



**AFRICAN COMPETITION FORUM CROSS-COUNTRY STUDY TO DETERMINE
ROAMING CHARGES IN AFRICA - ZAMBIA CHAPTER**



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ABSTRACT

The ability for a customer to automatically make and receive voice calls, send, and receive data, or access other mobile services when travelling outside the geographical coverage area of the customers' home network depends on several factors. Even once the roaming capability is available, commercial agreements may not and usually do not exist between every possible pair of countries/operators in addition to technical and commercial limitations to support international roaming. International roaming has been associated with high and often obscure pricing of roaming services. High international mobile roaming tariffs have long been viewed as an obstacle to cross-border trade and the free movement of persons. In addition, government policy and regulation have largely been focused on service provision, market competition and other aspects and not so much on international roaming despite the increased interconnection of countries and increased cross border trade. Therefore, this study sought to understand the features of roaming services in the telecommunications industry from a Zambian perspective. The study also 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 suggest that international voice roaming charges despite numerous interventions have remained sticky and the agreements due to their nature equally imply fixing of wholesale rates at the time of negotiations. The study makes appropriate recommendations for increased price competition among MNOs by charging flexible rates instead of fixed rates.

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 revenues¹.
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 country². 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 competition³.
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 competition⁴. 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 they are charged wholesale roaming fees (the inter-operator tariff (IOT))⁵. Customers, on the other hand, are charged retail roaming rates that

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>

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 power⁶.

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 patterns⁷. Factors such as labor costs, inflation rates, technology platforms, economies of scale, and target customer segments typically affect roaming rates⁸, and these vary across nations. As a result, retail prices for international roaming services have historically been higher than retail pricing for local services⁹. 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 favored by financial analysts. Moreover, any blame associated with high charges could always be placed on foreign operators.
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.

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).

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:
 - (i) 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.
 - (ii) To get an understanding of the type of competition concerns that exist in regard to roaming charges in the different ACF member countries.
 - (iii) 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 Agreement Establishing the African Continental Free Trade Area, 5 February 2021, A.U.T.S 36437

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 Tariffica (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.

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

¹¹ ZICTA Annual Report 2020

¹² ZICTA Annual Report 2020

Nature of Competition

15. The mobile telecommunications industry comprises of two edges that provide competitive advantage. These include the expense 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 market¹³.
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 appropriate¹⁴.
17. Recent developments show that increasingly, MNOs have chosen to divest their passive infrastructure in preference of colocation¹⁵ which in the case of Zambia has been supported at both legal and policy level. While this has increasingly 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

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.

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 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-

¹⁶ Zambia Telecom. <https://www.zambiainvest.com/telecoms/> accessed on 06/01/2022

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 market¹⁸. 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 MTN¹⁹. 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 telephony²⁰.
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

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>

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 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 technologies²⁴. 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 customers²⁵. 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 rapidly²⁶.

Universal Access

27. The Zambian government has implemented a programme to roll out sites in rural areas through Zamtel. The programme began in 2017

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>

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.

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 operator²⁷.

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 arrangements²⁸.

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.

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

²⁷<https://sa-tied.wider.unu.edu/sites/default/files/pdf/SA-TIED-WP-122.pdf>

²⁸ <https://itweb.africa/content/wbrpOMgYoRrvDLZn>

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 the Zambian consumer 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 endeavors 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 of 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 Zimbabwe²⁹.

²⁹ SADC Regional Indicative Strategic Development Plan (RISDP) 2020-2030 published in October, 2020

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 roaming³⁰. 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.

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

³⁰ SADC (2015a). 'SADC Roaming Policy'. Walvis Bay: SADC. Available at: www.itu.int/en/ITU-D/Regulatory-Market/Documents/Roaming/SADC%20POLICY%20ON%20%20ROAMING%20APPROVED.pdf

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.

