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

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Abstract: This paper analyses interconnection in telecommunications markets in the Southern African Development Community (SADC) region, focusing on cross-border roaming as well as international interconnection. These issues have been identified as critical for cross-border integration and regulatory alignment. The paper argues for a greater alignment of regulatory approaches across the SADC region to promote competition, lower prices, and innovation. This is done by investigating the regional experience in terms of the cross-country integration of telecommunications markets through international calls and roaming services. The investigation and analysis find that there are currently low levels of alignment in regulation between SADC member states thanks to varying national policies across various countries. In addition, information regarding operator costs is asymmetric, making regulation challenging, as this affects the extent to which the relationship between costs and retail prices can be observed and regulated. Direct consultation between the SACD, regulators, competition agencies, and other stakeholders is recommended in order to address these issues. Another important finding is that advances in technology have meant significant increases in demand for broadband and data services, resulting in a surge in demand for over-the-top services. Attention therefore needs to be paid to the harmonization of regulation regarding Internet-related services. Here, fixed services can play a valuable role in providing high speeds and high volumes of data at a lower cost, which is important considering the difficulties that landlocked SADC countries face in providing low-cost Internet services.

Key words: Southern African Development Community, interconnection, competition, regulation, telecommunications

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1 Introduction

This paper is the third study under the theme 'Competition and Regional Regulation of Telecommunication Services' conducted for the sixth work stream of the 'Southern Africa—Towards Inclusive Economic Development' work programme on regional growth for southern Africa's prosperity. The paper focuses on interconnection, which has been identified as a critical issue for cross-border integration and regulatory alignment. The focus areas of the paper are cross-border roaming and international mobile interconnection rates within the Southern African Development Community (SADC) region, identifying the extent of regulatory alignment within the region.

Interconnection plays an important role in the telecommunications industry, as it enables customers connected to one network to communicate with customers of another network. Therefore, not only does it ensure telecommunications services are more accessible to the growing population, but it also has a bearing on the extent to which subscribers to a younger operator have access to subscribers to other (in some cases, larger) operators—and therefore a bearing on competition between operators. This becomes more pronounced when we consider regional interconnection, as it ensures subscribers across countries can communicate with each other. The African Continental Free Trade Area (AfCFTA) also brings into perspective the key role that harmonized regional telecoms regulation plays. With the AfCFTA having the potential to spur industrialization and growth in the SADC region and beyond, there is a need for the effective regulation of telecoms markets to lead to optimal services, including lower prices. This is important, because low-cost and high-quality telecoms services improve productivity, which is paramount for the industrialization objectives of the AfCFTA.

The first paper in the series considered competitive dynamics in the telecommunications sector in selected countries in southern Africa, including South Africa, the United Republic of Tanzania, Zambia, and Zimbabwe. The second paper compared the different economic regulatory approaches in the region, focusing on the same countries. This paper therefore follows on from the previous work by arguing for a greater alignment of regulatory approaches across the SADC region to promote competition, lower prices, and promote innovation in telecommunications services.

The previous papers in this work stream revealed a mixed picture of competition in mobile markets, with markets still remaining highly concentrated, while smaller players have recently grown in terms of subscribers, for example in Tanzania and Zambia (Paelo and Robb 2020a). However, it has not been very clear whether entrants and smaller players are able to translate increases in subscribers into competing in a meaningful way for all customers. While all the studied countries have steadily experienced decreasing national mobile termination rates (MTRs), this has led to increased retail competition in some countries more than others. In Zimbabwe, for example, where one operator dominates the mobile market and the related mobile money market, prices for mobile services remain extremely high. However, although mobile markets remain concentrated, competition in terms of data continues to increase through providers such as data-only operators and other Internet service providers offering fixed wireless, fibre, and satellite services.

The second paper also recognized that the effectiveness of economic regulation is of critical importance in determining market outcomes in the telecommunications sector. This is because of network effects and scale economies in telecoms markets, which make it difficult for entrants and small players to grow and compete effectively. In mobile markets, where it has been found that there are high entry barriers and network effects, markets can tip towards monopoly or duopoly

unless pro-competitive regulation ensures a level playing field for new entrants (Paelo and Robb 2020a). The authors therefore considered economic regulation and the ways in which it can be used in the SADC to promote efficient, competitive telecoms markets that can assist in expanding access and affordability. From their analysis, there is a suggestion that in practice, the level of alignment between countries is currently low, and regulation could be much more effective at stimulating competition. This point is further reiterated in this paper, where we find that principles of competition could be further carved into economic regulation at both national and regional levels.

In this paper, we investigate the regional experience in terms of the cross-country integration of telecommunications markets through international calls and roaming services, and how greater alignment can be achieved in the pro-competitive regulation of interconnection for greater regional integration and rivalry. In section 2, we discuss the principles of international interconnection and roaming, and how the regulation of these issues has been shaped in various jurisdictions such as the European Union (EU) and Africa. Section 3 reviews the regulation of interconnection and roaming in the SADC region, together with an analysis of the rates provided to subscribers across various countries within the region. Section 4 proceeds to unpack emerging themes in the cross-country integration of telecoms services in the region, followed by recommendations in section 5.

2 Regulation of interconnection in telecommunications markets

Regulation in the telecommunications industry is important because markets in the sector typically involve economies of scale and network effects, which make it difficult for small players to compete effectively with incumbent firms (Paelo and Robb 2020a). Regulation in national markets has therefore focused on the aim of providing affordable fixed and mobile rates to consumers at the retail level. In many countries across the globe, including in the SADC region for instance, there has been a trend in regulation towards the reduction of MTRs, which has stimulated and brought down national call rates (Paelo and Robb 2020a).

While there has been a positive effect of regulation on national MTRs resulting in lower prices for calls, the same has not been experienced at the regional or international levels. There is consensus that international interconnection and roaming rates have historically been high across jurisdictions such as the Association of South-East Nations region, the EU, sub-Saharan Africa, and Organization for Economic Cooperation and Development (OECD) countries (Gillwald and Mureithi 2010; OECD 2013). Given the cross-country nature of international interconnection and roaming rates, and that wholesale prices are determined by foreign operators outside the jurisdiction of domestic regulators, international and regional cooperation is imperative in order to address the prevailing high prices across regions.

This section defines the concepts of mobile international interconnection and cross-border roaming. It also highlights international 'best-practice' approaches to regulation in selected jurisdictions in these markets, where regulatory intervention has been attempted with varying market outcomes.

2.1 Mobile international interconnection

Interconnection refers to the commercial and operational arrangements between network operators that enable customers connected to one network to communicate with customers of another network. As markets have become relatively more sophisticated, different forms of interconnection have evolved—for instance, between mobile networks, between mobile and fixed

networks, and between mobile and fixed networks across borders (Intven and Tetrault 2000). Without interconnection, a customer cannot call subscribers on another network or access Internet content located on another network. Interconnection is thus an essential element of local, long-distance, and international fixed voice calls, and of mobile voice and data services (Intven and Tetrault 2000).

This paper is concerned with the degree of mobile interconnection within the SADC region and the extent to which the regulation of interconnection between SADC member states is aligned for greater regional integration and rivalry. Based on the importance of interconnection for the success of a mobile network operator (MNO), MNOs will generally have an incentive to interconnect—it increases the value of the network to its subscribers. However, while there is a general incentive for MNOs to interconnect, operators (particularly larger ones) will have less of an incentive to interconnect if they are faced with a strong potential competitor, as it is in their interest to limit competition and preserve market power (Intven and Tetrault 2000). This situation can prevail because incumbent firms in the industry are generally integrated throughout the value chain, have access to infrastructure, have a larger subscriber base, and will thus enjoy the benefits of first-mover advantage and network effects. This is why regulation in interconnection is necessary.

The second study conducted under the theme of 'Competition and Regional Regulation of Telecommunication Services' found that MTRs (the tariffs mobile operators charge one another for terminating calls on their network, i.e. the rates for mobile interconnection) in the case study countries are regulated at the national level and have steadily been declining within each country, leading to increased competition in national voice markets (Paelo and Robb 2020b). However, given the important role that cross-border interconnection plays in facilitating greater levels of competition that lead to lower retail prices and increased cross-border integration, there is a need to assess the rates of interconnection between countries and whether they are reflective of competition.

