls to Zimbabwe compared to Econet in Zambia charging US$1.2 per minute. The are no figures for prepaid roaming charges for making local calls to Zimbabwe for Telecel. On average, Telecel is charging the highest roaming rates across the three countries. The differences in roaming rates reflects the Zimbabwean MNOs market structure which is a near monopoly. Econet holds higher bargaining power in comparison to its competitors since the bulk of mobile network customers in Zimbabwe are on its network. Furthermore, Econet's size allows it to have more roaming business and can thus enjoy economies of scale in that regard. Last, inhouse challenges that have characterised both Netone and Telecel over the years is a contributing factor for high inefficiencies.

Figure 97: Roaming Cost for Making Local Calls when Roaming Within (USD per min)



Econet	0,7	0,41	0,69
Telecel	0,69	0,38	0
Netone	1,08	0,59	0,6

Source: Author's Compilation from MNO Websites

MAKING LOCAL CALLS WHEN ROAMING WITHIN (USD PER MIN)

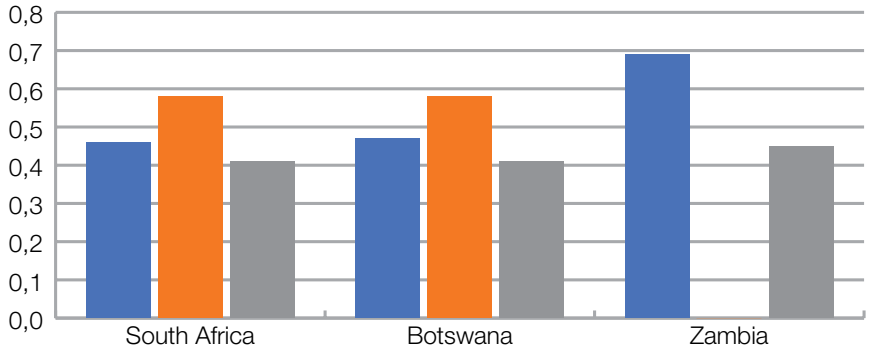
43. The Figure highlights the average cost for making local calls when roaming within for example South Africa. This implies that a Zimbabwean subscriber on roaming will be making calls to individual subscribers staying in South Africa, Botswana, or Zambia. Netone has the highest cost in South Africa and Botswana while Econet is more costly in Zambia than Netone. Telecel is the cheapest in Botswana and South Africa followed by Econet, showing that there is some form of competition to the largest MNO in Zimbabwe.

ROAMING CHARGES FOR RECEIVING CALLS IN THE VISITED AFRICAN COUNTRY

44. The Figure shows roaming charges for incoming calls for a Zimbabwean MNO subscriber receiving calls in the selected African country.

45. Netone has the cheapest rates for incoming calls in the selected African countries. Econet is relatively cheaper to Telecel in South Africa and Botswana when receiving calls.

Figure 98: Roaming Charges for Receiving Calls in Visited African Country (USD/ Min)



Econet	0,46	0,47	0,69
Telecel	0,58	0,58	0
Netone	0,41	0,41	0,45

Source: Author's Compilation from MNO Websites

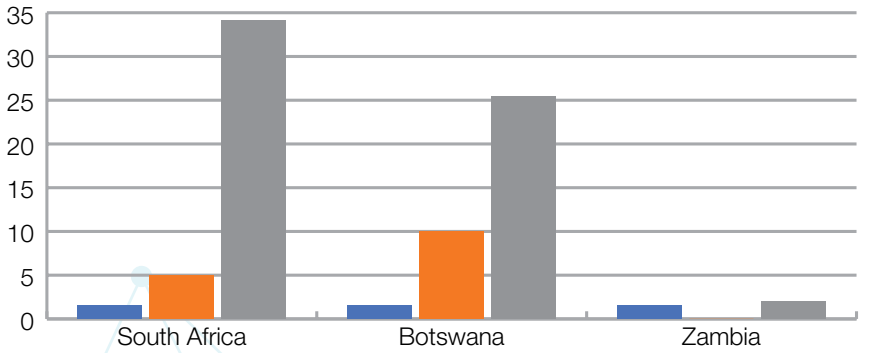
MOBILE DATA CHARGES WHEN ROAMING (USD PER MB)

46. Mobile data has increasingly become a crucial element of roaming as subscribers need to access data when roaming to ensure applications such as emails are functional and other social media applications. Access to data is also crucial in the Zimbabwean context given that cross border transport and logistics business operators are their clients. Haulage trucks are fitted with tracking devices that require data connectivity.