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

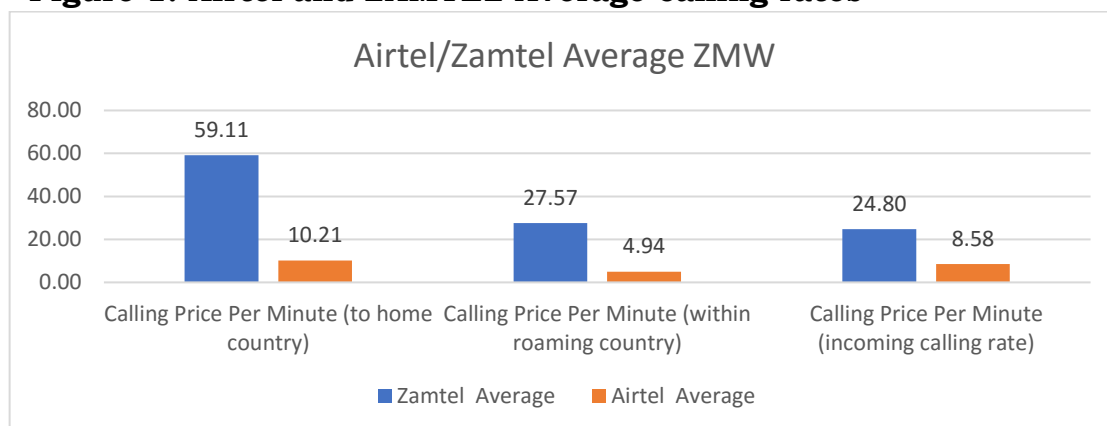
stretch to deliver the highest impact towards reducing the SADC Roaming Tariffs for voice, SMS and data.

Voice Calling Segment

Calling rates per minute in a visiting country

40. Roaming rates per minute among MNOs from selected SADC member states where considered for a Zambian subscriber roaming in that country. Figure 1 below 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.

Figure 1: Airtel and ZAMTEL Average calling rates



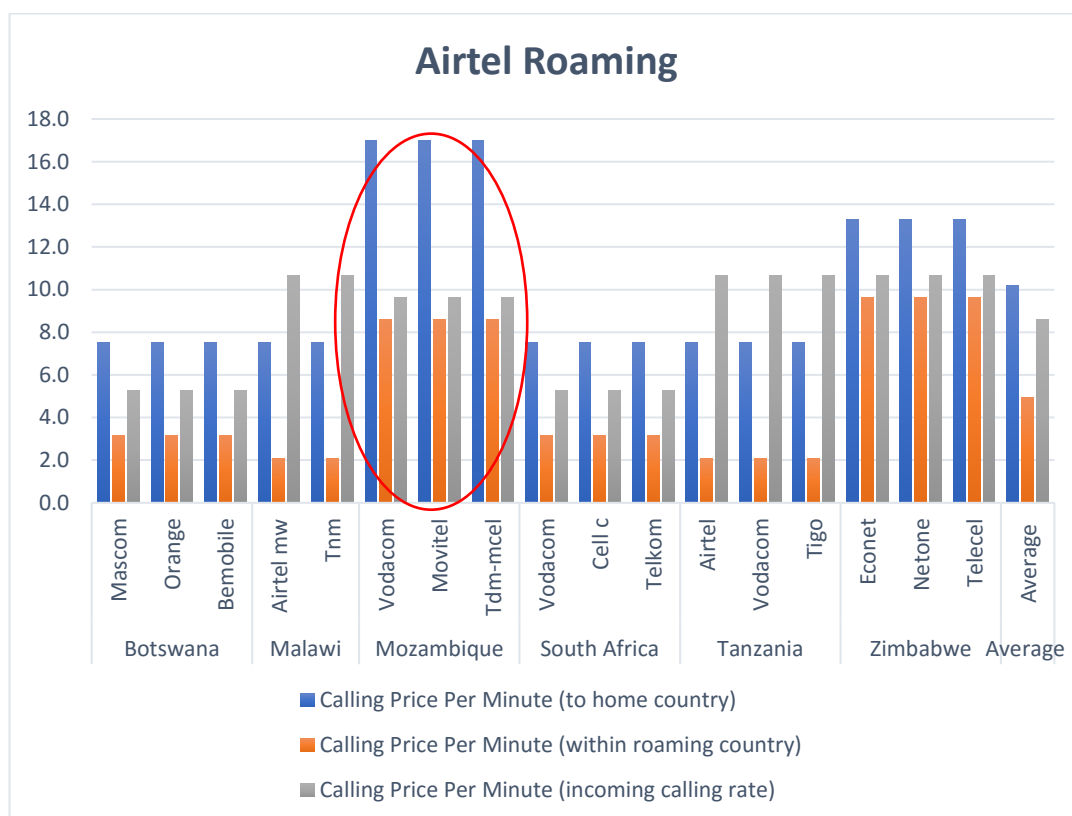
41. Data shows that there is a significant difference in price between Airtel and ZAMTEL for a Zambian roaming in a visiting country when making a call to Zambia. On average, it cost a subscriber K59.11 to call Zambia on the ZAMTEL network as compared to K10.21 on the Airtel network. The difference in 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.