Regional regulations for cross-border and international interconnection rates have been formulated in various jurisdictions such as the EU, East Africa, and Latin America. The EU has been the leading regional bloc in terms of progress towards the harmonization of interconnection rates across a regional economic community. The European Electronic Communications Code (EECC) was adopted in 2018 as a directive regulating electronic communications in the EU. The EECC was formulated as a means of achieving a digital single market in Europe, covering a range of telecommunications regulations including the regulation of interconnection across the region. In line with the EECC, the EU has adopted a delegated act in the field of voice and call termination rates, which was enacted in December 2020 (EC 2021a). The delegated act sets a single maximum EU-wide mobile voice termination rate and a single maximum EU-wide fixed voice termination rate, which will be applicable to any provider of fixed and mobile termination services across the EU (EC 2020).

This development is significant, as it ensures that there is essentially no difference between call termination rates charged between operators within or beyond national borders inside the EU. Effectively, all users of fixed and mobile voice services will face the same 'local' rates, irrespective of location within the EU. It has been shown that lower MTRs tend to lead to lower retail unit prices for end users (Growitsch et al. 2010). Through a review of theory, literature, and European experiences, as well as econometric modelling to study the impact of MTRs on retail prices and demand, Growitsch et al. (2010) show that lower cross-border MTRs result in lower retail prices for both local and cross-border interconnections. Therefore, it is likely that, other things being equal, lower termination rates across a region will result in lower retail prices for end users throughout the region. In relation to SADC countries, this is important because lower retail rates

can potentially apply to all subscribers and not only those subscribers that make cross-border phone calls.

The benefits of the regional harmonization of interconnection include the development of an efficient regulatory environment that fosters increased competition in cross-border communications, leading to a conducive environment for investment and the integration of economic and social activities (ITU 2009). Through its approach to the harmonization of termination rates throughout the region, the EU anticipates significant benefits, such as increased cross-border telecommunications competition and service provision (EC 2021b). This points to the opportunity for SADC countries to follow a similar approach in order to achieve a more integrated regional economic community.

2.2 International roaming

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 (GSMA 2012b). 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 (Sutherland 2010).

Roaming services are part of the overall mobile market proposition, and operators have an interest in setting roaming rates at a level that encourages the use of their services and distinguishes them from the competition (GSMA 2012a). 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 MNO in each visited country, upon which they are charged wholesale roaming fees (the inter-operator tariff (IOT)) (Infante and Vallejo 2012). Customers, on the other hand, are charged retail roaming rates that are usually more expensive than equivalent domestic rates (Infante and Vallejo 2012). In some cases, MNOs conclude agreements with more than one operator in each country to increase their bargaining power (BEREC 2010).

The IOT depends on which visited network in a country handles the call, as different operators in a given country will tend to charge different fees (Analysys Mason 2010). This is primarily why a home operator will have little control over the baseline cost of roaming fees. More generally, the direct cost to receive a call while roaming is the difference between the MTRs in the visited and home countries, plus the cost of carrying a call between the countries, with an additional roaming cost (Analysys Mason 2010). While this is the general formulation of roaming costing, costs faced by operators in the SADC region are still not abundantly clear, as discussed below.

Mobile markets across regions and nations have evolved rapidly over the decades, 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 (Spruytte et al. 2017). Factors such as labour costs, inflation rates, technology platforms, economies of scale, and target customer segments will typically also affect roaming rates (GSMA 2012b), and these will vary across nations. However, retail prices for international roaming services have historically been higher than retail pricing for local services (African Union 2013; Spruytte et al. 2017). It is unclear whether the heterogeneity in national markets justifies the vast differences in prices across regions.

An analysis conducted by the International Telecommunications Users Group in 1999 indicated that there were prevailing significant differences in rates for international calls across the EU, with a survey showing that prices for calls on the same routes varied by between two and ten times across different MNOs and that these variances could not be motivated by technical explanations (Sutherland 2000). These issues have resulted in concerns over 'bill shocks' (users being afraid of receiving high bills and therefore avoiding roaming all together), as well as concerns about the transparency of the retail pricing of international roaming and high pricing more generally (African Union 2013; Spruytte et al. 2017).

Roam Like at Home (RLAH)

In order to address the persisting high roaming rates experienced across regions, the RLAH initiative was developed by telecommunications stakeholders through the International Telecommunication Union (ITU), which set out ways to achieve a reduction in retail roaming rates to zero (i.e. lowering the roaming retail price to make it the same as the local retail price) (ITU 2016; SADC 2015a; Spruytte et al. 2017). Developments in RLAH have since been benchmarked by the EU and have demonstrated to countries across the world the role that regional bodies can play in significantly reducing prices and creating competition in international mobile roaming services (Bourassa et al. 2016). RLAH became a reality for Europeans travelling within the EU on 15 June 2017.

In 2003, the European Commission (EC) made international roaming services subject to *ex ante* regulation, as the market was deemed to lack effective competition, and designated operators had significant market power (EC 2012). This was due to the fact that international roaming services are cross-border in nature, and national regulators can only impose remedies on operators in their territories.

Following the EC findings, a roaming regulation ('Roaming I') was developed in 2007 that introduced caps for wholesale and retail voice prices (for both incoming and outgoing calls), effectively forcing the operators to use what was called a Eurotariff. Operators were, however, still allowed to charge other pricing tariffs, but only to those customers who would choose such alternative plans voluntarily (Spruytte et al. 2017). 'Roaming I' was then replaced by 'Roaming II' in 2009. The EC decided to continue its price caps strategy for voice, lowering them in order to reduce the gap between wholesale and retail prices; SMS and data service prices were now also regulated (OECD 2012). Despite these interventions, Infante and Vallejo (2012) used empirical data to prove that wholesale regulation alone did not suffice to ensure that competition at wholesale level led to lower wholesale prices, or that this led to lower prices at the retail level.

As a result, in 2012 the EC once again lowered the existing wholesale caps, and it also added retail caps for data services for the first time; this was termed 'Roaming III'. Following a survey that showed an estimated increase in customers for operators by 300 million (EC 2014b), parliament voted to abolish roaming charges in 2014 (EC 2014a). This was followed by a two-year transitionary period when operators were allowed to charge a small additional amount as a mark-up above prevailing domestic prices.

Harmonization of roaming in East Africa

The East African Community (EAC) has also implemented its own version of RLAH through an initiative titled One Network Area (ONA). The aim of the initiative is to promote regional integration by bringing down the high cost of roaming. ONA is based on a set of regulatory interventions, specifically:

- eliminating charges for receiving voice calls while roaming within the EAC.
- waiving taxes and surcharges on incoming ONA voice traffic, while establishing wholesale and retail price caps on outbound ONA traffic;
- requiring MNOs to renegotiate with their roaming partners to reduce wholesale tariffs.

In 2016, two years after the implementation of ONA, the EAC recorded that voice traffic had tripled in both Kenya and Uganda, and had grown nearly fivefold in Rwanda (ITU 2016). It was also found that a wholesale price cap of US$0.7 per minute without any surcharges allowed all MNOs in the EAC to offer roaming services profitably (ITU 2016). However, in order for ONA to be more sustainable, the region required a glide path that would take the low price caps down to no roaming-specific charges (ITU 2016). Despite the consensus around the benefits that ONA brought to the region, the initiative has since collapsed, with available reports indicating that this was due to the lack of movement towards waivers on taxes and surcharges by member states (EastAfrican 2018).

Aside from ONA, the EAC region has also experienced the lowering of international roaming rates. In the mid-2000s, the EAC began to experience a drop in roaming charges, which was initiated by mobile operators without any regulatory requirement to do so. Gillwald and Mureithi (2010) assessed what had triggered the reduction in rates by applying the work of Christensen and Raynor (2003) on theories of disruptive competition and innovation. The authors explained how and why Zain (the mobile operator that had spurred the reduction in roaming rates) was able to disrupt the market despite not having been able to undermine the dominant players in the mobile market.

Christensen and Raynor (2003) identify two distinct categories of competition, based on the circumstances of innovation. In sustaining circumstances, competition entails making better products that can be sold for more money by competitors. In disruptive circumstances, the challenge is to commercialize a simpler, more conventional product that sells for less and appeals to a new or unattractive customer set. Gillwald and Mureithi (2010) argue that Zain did the latter; it took the roaming service, which was long established but not affordable to everyone, and offered it at the cost of an ordinary domestic voice service.

In the EAC, markets had historically been integrated. However, at regional level, the telecommunications market was regulated and formally harmonized through the activities of the East Africa Regulatory Postal and Telecommunications Organization (EARPTO). The telecommunications market in the EAC was one of the earliest regional markets in Africa to become liberalized through the opening of international gateways, with Kenya being the last country in the region to open its international gateways, in 2004 (Gillwald and Mureithi 2010).