47. Rates charged for mobile data reflect that Econet is the cheapest and charges the same amount per megabyte across the three countries. Telecel is the second cheapest and Netone is the most expensive. Econet Wireless is likely cheaper because of its regional footprint through its sister company Liquid Intelligent Technologies.

48. An assessment of the roaming charges for data and voice roaming reveal that Econet - the largest MNO, is facing competition from the other two players Netone and Telecel on roaming charges for making local calls. Econet is overall cheap compared to the other two players in provision of roaming data and this is likely due to its links with Liquid Intelligent Technologies. This can also largely be due to their technological advancement of the company and economies of scale in operations which enables it to obtain better rates for its customers.

Figure 99: Roaming charges for Data in selected countries (USD/MB)



Econet	1,58	1,58	1,58
Telecel	5	10	0
Netone	34,15	25,43	2

Source: Author's Compilation using MNO Websites

COMPETITION CONCERNS IN THE MARKET

49. The Competition authority in Zimbabwe has not received any complaint or investigated any anticompetitive practise in the provision of roaming services or in the mobile telecommunications services market. However, this does not imply that the sector has no competition concerns. Information gathered from interviews points to existence of two competition concerns in the provision of data and roaming services in Zimbabwe, namely steering of roaming partner by home networks and spectrum spillage as discussed below.

STEERING OF ROAMING TRAFFIC

50. The steering of traffic[3] is the directing of roaming customers to a preferred network in foreign country by its home network or vice versa. This practice is widespread across the region and declines customers the right to choose a roaming partner of their choice. The practice tends to benefit large incumbents with market power or with a strong regional presence at the disadvantage of small players.

51. One of the arguments raised in support of this practice is that it benefits the customer since they are directed to a network offering the lowest price and also alleviates quality concerns for users. They further argue that steering of traffic enables precise control of the distribution of outbound roamers in foreign networks, operators can thus choose partners based on mutual traffic deal, delivered quality and price. Traffic is redirected to those networks with whom the MNO in Zimbabwe has the best wholesale rates. In such a scenario, some Zimbabwean MNOs view it as a business case rather than an anticompetitive practice as the preferred partner is selected based on the quality of service provided.

52. However, in mutual traffic deals, there is a possibility of alliances which become exclusive combined with reciprocity agreements, as partners can end up retaining the market and blocking other participants which may offer lower prices. (Paltridge et al, 2009). These arguments also need to be tested empirically to ascertain if users are always directed to the cheapest network.

53. This observation creates a much bigger problem in Zimbabwe which already has a single dominant player, Econet. The practice further entrenches Econet's position as it is likely to receive the bulk of the steered roaming traffic.

3 https://www.mobileum.com/products/roaming-and-core-network/roaming-management/steering-of-roaming/

RISE IN OVER-THE-TOP APPLICATIONS

54. The rise of over-the-top (OTT) services which can substitute voice roaming is a competition concern raised by some MNOs in Zimbabwe. Although it does not raise any infringement on competition law it warrants further inquiry. MNOs are of the view that OTT services such as social media applications .e.g., WhatsApp which offer competing voice services is now directly competing with mobile voice roaming service. The greatest challenge cited was that OTT currently do not incur the same cost as voice roaming yet they compete in the same market. However, important to note is that while they compete on voice they still rely on MNOs for data.