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.
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.

Figure 2: Airtel Roaming Rates Across Selected SADC Countries³¹

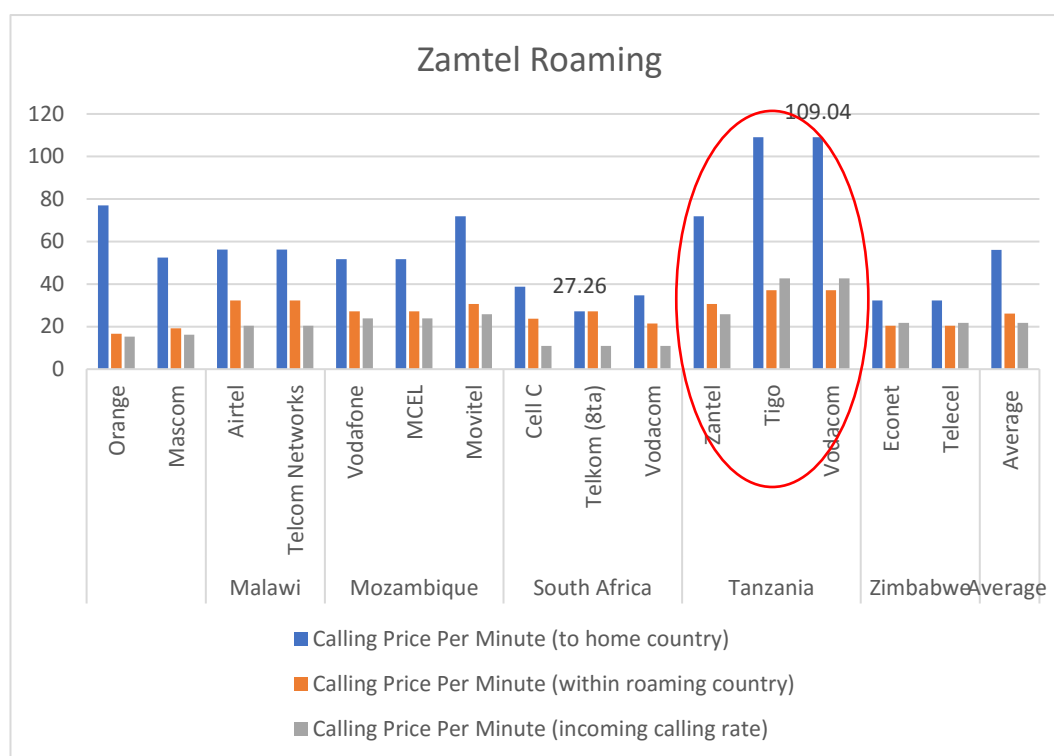
³¹ Traffica Data Set



45. Figure 2 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 subsidizing 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.