International gateways are the facilities through which international calls are sent and received (GSMA 2016b). Resistance to the liberalization of international gateways by governments was based on the notion that monopolized gateways facilitated the national interests of developing countries; however, competition in international call service markets in the developed world refuted this notion (GSMA 2016b). Governments in the EAC such as Kenya, Tanzania, and Uganda liberalized these markets to operators much earlier than their neighbouring countries, making it economical for a smaller market player such as Celtel/Zain to integrate its regional cellular coverage into a one-network roaming area (ITU 2016).

Celtel/Zain was the only operator that operated in the EAC's largest economies—Kenya, Tanzania, and Uganda—and proposed to EARPTO to offer a roaming-charge-free integrated service within the region (Gillwald and Mureithi 2010). From 2006, Celtel/Zain was able to

leverage its presence across the region, along with the liberalized gateways and high cross-border travel, in such a way that it could bill its customers across all three networks as on-net customers rather than as roamers (Gillwald and Mureithi 2010). The zero roaming charges that Celtel/Zain offered therefore provided it with the opportunity to compete with incumbents for subscribers across the region.

The zero roaming charges offered by Celtel/Zain were followed by Vodacom in Tanzania, Safaricom in Kenya, MTN and UTL in Uganda, and MTN Rwanda partnering to offer a service called Kwama Kwaida in 2007. Kwama Kwaida was a service whereby roamers were charged the rate for their home country once they had travelled across a border within the EAC region. Within months, roaming charges had disappeared across all the major networks in East Africa (Gillwald and Mureithi 2010). The Kama Kwaida partnership became eroded in 2009 (EastAfrican 2009), which was attributed to the imposition of taxes and surcharges by some governments in the region. This was argued to undermine the nature of the healthy competition that was apparent in the market and whose effect had been to lower roaming rates (ITU 2016). This also coincided with Airtel's expansion into Africa through the acquisition of Celtel/Zain (IHS Markit 2010).

Importantly, these initiatives highlighted that even with minimal regulation and aggressive competition between rivals, roaming services can be offered to subscribers at prices that are much lower than those that seemingly prevail, and can still be profitable (ITU 2016).

3 Review of international interconnection and international roaming regulation in the SADC

Made up of telecommunications regulators in the SADC, the Communications Regulators' Association of Southern Africa (CRASA) was created by the SADC Secretariat in 1997 to pursue the goals of SADC regional integration and economic growth through the promotion of the accelerated development of the communications sector. CRASA's mission is to coordinate the harmonization of communications regulations for the socio-economic benefit of the SADC (CRASA 2019). Three key areas of emphasis for CRASA are harmonizing the allocation of the radiofrequency spectrum, expanding broadband access, and reducing the cost of international call termination and roaming charges in the region (CRASA 2019). Therefore, all efforts towards the regional harmonization of interconnection in the SADC and movements towards regulatory alignment in the region are headed by CRASA.

3.1 Cross-border interconnection

Recognizing the need for regulation in interconnection, CRASA produced a set of guidelines on interconnection in 2000. These guidelines aimed to facilitate national regulatory authorities to develop country-specific principles for the regulation of national interconnection, with the harmonization of regulation across member states remaining a key objective as far as practicable in the building-up of regional integration (CRASA 2002). On regional mobile interconnection, in 2017 the SADC Secretariat developed the 'SADC Regional Interconnection Policy Framework', a policy document addressing the harmonization of cross-border mobile interconnection regulation in the region.

Over the past ten years, CRASA has focused its attention on the reduction of regional roaming services,[1] as discussed below. Therefore, while there have been guidelines and frameworks on interconnection between countries at the regional level, both national and international interconnection regulations are typically the focus of national regulators.

3.2 Roaming

In 2007, the SADC ministers responsible for telecommunications, postal services, and information and communications technologies (ICTs) issued a ministerial directive to initiate the SADC Roaming Project. The project aimed to develop a policy and regulatory framework for the provision of affordable mobile roaming voice, SMS, and data services across the region.

Under the SADC Roaming Project, the ministers launched a second initiative, known as SADC Home and Away Roaming. The initiative was to develop a policy and regulatory framework that would enable the SADC Home and Away Roaming service, a service similar to the EU's RLAH initiative, whereby the harmonized costing and pricing of roaming services within the region could be achieved.

The SADC ministers then adopted a communique in 2008 that laid the foundation for the establishment of the Regional Alliance Task Team (RATT) on SADC Home and Away Roaming. RATT comprises representatives of the SADC Secretariat, CRASA, GSM Africa, the Southern Africa Telecommunications Association, and the SADC Parliamentary Forum as an observer. The main task of RATT was to investigate mechanisms for reducing the high cost of international roaming in the SADC region, with a view to submitting a report to the ministers for a final decision (CRASA 2011). RATT identified that there was a need for a regulatory impact assessment (RIA) on SADC Home and Away Roaming. Due to financial reasons, however, a partial RIA was conducted.

Analysys Mason (2010) conducted the partial RIA, and detailed the key findings as follows:

- Roaming represented a sizeable revenue stream for operators in SADC countries that were heavily reliant on tourist trade for revenue, such as Mauritius and Seychelles. Roaming was therefore a source of foreign exchange, and regulatory action to reduce IOTs had the potential to result in a reduction in inflows of foreign currency in these countries.
- The main elements of the cost of international roaming were identified to be IOTs and international gateway charges. These costs were lowest at their unit level for larger operators in the region, such as MTN and Zain.
- Small operators were found to be handicapped in the roaming market because of their lack of scale, meaning they had limited ability to build roaming volume.
- IOTs were historically not cost-based but above costs, which translated into retail roaming tariffs being high.
- The region had significantly varied retail margins between operators, and this was compounded by a lack of transparency and consumer awareness of prices at the retail level, which affected consumer choice and competition.
- There was also generally a lack of complete and clear information on the status of roaming in each SADC country.

[1] Interview with CRASA, 22 February 2021.

Following the partial RIA, it was clear that retail prices for roaming in the region were high relative to the costs faced by operators (Analysys Mason 2010). Furthermore, the findings of the partial RIA are consistent with later findings by Spruytte et al. (2017), which indicate that within regions there is a heterogeneity among national mobile telecommunications markets as a result of differences in travel patterns, labour costs, inflation rates, technology platforms, economies of scale, and target customer segments, which contribute to high and inconsistent roaming rates in regions.

The findings and recommendations of the partial RIA led to the development of the SADC Roaming Policy, launched in 2015. The policy recognizes that given the cross-border nature of roaming services, national regulators cannot single-handedly regulate roaming services end to end (SADC 2015b). Initiatives that aim to reduce roaming charges within one member state only serve to benefit operators and subscribers in other member states. Since IOTs are the wholesale roaming fees that operators charge one another for roaming services, and IOTs are one of the main contributors to the high cost of roaming initiatives, a national regulator's reduction of IOTs in one member state does not address the issue of high international roaming rates across the region, as such a reduction only benefits 'away' roamers and not 'home' roamers that visit other member states. Coordinated regional action on roaming rates is therefore imperative to ensure the benefits of lower rates are felt throughout the region (SADC 2015b).

The objectives of the Roaming Policy are:

- to address the high charges on roaming services in the region;
- to develop a roaming cost model for determining the cost of roaming within the region;
- to harmonize the costing and pricing of roaming services within the region;
- to provide minimum safeguards for consumers of roaming services, in order to empower them to make informed decisions.

In moving towards fulfilling the objectives of the SADC Roaming Policy, the SADC Roaming Regulations 2015 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 (SADC 2015a). The regulations direct member states regarding the role that national regulators 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.

In relation to the costing of roaming services, the regulations direct member states to play an active role in establishing cost-based roaming charges. The regulations propose that national regulators should adopt a glide path in transitioning from existing roaming prices to cost-based roaming prices, over a period of three years for wholesale roaming prices and five years for retail roaming prices. For the determination of wholesale roaming prices, the regulations propose glide path formulae calculated based on IOTs and a weighted traffic average (WTA). The WTA is the weighted average of domestic MTRs within the SADC region. The wholesale glide path formulae per year, which are also the wholesale price ceilings between operators, are shown in Table 1. Ultimately, the charges on wholesale prices were projected to not exceed cost plus five per cent as at 1 October 2017 (SADC 2015a).

For the determination of regional retail roaming prices, the retail glide path consists of RLAH and cost-based pricing (Table 2). Under RLAH, the pricing and charging of regional roaming services are calculated with specific reference to the roaming customers' home country rates plus a premium, as outlined in the regulations (for 1 October 2015, for instance, the premium is (ROAM - RLAH) * 0.67, where ROAM is the existing retail roaming price per country as at 21 October 2014). With cost-based pricing, the charging and pricing of regional roaming services are proposed to be calculated based on a cost plus a premium (for 1 October 2018, the premium is (RLAH–COST) * 0.67). The objective of the retail price glide path was to annually reduce the premium on retail roaming charges by 33.3 per cent over a three-year period. Following this, the charges for roaming services were to not exceed cost plus five per cent (SADC 2015a). The glide path is therefore a transition of pricing under RLAH to cost-based pricing.