SPECTRUM SPILLAGE

55. Just like in the case above, another competition challenge emanates from spectrum spillage although it does not amount to infringement of competition law. This normally occurs in areas surrounding border areas where a foreign network still receives network signal from its home network while in a foreign country. Information gathered shows that in some instances network spillage from foreign MNOs covers a distance of up to 30km into Zimbabwe. This therefore implies that Zimbabwean MNOs lose potential roaming business as spectrum spills into their territory. This is of primary importance given the different macroeconomic environment that exist in different countries. Foreign MNOs from bigger countries like South Africa tend to benefit more from spectrum spillage as their customers do not have to roam when within a 30Km radius.

GOVERNMENT SHAREHOLDING IN MNOS

56. Roaming rates charged by Econet are cheaper in South Africa and Botswana. Telecel on average is charging the highest roaming rates across the three countries. The possible cause being that Econet has economies of scale arising from its position on the market which also gives it bargaining power when negotiating with roaming partners. This position has not been threatened by any of the two MNOs as they have failed to offer enough competitive pressure to Econet. In fact, what has been discussed earlier shows that the other two MNOs have been facing inhouse challenges closely linked to their ownership structure in which Government is the major shareholder in each of the two MNOs. This is reflected especially in the case of Telecel which started having endless in-house challenges following Government's acquisition of a controlling stake in the firm. Government control of the two MNOs is one of the sources of their ineffectiveness to offer effective competition to Econet.

REVENUE GENERATION AND PROFITABILITY

57. According to information obtained from interviews, international roaming only generates a relatively small share of the mobile network operator's overall revenue, ranging from 0.5% to 5% of MNOs revenue in Zimbabwe. Roaming as a service is generally profitable though currently MNOs in Zimbabwe have more outbound than inbound traffic due to closure of borders as a Covid 19 containment measure. Furthermore, MNOs experience foreign exchange losses which erode their profits arising from the macroeconomic challenges that the country is facing. If a subscriber travels to a foreign country, they are charged US dollars and when they come to Zimbabwe they suffer exchange rate losses as they are charged in local currency. However, one of the reasons why roaming is considered essential in the country is the forex component rather than total revenue as it is a major source of international services funding for Zimbabwean MNOs.

REGIONAL AND CONTINENTAL PRIORITIES

IDENTIFY REGIONAL AND CONTINENTAL PRIORITIES

58. The MNOs service providers in Zimbabwe are of the view that regional and continental priorities should centre around opening up borders and facilitating the free movement of people. Provision of roaming services, both voice and data, is highly dependent on the movement of people across borders. Therefore, restrictions around the movement of people across the region which has been further worsened by covid 19 induced restrictions means low business for roaming and that leads to increasing cost of roaming as fixed costs of providing the service remain high.

59. Given that the significant costs associated with roaming emanates from data clearance and signalling, it is worth exploring the possibility of establishing regional data clearing and signalling firms. Having a regional or continental signalling and data clearing house will go a long way in reducing the cost of roaming. However, more research is required before this can be adopted in order to assess if there is a business case for establishing such entities for the region. Information gathered through interviews points to the need of huge volumes of traffic which can provide a business case to establish a data clearing house.

60. To further reduce the cost of roaming in the region, some players are also of the view that inter-operator tariffs can also be reduced through offering a Most Favoured Tariff Rate along the lines of the World Trade Organisation (WTO) Most Favoured Nation principle applied in international trade. This would imply that any operator in the region will be obliged to favour a regional operator than an operator outside the region when charging inter-operator tariff. Thus, a regional operator must be charged a less inter-operator tariff than a foreign MNO operating outside the region. This can be agreed through the current existing regional economic groupings.

61. Last, since the provision of roaming services involve making payments in foreign currency, it therefore means that regional macroeconomic stability is a key ingredient to ensuring stable roaming tariff rates. There is therefore need for countries in the region to put in place sound macroeconomic policies that ensures regional macroeconomic stability.

COMPETITION CONCERNS TO BE ADDRESSED TO MEET PRIORITIES

62. Given the existence of traffic steering practice by some players in Zimbabwe, it has been reported that this practice is rampant in the region and continent at large. There is therefore need for regulatory intervention in the region and continent to enforce anti-steering policies in order to allow customers to choose a roaming partner of their preferred choice. This will go a long way in ensuring a competitive market in the provision of roaming services, since this practice favours large incumbents especially those with a wider regional footprint, while excluding small players.