Figure 3: ZAMTEL Roaming Rates Across Selected SADC Countries³²



47. Figure 3 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.

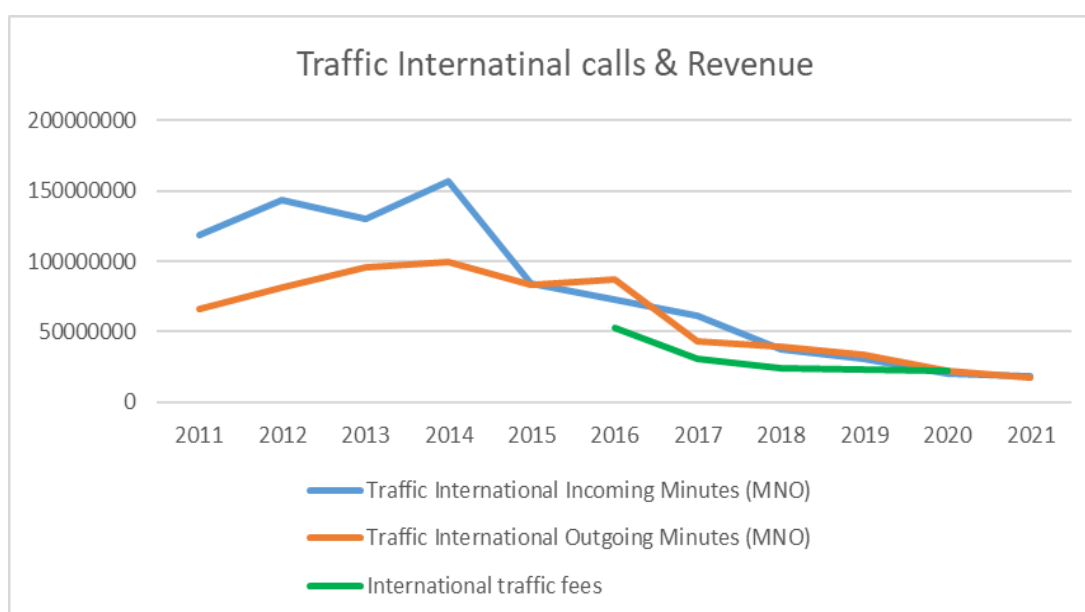
48. In the event where smaller operators have been able to increase their number of subscribers, such as in Tanzania and Zambia, they still need to have increased their portion of subscribers to use cross-boarder services in order to negotiate favourable rates³³. Therefore, it

³² Traffica Data Set

³³ The regulation of interconnection and regulatory alignment in the Southern African Development Community

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 states³⁴.

Figure 4: Traffic for International Incoming and Outgoing Calls for Zambia³⁵



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. ³⁶

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.³⁷ The increased use of OTT

³⁴ The regulation of interconnection and regulatory alignment in the Southern African Development Community

³⁵ Zicta 2016-2020 Annual reports and Zicta ICT statistics 9th March 2022

³⁶ ZICTA Mid-year Market Report

³⁷ ZICTA 2021 Annual Market Report

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.

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 rapid³⁸. 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 2021³⁹.