Table 1: Wholesale price ceiling and glide path formulae

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: author's compilation based on data from SADC (2015a).

Table 2: Retail price ceiling and glide path formulae

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: author's compilation based on data from SADC (2015a).

Despite the regulations and policy stance taken by the SADC Secretariat and CRASA around the need for harmonization of the regulation, costing, and pricing of international mobile roaming services in the region, there is still a persistence of mixed approaches to these issues by member states in the region. Table 3 shows the approaches to the regulation of international mobile roaming currently being taken by national regulators in the 16 SADC member states.

Of the 16 SADC member states, seven are actively involved in the regulation of wholesale and retail international roaming prices. However, regulation among these member states is not entirely consistent. For instance, South Africa regulates wholesale international roaming prices and not retail international roaming prices. Eswatini, on the other hand, regulates retail international roaming prices but not wholesale international roaming prices. The national regulators also collect retail and wholesale tariff data at varying degrees. All regulators collect tariff data on voice and SMS tariffs; however, only seven regulators gather data on IOTs at the wholesale level. Given that the partial RIA identified IOTs as one of the main elements contributing to high roaming rates, and that the SADC Roaming Regulations include IOTs as a key variable in the glide path formulae for a reduction in wholesale rates, it is expected that countries should gather data on IOTs in order to be able to effectively regulate wholesale roaming rates. Furthermore, it is of particular concern that although all member states collect varying data pertaining to wholesale and retail tariffs, member states such as Kenya, Madagascar, Seychelles, and Tanzania are not involved in any active form of regulation of roaming rates.

Table 3: SADC member states' regulation of international mobile roaming

Member state	Price controls on voice and SMS roaming	Price controls on data roaming	Regulator collecting retail tariff data	Regulator collecting wholesale tariff data	Retail international roaming prices regulated	Wholesale international roaming prices regulated
Angola	Yes	Yes	Voice, SMS, data	Voice, SMS, data, IOTs	No	
Botswana	Yes	Yes	Voice, SMS, data	Voice, SMS, data	Yes	Yes
Democratic Republic of the Congo (DRC)	No	No	Voice, SMS, packages, retail costs	Voice, SMS, packages	No	No
Eswatini	Yes	Yes	Voice, SMS, data, retail costs	Voice, SMS, data, IOTs	Yes	No
Kenya	No	No	Voice, SMS, data		No	No
Lesotho	Yes	Yes	Voice, SMS, data, retail costs	Voice, data, SMS, roaming overhead costs, IOTs	Yes	Yes
Madagascar	No	No	Voice, SMS, data	Voice	No	No
Malawi	Yes	Yes	Voice, SMS, data	Voice, data, SMS, roaming overhead costs	Yes	Yes
Mauritius	No	No	Voice, SMS, data		No	No
Mozambique	Yes	Yes	Voice, SMS, data, packages, retail costs	Voice, SMS, data, packages, roaming overhead costs, IOTs	Yes	Yes
Namibia	No	No	Voice, SMS, data	Voice, SMS, data, IOTs	Yes	Yes
Seychelles	No	No			No	No
South Africa	No	No	Voice, SMS	Voice, SMS, IOTs	No	Yes
Tanzania	No	No	Voice, SMS, data	Voice, SMS, data	No	No
Zambia	No	No	Voice, SMS, data	Voice, SMS, data	No	No
Zimbabwe	Yes	Yes	Voice, SMS, data	Voice, data, SMS, roaming overhead costs, IOTs	Yes	Yes

Source: author's compilation based on data from ITU ICT-Eye (2021).

In some member states such as South Africa, active regulation has in some cases been done by addressing concerns in roaming rates such as high bill shocks. In 2016 the Independent Communications Authority of South Africa (ICASA) published amendments to the Electronic Communications Act of 2005 which were focused on end user and subscriber service charter regulations. The 2016 amendments detailed that MNOs were obligated, among other requirements, to notify roaming subscribers of:

- charges applicable to incoming and outgoing voice and data, and incoming and outgoing SMS;
- roaming networks available upon arrival in a foreign country;
- toll-free voice, SMS, and email customer care contact details;
- real-time roaming usage updates;
- regular updates of at least 24 hours on the level of usage, current account balance, and remaining amount of data in relation to any applicable usage cap.

Through these amendments, ICASA addressed the directive in the SADC Roaming Regulations around the need for transparency between network operators and subscribers on international roaming services.

3.3 International call and roaming rates in the SADC

Mobile operators within the SADC region 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 both international calls and roaming services. Rates for international calls and international roaming services charged by operators in Botswana, Malawi, Namibia, South Africa, Tanzania, Zambia, and Zimbabwe were gathered for the purposes of this research.

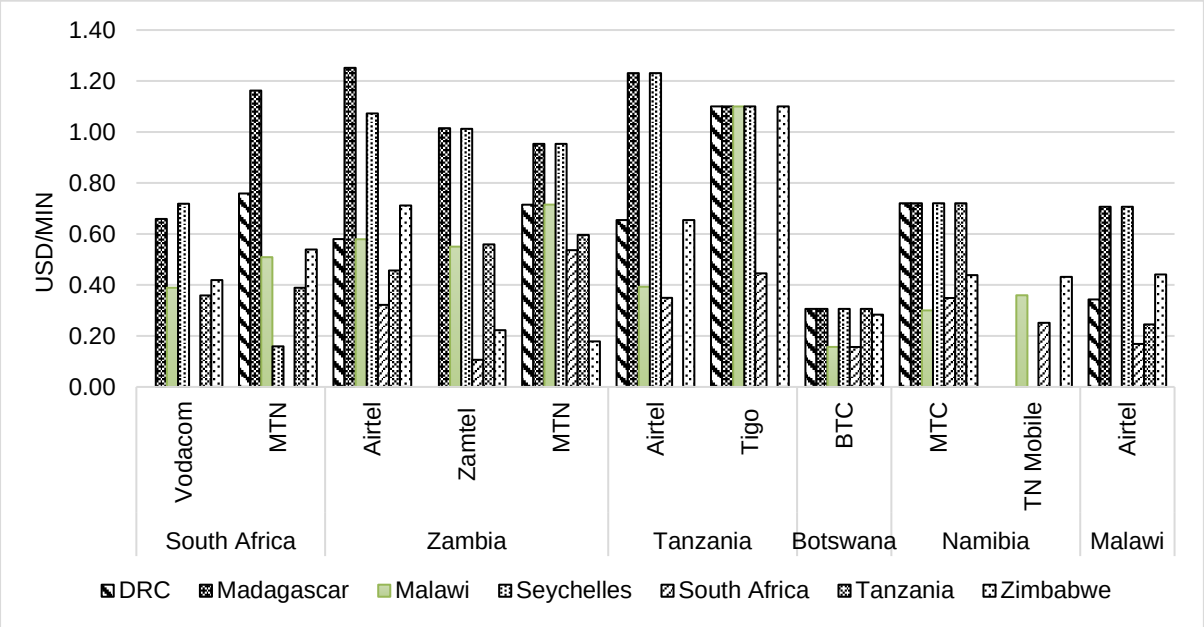
International call rates

Data on international call rates was gathered from the websites of the ten MNOs in the SADC region: BTC Botswana; Orange Botswana; Airtel (Malawi, Tanzania, and Zambia); MTC Namibia; TN Mobile Namibia; Vodacom South Africa; MTN (South Africa and Zambia); Tigo Tanzania; Airtel Zambia; Zamtel Zambia. These rates are what the MNOs charge subscribers to call countries across the world from their home country. For this paper, rates were collected from the above MNOs to all SADC member states. In some cases, MNOs do not provide rates to some SADC member states. For instance, the international call rate to DRC and Lesotho is not stated by Zamtel Zambia. Similarly, while Econet and Telecel in Zimbabwe publish international roaming rates, rates for international calls are not available on their websites. Some operators, such as Vodacom and MTN, publish the rates for each individual country worldwide. On the other hand, Airtel publishes rates according to zones: calling destinations are grouped within zones, and all destinations within the same zone share the same international call rate from the home country. It is unclear, however, what variables are used to determine the different zones. All operators also publish their rates in local currencies. Therefore, while it is possible to compare rates between operators within the same country, it is difficult in the first instance to compare the rates of operators across countries.