RECOMMENDATIONS TO ADDRESS COMPETITION CONCERNS TO MEET REGIONAL AND CONTINENTAL PRIORITIES

63. This study sought to understand the market structure, bargaining dynamics and levels of competition in the provision of both voice and data roaming services in Zimbabwe. The study has shown that there are currently three MNOs namely Econet Wireless, Netone and Telecel. The market is currently dominated by Econet Wireless which is the only private player and controls 67% of the market. The remaining players are all government owned companies with in-house challenges which have made them inefficient competitors to Econet Wireless.

64. Barriers to entry in the form of spectrum limitation and license fees have been discussed but the recent changes in regulations through SI 12 of 2021 is a welcome procompetitive regulation and likely to lead to new entry in the sector via MVNOs.

65. The major anticompetitive practice identified in the Zimbabwean market in the provision of roaming services is the steering of traffic by players to 'preferred'

networks. As discussed, the practice is also prevalent in the region and tends to favour large incumbents thereby lessening competition in the provision of roaming services both nationally and in the region. In light of the above findings, the study recommendations have been split into national and regional as follows:-

NATIONAL

66. Government must privatise both Netone and Telecel to improve efficiency and allow more investment into the two companies to enable them to offer effective competition to Econet Wireless.

67. The Competition and Tariff Commission must advocate with POTRAZ, and MNOs to promote competition in the provision of roaming services and appreciate implications of traffic steering on the market.

REGIONAL

68. Anti-steering policies must be advocated for by telecommunications regulators and competition authorities.

69. Regional telecommunications regulators association must advocate for 'most favoured tariff' to give preferential treatment to regional MNOs.

70. Further research needs to be conducted on the scope of developing a regional signalling and data clearing house.

BIOGRAPHIES

AFRICAN COMPETITION FORUM

Precious Mathibe

1. is an International Relations Specialist within the Competition Commission South Africa and serves as the African Competition Forum (ACF) Secretariat. Previously employed by the Department of Trade and Industry in the International Trade and Economic Development with the focus in Africa. She holds a Master's degree in International Business from Gordon Institute of Business Science (GIBS) and Btech Honours Level in International Communications majoring in International Relations from Tshwane University of Technology (TUT).

ANGOLA

Guy Cornélio Domingos Kialanda

2. is currently the Head of Market Studies and Monitoring Department at the Angola's Competition Regulatory Authority (ARC). Previously, he held the position of Head of the Public Aid Control Department.

3. Kialanda has a degree in Economics and Management from the Jean Piaget University of Angola, having specialized in Applied Statistics in Economics, where he is also an associate teacher of Risks Analysis, Forecasting Methods and Descriptive Statistics. He is currently completing his Master's in Business Administration and Management at the Universidad de la Empresa, in the Oriental Republic of Uruguay.

Délcio Pradiné Penelas

4. is a Senior Economist at the Angola's Competition Regulatory Authority (ARC), currently assigned to the Merger Control currently assigned to the Merger Control Department. Previously, he was the Head of Market Studies and Monitoring Department. Prior to joining ARC in 2019, he has worked as a Business Analysist for 7 years in Angola Cables, a leading multinational company operating in the ICT wholesale segment.

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6. is a Senior Technician at the Competition Regulatory Authority (ARC), allocated to the Department of Market Studies and Monitoring, since 2020. Mendes holds a degree and a Master's degree in Economics and Commerce and in Economic Sciences, respectilly from the Degli Studi di Firenze University. In 2018, through the collaboration between the Court of Firenze and the University of Firenze, he was selected to work at the Court as a Technician in the Department of Administration and Accounting, where he remained until April 2019.

David Kapela Mbunga Kuntima

7. is currently a technician in the Department of Market Studies and Monitoring, at the Competition Regulatory Authority, where he joined in 2020. Kuntima has a degree in Economics from the Faculty of Economics of The Agostinho Neto University. He was Assistant Accountant Business Service & Outsourcing at KPMG Angola – Audit, Tax, Advisory, was involved in several consulting projects highlighting: Royal Air Maroc; ABS Europe Ltd and First Bank Rand.