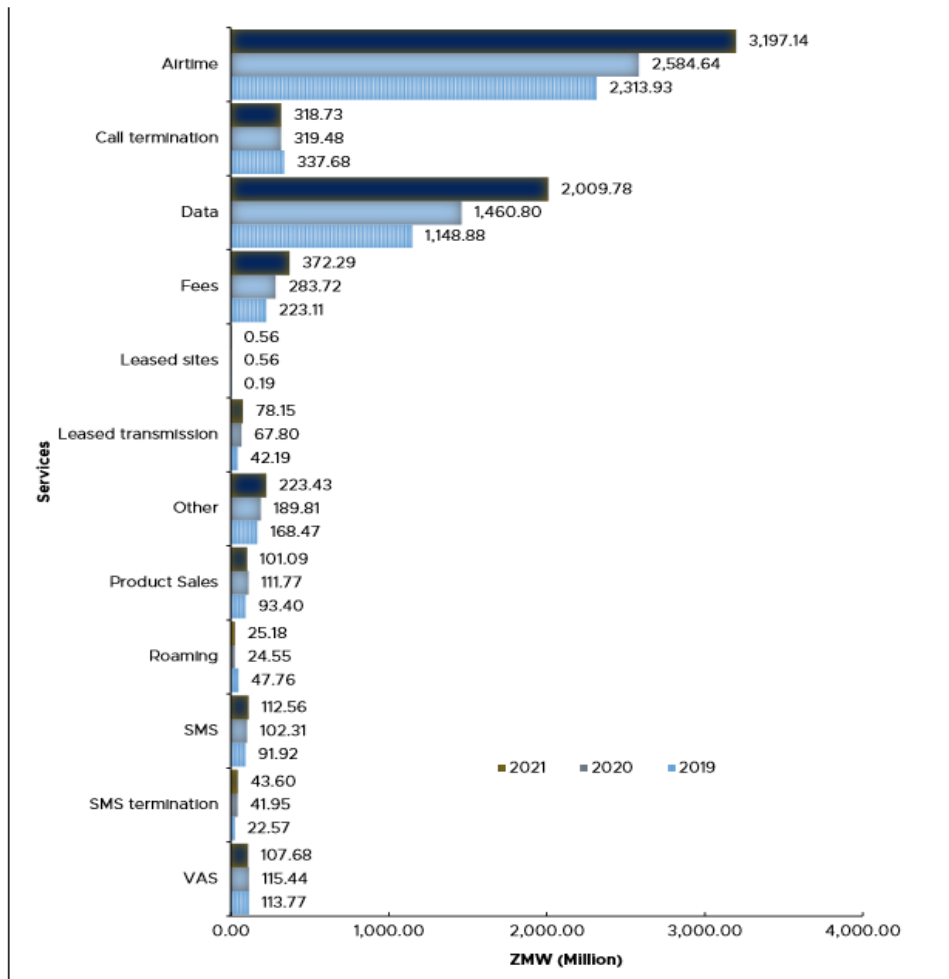
Profitability

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 4). 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.

Figure 5: Mobile Telephone Revenue by service 2019 to 2021

³⁸ <https://www.pwc.hr/en/poslovno-savjetovanje/assets/publikacije/comms-review-mar-2014-new-metrics-for-a-changing-industry-final-hr.pdf>

³⁹ ZICTA Mid-year



Source: ZICTA Annual Market Report 2022

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 2 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 6. 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 ZAMTEL⁴⁰.
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.