In order for the rates to be compared regionwide, we converted them into US dollar terms. This was done in consideration of the fact that the region consists of small open economies that are subject to fluctuations in the US dollar. These conversions were carried out using the average exchange rates for each country in 2020, using quarter one and quarter two exchange rates as published by the International Monetary Fund (IMF).

The international call rates charged by the identified operators to call DRC, Madagascar, Malawi, Seychelles, South Africa, Tanzania, and Zimbabwe are shown in Figure 1. The comparison of international calling rates across SADC countries where data is available provides some key observations about trends in the region, which point to the need for greater regulatory harmonization.

Figure 1: International calling rates to selected countries, US dollars per minute



Source: author's illustration based on data from Vodacom South Africa, MTN South Africa, Airtel Zambia, Zamtel Zambia, Airtel Tanzania, Tigo Tanzania, BTC Botswana, MTC Namibia, TN Mobile Namibia, and Airtel Malawi.

The rates for international calling to a number of SADC destinations are comparatively high, although it seems there are different factors that explain the differences. The first observation is that rates will tend to be higher for more remote countries and specifically islands such as Madagascar and Seychelles. This is likely to be explained by there being less calling traffic to the island nations, which generally rely more on tourism and thus will have more demand for roaming than for receiving international calls (Analysys Mason 2010). Second, it is only for some inland destinations that calling rates are consistently high across operators from different countries. Specifically, compared with South Africa, we find that DRC, Malawi, Tanzania, and Zimbabwe are the more expensive destinations among the identified MNOs. South Africa is taken as a benchmark because it is a consistently cheaper destination to call among all the MNOs.

The high comparative rates for these inland destination can be explained by a range of complex and interrelated factors, and in some cases these are particularly difficult to determine. One key factor is that taxation as a proportion of mobile phone rates in Africa has historically been among the highest in the world (GSMA 2011). A variety of sector-specific taxes apply in the telecommunications sector, including value-added tax surcharges, service and handset excises, and customs charges on capital equipment (Matheson and Petit 2017). In the SADC region, for instance, since the late 2000s, DRC, Madagascar, Malawi, Seychelles, Tanzania, and Zimbabwe have all implemented a surtax on international inbound call termination (SIIT) (GSMA 2011; OECD 2014). A SIIT is a fixed price that operators must charge for international inbound termination, of which governments obtain a set amount through taxes (GSMA 2011; OECD 2014). Putting the effects of SIITs into perspective, the available data on international calling rates in 2020 shows that calling Malawi, Tanzania, and Zimbabwe is about 40 per cent (Figure 1) more expensive on average than calling South Africa. Similarly, to call DRC is 54 per cent (Figure 1) more expensive on average than to call South Africa.

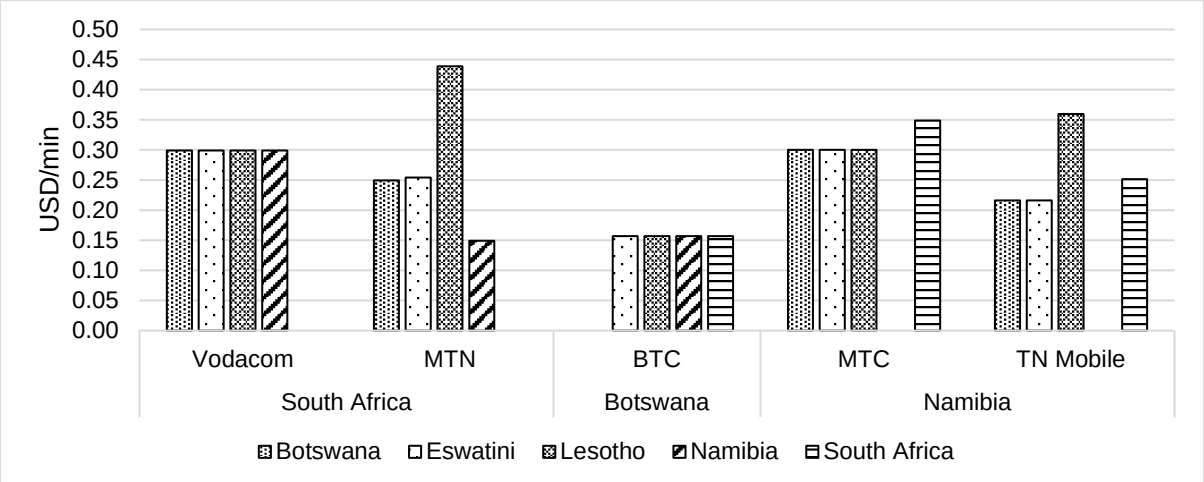
While the liberalization of telecommunications markets across Africa encouraged new business models that improved domestic communication services, the prescription of SIITs introduced an inconsistency in policy, whereby competition is promoted domestically but restricted at the international level (GSMA 2011; OECD 2014). SIITs have been shown not only to increase

international call rates to subscribers, but also to create significant extra costs to African businesses that trade with businesses in countries where a SIIT has been imposed (GSMA 2010). For example, it was recorded that Tanzania lost 110 million minutes in incoming voice traffic (fixed and mobile) between January 2013 and March 2014, while it lost US$1.3 million in corporate tax from reduced mobile operator revenue, US$1.4 million in corporate tax from businesses trading with other SIIT-imposed countries, and an additional US$0.8 million due to reduced remittances from the diaspora within the same period (GSMA 2011). Therefore, SIITs negatively impact not only the enforcing country, but also specifically the African countries that trade with them. Thus, the effects of SIITs reinforce the need for regulatory harmonization in the telecommunications industry in the SADC, which in turn will promote gains from regional integration.

The OECD (2014) investigated the effects of policies such as SIITs that mandate higher international termination rates. It found that such policies decrease international incoming traffic to the extent that the expected increase in tax revenue may be countervailed given the increase in termination rates (OECD 2014). The revenues per user received by countries that have introduced SIITs, compared with those that have not, will remain at best almost unchanged, while the inflow of their traffic will be drastically decreased (OECD 2014). As a result, there is a high likelihood of a reduction in consumer surplus when higher international MTRs are mandated. This reiterates that regulation across the region needs to be harmonized in order for the gains of regional integration, including increased consumer welfare, to be harnessed.

The role of taxes in international call rates can further be appreciated when we consider rates among Southern African Customs Union (SACU) member states. SACU enforces an agreement between its member states to maintain the free interchange (or flat-rate taxation) of goods and services between member states and common external tariffs within the customs area (SACU 2002). This is somewhat apparent in Figure 2, where we see that rates are generally lower, ranging between US$0.15 and US$0.30 on average compared with US$0.56 and US$1.25 on average in SADC member states outside SACU (Figure 1). Some operators such as Vodacom South Africa, BTC Botswana, and MTC Namibia even apply a flat rate or similar rate to most SACU countries.

Figure 2: International calling rates to SACU member states, US dollars per minute



Source: author's illustration based on data from Vodacom South Africa, MTN South Africa, BTC Botswana, MTC Namibia, TN Mobile Namibia, Airtel Malawi.

Given that the data does not provide information on the cost structures of the operators, strong conclusions cannot be drawn concerning whether the lower (and more uniform) rates in SACU are attributed to the taxing structure of the region. However, given the evidence around higher rates being attributed to countries that have imposed SIITs, the lower and more uniform rates in

the SACU region might possibly be explained by the SACU approach to taxing goods and services. This is a potential area for further research, as it shows there is a possible argument to be made for harmonized regional taxation policies in the telecommunications industry, which might result in more harmonized (and possibly lower) termination rates across the region. Importantly, further analysis of market and cost structures would need to be carried out to determine whether these prices are competitive.

Another factor explaining high comparative rates is costs. There are several components included by MNOs in the cost of termination and completing an international call, which include the cost incurred in switching and transmitting an international call from the originating country to the international gateway. However, the magnitude of these costs will vary from country to country depending on how telecommunications tariffs are structured. This is seen in policies such as SIIT described above, but also in terms of mobile subscription numbers for operators. Where mobile network subscription is high, international call charges may be lower compared with cases where subscription is low (Nigerian Communications Commission 2015). This is attributed to economies of scale within the industry—the higher the subscription numbers, the cheaper it becomes to finance capacity and operating costs.

In relation to the countries analysed in Figure 2, the explanation that subscription numbers also play a role in the termination rates charged makes some intuitive sense. For instance, according to data gathered by the ITU in 2019, total mobile subscriptions in South Africa are 90 per cent higher than Malawi, 86 per cent higher than Zimbabwe, and 62 per cent higher than DRC (ITU ICT-Eye 2021). Compounded by the fact that these countries also impose SIITs, this partially explains why the same inland destinations have consistently high calling rates across MNOs.