Belarmino Tonho Manuel Bandeira

8. is a technician of the Department of Market Studies and Monitoring in the Competition Regulatory Authority. He has a degree in Financial Management and master's degree in Monetary and Financial Economics from the Agostinho Neto University.

Samuel Calachissa

9. a technician at the Department of Market Studies and Monitoring, having worked as a Mathematics teacher of the Secondary school from 2012 until 2015, at "A Colina do Sol" College. Calachissa has a Degree in Mathematical Sciences from Agostinho Neto University, Faculty of Sciences and currently is a Master's student in Economics in the specialty of Development at the Catholic University of Angola.

CCA COMPETITION & CONSUMER AUTHORITY

BOTSWANA

Bonyana Ndubiwa

10. is a Manager responsible for Policy and Research in the Competition and Consumer Authority of Botswana. She joined the Authority (by then Competition Authority) at its inception in 2011 as a Manager, Policy and International Liaison. She worked for the Ministry of Trade and Industry from 1994 to 2010 and was the lead person in the development of competition and consumer policies and laws. She was appointed to establish the Competition Commission of Botswana (Board and Adjudicator) in 2010. She holds a Master's Degree in International Business from the University of Melbourne, a Post-Graduate Diploma in Economics for Competition Law from King's College, London, and a Bachelor of Arts in Economics and Statistics from the University of Botswana.

Christson Daman

11. is an Analyst in the unit of Research and Policy under the Department of Investigation and Policy and Research at the Competition and Consumer Authority in Botswana. Prior to joining the Authority in 2014, he worked as a Research Analyst at Statistics Botswana. Mr Daman holds a Post-graduate Diploma in Economics for Competition law from Kings College in London, a Bachelor's Degree in Statistics and Economics from the University of Botswana.

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COMESA

Kondwani Kaonga

12. is a Senior Economist in the Research, Policy and Advocacy Division at the COMESA Competition Commission. Prior to joining COMESA in 2020, she worked as a Senior Investigator at the Competition and Consumer Protection Commission from 2013 to 2020. She holds a Master of Arts in Economics from the University of Zambia and a Bachelor of Arts with a major in Economics from the University of Zambia.

Joseph Kaumba

13. is a Competition Analyst in the Enforcement and Exemptions Division at the COMESA Competition Commission. Prior to joining COMESA in 2021, he was a Senior Investigator at the Competition and Consumer Protection Commission from 2014 to 2021. He holds a Bachelor of Arts with a major in Economics from the University of Zambia and is currently pursuing an MSc Economics and Finance from the University of Lusaka.

KENYA

Ninette K. Mwarania

14. Provides leadership in Research, strategic planning and policy development, which are critical to advance the Authority's mandate. She is also in charge of advocacy and International Relations functions responsible for supporting in maintaining effective partnerships. In addition, she oversees knowledge management, resource mobilization and performance monitoring and evaluation for the Authority.

Cecilia Mueni Kyenze

15. Ms. Kyenze is a senior Analyst at the Planning, Policy and Research Department at the Competition Authority of Kenya and an expert in Competition and Consumer Protection Regulation policy. She has over eight (8) years of experience in economic analysis, research, investigations, monitoring and evaluation and advocacy in the areas of competition policy and consumer protection regulation. She also has experience in research projects in sectoral and emerging markets both at the national and regional level. She holds a Bachelor's degree in Purchasing and Supplies management and is currently undertaking a Master's degree in project Management.

Mohamed Borai Adan

Mr. Borai is an analyst in the Planning, Policy and Research department at the Competition Authority of Kenya. He holds a Bachelor of science in Economics and Statistics from Egerton University and currently enrolled for Masters of Economics (Policy and Management) at Kenyatta University. He has experience in economic analysis and research in competition policy. He also has experience in knowledge management.