Figure 6: Data rates per Megabyte in a visiting country 2021⁴¹

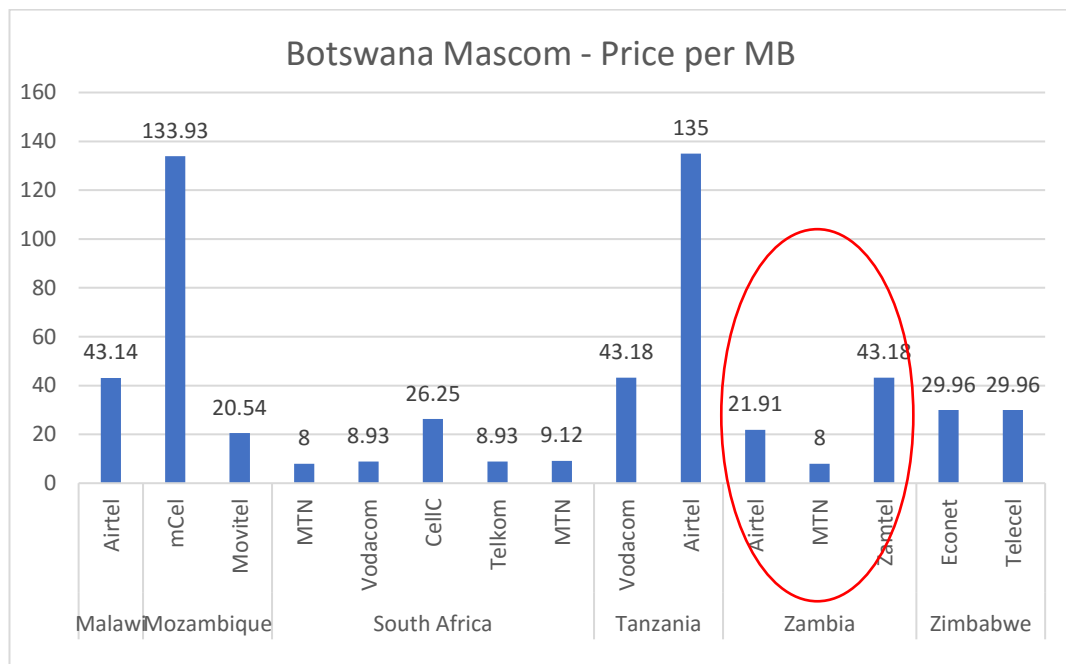


⁴⁰ Nsomba, (2021). The regulation of interconnection and regulatory alignment in the Southern African Development Community.

<https://www.researchgate.net/publication/355096237>

⁴¹ Traffica Data Set

Figure 7: Botswana Mascom Price per MB⁴²



56. Figure 7 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 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 costs⁴³.

⁴² Traffica Data Set

⁴³ Mobile Infrastructure Sharing (GSMA)

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 2017-2021⁴⁴.
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 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 network⁴⁵.
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 service⁴⁶.

⁴⁴ ZICTA 2017-2021 Strategic Plan

⁴⁵ ICT Sector Report — Annual Market Report 2022

⁴⁶ Nepal Telecommunications Authority, "Consultation Paper on Infrastructure Sharing," Nepal Telecommunications Authority, Kathmandu, 2010.

Competition Concerns

Enforcement

54. 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 intervene⁴⁷.
55. 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

56. 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 exchange⁴⁸. 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.
57. As a result, priority is also placed on ensuring harmonised policies, strategies, and initiatives in support of cross-border infrastructure and

⁴⁷ ICT Sector Report — Annual Market Report 2022

⁴⁸ Africa-International-roaming

services⁴⁹. 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 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 SADC⁵⁰.

Conclusion

58. 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.
59. 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.
60. 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

⁴⁹ https://www.sadc.int/files/4716/1434/6113/RISDP_2020-2030_F.pdf

⁵⁰ 4th Draft RISDP 2020-2030 Blueprints

(4G) mobile ultra-broadband internet access that satisfies the high-speed data demand.

61. 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.
62. 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

63. Based on the above facts and findings, the following recommendations were made:

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	high roaming prices have	Introduce a One Network Area (ONA)	• Elimination of charges for receiving voice calls	Regional Economic

<p>regulators do not review wholesale agreements for mobile roaming</p>	<p>often been blamed on “limited regulatory oversight and a lack of price discipline resulting from weak competition at both the wholesale and retail levels.</p>	<p>roaming initiative in Regional Economic Communities to promote regional integration by bringing down the high cost of mobile roaming.</p>	<p>while roaming in a REC Kenya, Rwanda, South Sudan and Uganda if the call originates in one of the countries in the REC.</p> <ul style="list-style-type: none"> • A waiver of excise taxes and surcharges on incoming ONA voice traffic while establishing wholesale and retail price caps on outbound ONA traffic. • Requiring mobile network operators (MNOs) to re-negotiate with their roaming partners to reduce wholesale tariffs. 	<p>Communities in Africa (SADC, COMESA, ECOWAS, CEN-SAD, ECCAS, IMA, IGAD)</p>
	<p>There could be anti-competitive clauses in the agreements that disadvantage other players during the bargaining process.</p>	<p>Wholesale agreements for roaming should be subject for review by ICT and Competition agencies to ensure that they are procompetitive in nature.</p>	<p>There will be no anti-competitive clause in the wholesale agreements that may limit/prevent competition in the market</p>	<p>ICT/ Competition regulators</p>