The accounting rate system is another factor that explains some of the consistently high rates in the region as well as the lack of harmonization of rates. When traffic is exchanged between carriers in different countries, an operator that sends more traffic than it receives has to make settlement payments to the receiving operator across the border (ITU 2012). These payments are calculated through bilateral relationships using a formula called the accounting rate, which is established according to principles set out in the international telecommunications regulations developed by the ITU (2010). If traffic is balanced on a particular route, the value of the accounting rate is essentially irrelevant, since no settlement is necessary. Therefore, each carrier's revenue will depend directly on its international call rate.

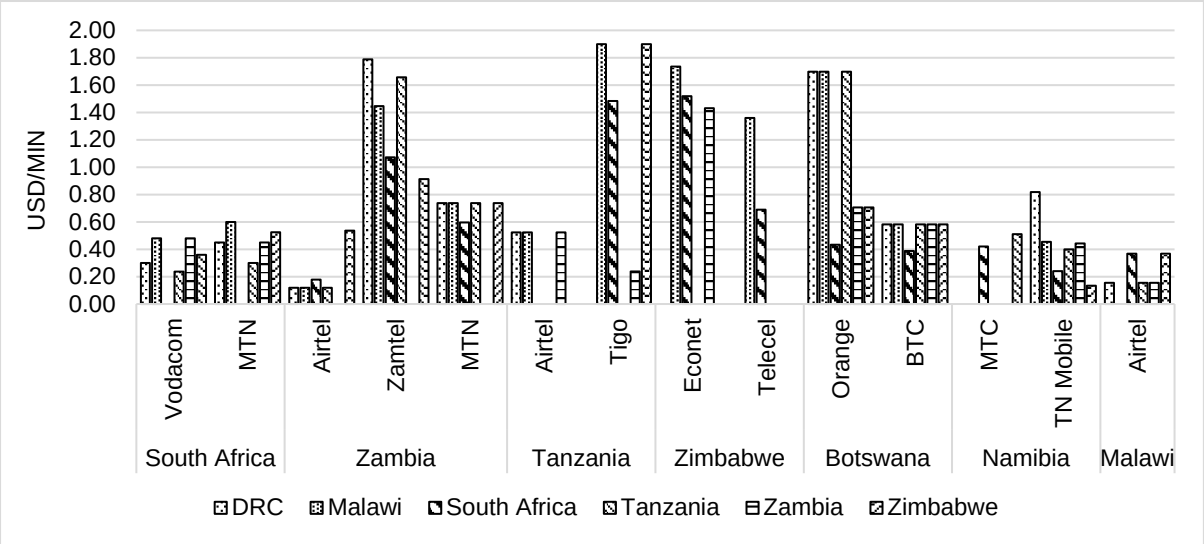
In relation to the countries examined above, international voice traffic in Tanzania, for example, is skewed towards outgoing traffic: in the second quarter of 2020, 57 per cent of all international calls were outgoing calls, while incoming traffic was 43 per cent of total international minutes (for both fixed and mobile calls) (TCRA 2020). Tanzania generally sends more international traffic than it receives (with proportions of international call minutes being skewed towards outgoing calls for the previous six quarters) (TCRA 2020). The expectation is therefore that more settlement payments are made by Tanzania to other countries than it receives. On the other hand, in 2019, South Africa's international voice traffic was skewed towards incoming calls: it recorded 175 million incoming international voice calls, while there were 100 million outgoing voice calls (ICASA 2020). While data is not available on international call traffic for specific routes, the above is indicative of the accounting rate system playing a role in higher international call rates for some countries as opposed to others.

International roaming rates: local calls

As described above, 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 roaming rates collected from the websites of BTC Botswana, Orange Botswana, Airtel Malawi, MTC Namibia, TN Mobile Namibia, Vodacom South Africa, MTN South Africa, Airtel Tanzania, Tigo Tanzania, Airtel Zambia, MTN Zambia, Zamtel Zambia, Econet Zimbabwe, and Telecel Zimbabwe.

Data on roaming rates in the SADC region are generally more easily accessible, which may be a result of the SADC Roaming Regulations, which direct member states to ensure that mobile operators provide information on the availability of roaming services and applicable charges. Importantly, not all operators provide roaming services throughout the SADC region. For instance, MTC Namibia only provides roaming services in Angola, Botswana, South Africa, and Zimbabwe, while Econet Zimbabwe does not provide roaming services in DRC, Eswatini, Madagascar, Seychelles, or Tanzania. Furthermore, while all roaming providers provide voice and SMS services, not all of the operators from which data was gathered provide roaming services for mobile data. Neither MTC Namibia, Zamtel Zambia, nor TN Mobile Namibia provide roaming services for data. Specifically, we compare international roaming rates for MNOs in Botswana, DRC, Malawi, Namibia, South Africa, Tanzania, Zambia, and Zimbabwe across local calls and mobile data in 2020. All rates were converted into US dollar terms using IMF exchange rate data for ease of comparability.

Figure 3: International roaming rates for local calls in selected countries, US dollars per minute



Source: author's illustration based on data from Vodacom South Africa, MTN South Africa, Airtel Zambia, Zamtel Zambia, Airtel Tanzania, Tigo Tanzania, BTC Botswana, MTC Namibia, TN Mobile Namibia, and Airtel Malawi.

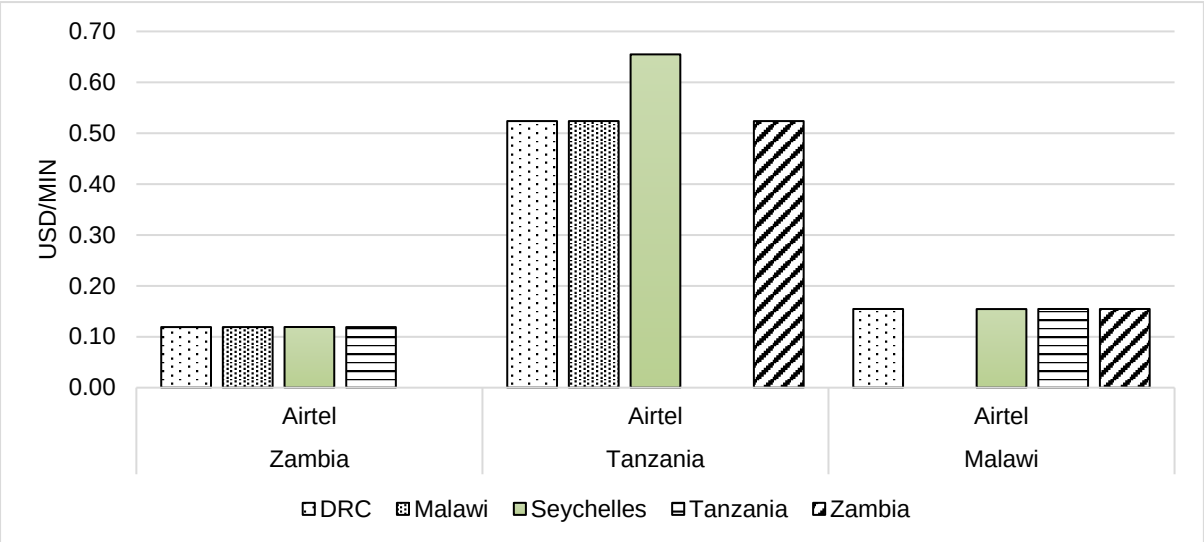
We compare the roaming charges of operators from the seven selected countries for a subscriber to place a local call using their home country SIM card while visiting either DRC, Malawi, South Africa, Tanzania, Zambia, or Zimbabwe (Figure 3). We see more significant differences in roaming rates across operators in the same country. In Zambia, for instance, rates for roaming calls between the country's three operators vary much more compared with those for international calls. In the most extreme case, it costs a Zamtel Zambia subscriber 14 times more than an Airtel Zambia subscriber to roam in DRC. Similarly, in Tanzania it is four times more expensive for a Togo subscriber to roam in Malawi than it is for an Airtel subscriber to do the same.

The significant differences in roaming rates between local operators in the same country may be explained by the varying sizes of operators in a given country. For example, the Zambian mobile telecommunications market comprises three operators but is dominated by Airtel and MTN (Paelo and Robb 2020b), which are international operators with a presence in other SADC member states. In the same vein, among the seven operators in Tanzania, Airtel was found to be one of the dominant operators, with a market share between 31 and 37 per cent, while Tigo is characterized as a much smaller player on the local market (Paelo and Robb 2020b).

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.[2] MNOs typically have to negotiate individual contracts and rates with MNOs in countries where they wish to provide roaming services. 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. Simply put, 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. The nuances around the negotiation of roaming rates are discussed in the next section.