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MAURITIUS

Sudesh Puran

16. is Head Investigations of the Unilateral Conduct Group at the Competition Commission in Mauritius. Prior to joining the Commission in 2010, he has worked as Economic Analyst at the Ministry of Finance and Economic Development from 2004 to 2009. Mr Puran holds a Post-graduate Diploma in Global Competition and Consumer law from the University of Melbourne, an MSc Economics and Econometrics from the University of Nottingham, UK and a BSc (Hons) Economics from the University of Mauritius.

Dr Khemla Prishnee Armoogum

17. is an Investigation Officer (Economics) from the Unilateral Conduct Group at the Competition Commission in Mauritius. Prior to joining the Competition Commission in 2010, she was team leader at the Asset4 Data Services Ltd, Mauritius. She holds a PhD in Economics from the University of East Anglia, UK, an MSc Economics and Financial Management from the Middlesex University, UK and a BSc (Hons) in Economics and Finance from the University of Mauritius.

Anusha Sumaruth Gunness

18. is an Investigation Officer (Legal) at the Competition Commission of Mauritius. She is with the Competition Commission for 4 years now. She has worked on and overseen numerous cases and investigative work undertaken at the Commission. Prior to joining the Commission in 2018, Anusha worked in the financial services sector for 3 years with exposure to different legal and compliance matters as Compliance and Corporate Executive respectively. She holds an LLM in International Business Law from the University of Central Lancashire (UK) and a Bachelor (Hons) in Law and Management from the University of Mauritius.

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19. is an Assistant Investigation Officer (Economics) at the Competition Commission in Mauritius. Prior to joining the Commission in 2021, she worked at the Economic Development Board (Mauritius), involved in different analytical works to estimate the impact of economic events on trade and businesses in Mauritius. She holds an MSc Economics and Financial Economics from the University of Nottingham, UK and a BSc (Hons) Economics and Finance from the University of Mauritius.

Djodee Coopoosamy

20. is an Assistant Investigation Officer (Legal) at the Competition Commission in Mauritius. She holds a Bachelor of Laws (Hons) and an LLM in International Business law from Middlesex University. She completed the Bar professional training course at Northumbria University and was called to the Bar of England and Wales at the Honourable Society of the Middle Temple and in the Republic of Mauritius.

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CCSA

Dr Thulani Mandiriza

21. is a Principal Economist at the Competition Commission of South Africa since 2012. Thulani holds a PhD (University of Pretoria), two Masters Degrees, one in Business Administration and another in Development Economics from University of Oslo, Norway.

Salma Kagee

22. is a Senior Economist in the Economic Research Bureau (“ERB”) of the Competition Commission of South Africa (appointed in August 2021). Ms Kagee was previously an Economist in the same division of the Commission (appointed in September 2016). Prior to joining the Commission, she was an Analyst at Genesis Analytics (appointed in April 2014). Ms Kagee holds a Bachelor of Business Science Degree (with honours) in Economics from the University of Cape Town, awarded in 2012, and later received a Master of Commerce Degree in Economics in 2014 from the same university.

Kagiso Zwane

23. is an Economist in the Competition Commission's Economic Research Bureau, which he joined in 2022. Prior to joining the Commission, he worked at Genesis Analytics in the Evaluation for Development and Competition and Regulatory Economics practices. He holds a Master of Commerce in Applied Development Economics (University of the Witwatersrand) and Bachelor of Business Science in Economics (University of Cape Town).

COMPETITION AND CONSUMER PROTECTION COMMISSION – ZAMBIA

24. The report on the ACF Cross-Country International Roaming and Pharmaceutical Study – Zambia Chapter was prepared by a team of Researchers namely Mr. Peterson Mumbuluma – Research Analyst, Ms. Thelma Simfukwe – Research Analyst, Ms. Mweete Chiluba - Research Analyst, Ms. Inonge Mulozi – Senior Research Analyst in the Competition and Consumer Protection Commission's Research and Education Unit. The collection of data, analysis and the overall drafting of the report was coordinated by the Chief Analyst – Mr. Parret Muteto and approved by the Executive Director Mr. Chilufya Sampa of the Competition and Consumer Protection Commission. The team of Researchers that worked on the report has knowledge and a wide understanding of Competition Law and Policy, Industrial Economics, Finance and Investment Appraisal.

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