Airtel has a presence in four SADC 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. Although Airtel does not offer the same roaming rates to subscribers in Malawi, Tanzania, or Zambia, we see that subscribers in these countries experience the same rates when they travel to DRC, Malawi, Tanzania, and Zambia, which are countries in which Airtel is present (Figure 4). Therefore, Airtel does not necessarily have to negotiate roaming agreements with other operators in these countries. However, although Airtel is able to provide uniform rates, this is not indicative that these rates are at a competitive level. It is also not clear why these rates would be considerably higher for Airtel Tanzania.

Figure 4: Airtel One Network local calls, US dollars per minute



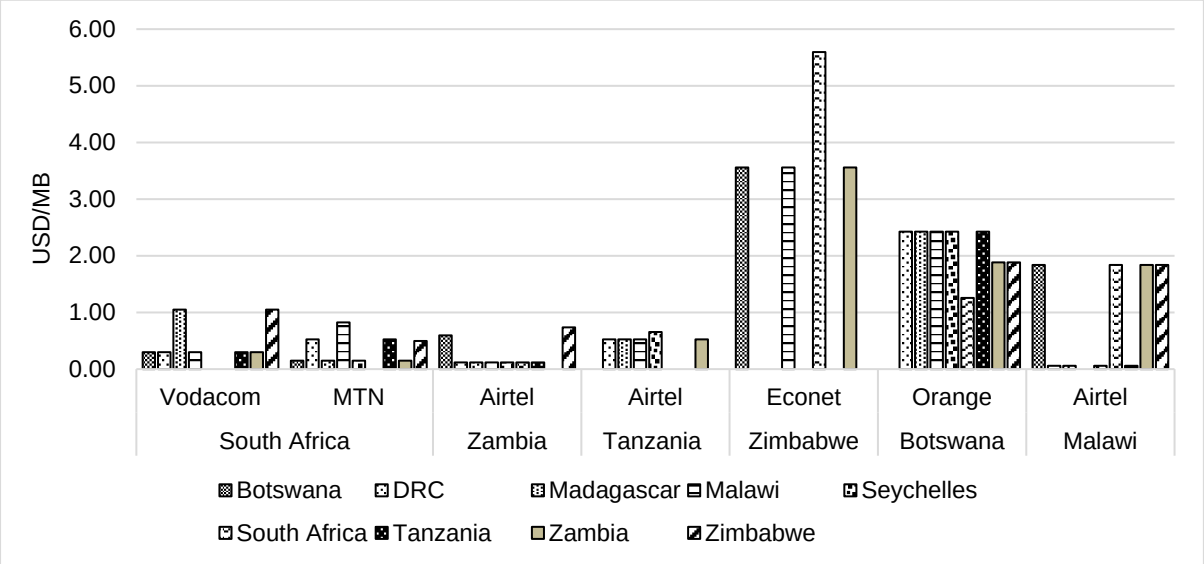
Source: author's illustration based on data from Airtel Zambia, Airtel Tanzania, and Airtel Malawi.

[2] Interview with Malawi Communications Regulatory Authority (MACRA), 11 February 2021.

International roaming rates: mobile data

As highlighted above, international roaming on mobile data is not as widely provided as on voice and SMS services. However, where roaming on data is provided, there are stark differences across countries. Airtel Tanzania and Zambia, as well as Vodacom and MTN South Africa, charge rates below US$1 per megabyte to roam on mobile data in seven selected countries, which are among the lowest rates across the selected countries (Figure 5).

Figure 5: International roaming rates for mobile data in selected countries, US dollars per megabyte



Source: author's illustration based on data from Vodacom South Africa, MTN South Africa, Airtel Zambia, Econet Zimbabwe, Orange Botswana, and Airtel Malawi.

Airtel Zambia has consistently low rates compared with the other selected operators. The company states that this is likely explained by the extensive investments in fibre that Airtel Zambia has made, including links to Namibia, South Africa, and Tanzania.[3] As will be discussed further below, this is a significant development, considering the increasing demand for Internet protocol (IP) interconnection, which makes investments in bandwidth virtually a prerequisite for competitiveness within the region.

Aside from Zambia, landlocked SADC 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.[4] 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.[5] 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.[6] In Zimbabwe, the

[3] Interview with Airtel Zambia, 10 September 2019.

[4] Interview with Airtel Zambia, 10 September 2019.

[5] Interview with CRASA, 4 February 2021.

[6] Interview with CRASA, 4 February 2021.

high rates for data generally and on roaming are also explained by the challenging economic environment in the country.[7]

4 Emerging themes on cross-country integration of telecommunications in the SADC region

Section 3 has highlighted that there are significant differences in cross-border and roaming rates within and across selected SADC member states. There is a range of reasons for these differences, including the role of taxes in the pricing of telecommunications services, difficulties in establishing the costs to operators, and whether costs are accurately reflected in retail prices. On the relationship between costs and prices, there is a concern that MNOs have to carry out individual agreements with their counterparts in different countries to provide services such as roaming, which in many cases are shaped by the relative bargaining power of the MNOs. Drawing from in-depth interviews with regulators in the region, this section reflects further on these issues and the extent to which they affect the integration of telecommunications services in the SADC region.

4.1 Taxes on telecommunications services

Taxes on telecommunications services have been described as one of the reasons for the high cross-border and roaming rates in the SADC region. Following CRASA's roaming policy of 2010, the region began to experience a drop in roaming and cross-border rates by as much as 30 per cent between some countries.[8] However, gains from this have since been eroded due to countries such as Angola, Malawi, Tanzania, and Zimbabwe introducing various taxes in the telecommunications industry, including a tax on international inbound calls. Taxes on call termination are structured in different ways across different countries. Malawi, for instance, taxes MNOs at a rate of US$0.08 per minute on all phone calls that terminate within the country,[9] which also applies to both international calls and roaming services. In addition to this tax, Malawian operators have to adhere to an annual levy of 3.5 per cent of turnover payable to the national regulator, ten per cent excise tax on airtime for voice and data, 16.5 per cent value-added tax, customs duty of 25 per cent on ICT equipment, and a capital gains tax of 30 per cent.[10] These taxes and levies are deemed to have led to significant increases in cross-border call and roaming rates to and within Malawi.[11]

It is promising, though, that the Malawian government has appreciated the adverse effects that these taxation measures have, including dampening the competitiveness of the telecommunications sector (Public Private Partnership Commission 2021). In its 2021–26 'Digital Economy Strategy', Malawi proposes a phasing out of the 3.5 per cent levy on MNOs' annual turnover, a phasing out of the ten per cent excise tax on airtime, and a lowering of the customs duty on ICT equipment to ten per cent (Public Private Partnership Commission 2021). The strategy appreciates that taxes lead to higher costs for subscribers, and discourage investment and innovation by MNOs (Public Private Partnership Commission 2021). Therefore, the strategy also aims to increase telecoms penetration and usage in order to extend the tax base, which will in the long run substitute for the loss in tax revenue from the phasing out of some sector-specific taxes.

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[7] Interview with Postal and Telecommunications Regulatory Authority of Zimbabwe (POTRAZ), 12 September 2019.

[8] Interview with CRASA, 22 February 2021.

[9] Interview with MACRA, 11 February 2021.

[10] Interview with MACRA, 11 February 2021.

[11] Interview with MACRA, 22 February 2021.

In accordance with its aim to reduce the cost of international call termination and roaming charges in the region, CRASA also recognizes that the imposition of various taxes on telecommunications services by some member states has significant adverse effects on the extent to which rates can be harmonized.[12] This is again because operators will typically pass on the burden of these taxes to subscribers through higher retail prices in specific countries. CRASA has since proposed to work with the SADC Secretariat, as well as with ministers responsible for ICT and ministers responsible for finance, to look into taxation policies surrounding telecommunications services within the region.[13]

The limited legal powers of enforcement afforded to CRASA make the need for coordination between different units within the SADC Secretariat more crucial.[14] Although CRASA is a body under the SADC Secretariat, it does not have the power to enforce adherence to its guidelines and directives by SADC member states. Unlike regional bodies in the EU or regional blocs in West Africa, for instance, CRASA's guidelines and frameworks are treated as recommendations that national regulators can choose to implement.[15] Therefore, the lack of enforcement instruments such as penalties for non-adherence, along with member states' implementation of national policies that are potentially misaligned with CRASA guidelines, creates more difficulty in achieving harmonized telecommunications services across the region. In particular, the issues around taxes also show that harmonization cannot be achieved in isolation. There is a need for a holistic approach to be taken towards harmonization, recognizing that harmonization in both telecoms services and regulations is in part dependent on the coordination of various directorates and units within the SADC Secretariat and its member states.

4.2 Lack of transparent information on costs to operators and bargaining power

The costs that operators face have previously been argued to be a factor in explaining the high retail rates faced by subscribers globally, and various regulators across the region agree that the SADC region is no exception to this.[16] However, it is still largely unclear what exact costs operators face and to what degree these costs differ by operator within and across SADC countries. Operators are notoriously evasive about their costs, as demonstrated in previous competition law proceedings (Manoim et al. 2011). While regulators such as CRASA, the Malawi Communications Regulatory Authority, and the Tanzania Communications Regulatory Authority (TCRA) have investigated the costs faced by MNOs in their jurisdictions, there still appears to be a lack of transparency in the costs faced by MNOs more generally (Paelo and Robb 2020a). For instance, there appears to be very little sharing of information between regulators in the region for best-practice purposes, including general data and information on regulatory policies and decisions.[17] This has a direct effect on the extent to which national regulations can be aligned with one another. In attempting to understand the extent of roaming and roaming patterns in the SADC, for instance, CRASA notes that there is a need for a more deliberate focus on data collection at a national level regarding costs.[18]

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[12] Interview with MACRA, 11 February 2021.

[13] Interview with CRASA, 22 February 2021.

[14] Interview with CRASA, 22 February 2021.

[15] Interview with CRASA, 22 February 2021.

[16] Interview with CRASA, 22 February 2021; interview with MACRA, 11 February 2021; interview with Zambia Information and Communications Technology Authority (ZICTA), 12 February 2021.

[17] Interview with MACRA, 11 February 2021.

[18] Interview with CRASA, 22 February 2021.

Interviews with regulators in the region have also echoed that wholesale and retail rates 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, the greater the bargaining power afforded to that particular operator when it is negotiating agreements with its counterpart in a given market.[19] 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. Even in cases 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 that use cross-border services in order to negotiate favourable rates.

National regulators have therefore found that larger multi-country operators such as Airtel, MTN, and Vodacom typically find themselves at an advantage when negotiating rates through bilateral agreements compared with smaller players, such as South Africa's Cell C and Malawi's TNM.[20] 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.

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. In Zimbabwe, for instance, for the purposes of investment and innovation, local operators such as NetOne have to borrow funds on the local market, where the macroeconomic environment continues to be unfavourable for business,[21] whereas a strong competitor such as Econet has the ability and access to borrow on the international market. Similarly, TNM in Malawi faces the same challenges around access to finance for investment as does NetOne, whereas Airtel Malawi (TNM's only competitor) has the advantage of being a subsidiary of Bharti Airtel International, operating in 14 Asian and African countries.[22]

Importantly, the advantages afforded to group MNOs are not limited to the voice market but extend to other markets in the telecoms sector. For instance, the Airtel group's access to international funds for investment allowed Airtel Zambia to invest in fibre links to Namibia, South Africa, and Tanzania.[23] The significance of this should not be underestimated: as landlocked countries such as Zambia are disadvantaged in terms of available bandwidth, Airtel's investments in fibre meant a significant increase in capacity and allowed a reduction in their data rates.[24] Furthermore, the ability to make these significant investments magnifies the scale advantages that

[19] Interview with Airtel Zambia, 10 September 2019; interview with CRASA, 22 February 2021; interview with ZICTA, 12 February 2021.

[20] Interview with POTRAZ, 12 September 2019; interview with CRASA, 22 February 2021.

[21] Interview with NetOne, 12 September 2019.

[22] Interview with MACRA, 11 February 2021; see also Airtel Malawi (2021).

[23] Interview with Airtel Zambia, 10 September 2019.

[24] Interview with Airtel Zambia, 10 September 2019.

accrue to first movers and larger operators, which become very important in a market where technology is rapidly changing, as will be discussed below.

It is evident that it is important to appreciate the relative sizes of operators in a given market when one is thinking about regulation more generally as well as the harmonization of regulation across the region in particular. Importantly, scale brings advantages in terms of production, finance, increased capabilities, and even distribution and marketing. This has significant implications when we are considering the extent to which regulation can be harmonized, given that member states also have to engage with local MNOs and interests. A regional approach between the SADC Secretariat, CRASA, and national regulators needs to take this into account.

4.3 The role of competition, IP interconnection, and over-the-top (OTT) services

There are important debates about the lack of competition in telecommunications markets in the region (GSMA 2016a, 2018; Paelo and Robb 2020a, 2020b). From a spectrum assignment perspective, for instance, it is important to ensure that potential entrants and smaller operators have an opportunity to acquire spectrum, yet the viability of potential spectrum licensees is also a concern, because if spectrum is underutilized or lies dormant, then consumers will not fully realize the benefits associated with faster, cheaper broadband (Paelo and Robb 2020a). Similarly, at the infrastructure-sharing level, it is of concern whether the effective regulation of infrastructure can ensure competition at the service level using shared facilities.

Regulators in the region have expressed that in the recent past there has been a lack of embedment of the principles of competition in the regulation of telecoms markets within the region.[25] This has contributed to relatively high cross-border telecoms rates, as seen above.[26] Various regulators are generally implementing measures that aim to facilitate competition for the purposes of improved access and the reduction of retail pricing. CRASA, for instance, developed a framework for the assessment of competition in the ICT sector in 2015. It is promising that half of the SADC members states' national regulators have since adopted this framework and have recognized the role of competition policy in telecommunications regulation through memoranda of understanding and other formal tools with competition agencies in their countries.[27] Some authorities have launched inquiries in telecoms markets.[28]

The sharp global increase in the use of IP connections and data services over the past decade has two key consequences for cross-border telecommunications services:

1. a significant decrease generally in the demand for traditional cross-border and roaming phone calls;
2. an increase in OTT voice and video services such as WhatsApp and Skype.[29]

The proliferation of OTT services has effectively led to a contraction in demand for national and cross-border traditional voice markets.[30] This has had some negative effects on revenue for

[25] Interview with CRASA, 22 February 2021; interview with MACRA, 11 February 2021.

[26] Interview with CRASA, 22 February 2021.

[27] Interview with CRASA, 22 February 2021; interview with ZICTA, 12 February 2021.

[28] Interview with the Competition and Consumer Protection Commission Zambia, 10 September 2019; see also Competition Commission of South Africa (2019).

[29] Interview with CRASA, 22 February 2021; interview with MACRA, 11 February 2021.

[30] Interview with POTRAZ, 12 September 2019; interview with MACRA, 11 February 2021.

operators in traditional voice markets, who have called for the regulation of OTT services.[31] It is not particularly clear whether there is indeed a need for the regulation of OTTs or how that can be achieved. However, what has become abundantly clear is that the competition and regulatory concerns surrounding the assignment of spectrum, the vertical integration of firms, and the abuse of dominance in infrastructure-sharing are more significant at a regional level if we wish to drive down prices domestically and across borders. Regional cooperation in this area, perhaps under the guise of the AfCFTA, would bring significant benefits.

These issues in part explain the relatively high cross-border call and roaming service rates that have been shown in the sections above. Importantly, they also shed light on whether more efforts and resources should be directed towards fostering effective competition through harmonized regulation in data services generally, at both national and regional levels, rather than the harmonization of traditional telecommunications services such as international call rates. This is because even in times of crisis—such as during the coronavirus pandemic, when there has been little travel or roaming—there has been a significant and ongoing reliance on OTT voice and video services.[32] As a result, this has particularly favoured operators that are either vertically integrated or have had the ability to make significant investments in bandwidth and infrastructure over time. This does not mean that operators that have managed to make investments should be penalized based on their size and scale. However, there is certainly a need for effective regulation to drive competition in the region and across borders. This requires coordination within the SADC Secretariat and relevant bodies from SADC member states, including national regulators and competition agencies.

5 Conclusions and recommendations

This study has considered developments in cross-border interconnection in the SADC region in order to argue for increased competition and cross-border integration. Low-cost, high-quality telecommunications services improve productivity across economies, and they improve the lives of consumers by offering them cheap and easier communication and enabling them to access opportunities for study and employment as well as financial services. Therefore, in the context of regional integration, the growth of mobile technology in Africa is important, as it is a key facilitator of the cross-transfer of knowledge, innovation, and growth in trade, which are especially relevant in the context of the digital economy and the AfCFTA.

This paper, along with the previous two WIDER Working Papers on the theme 'Competition and Regional Regulation of Telecommunication Services', has found that there are specific challenges that are present in the telecommunications sector in the SADC region. Particularly regarding interconnection between SADC member states, it has become apparent that there are currently low levels of alignment in regulation between member states. This is observable, for instance, through the varying taxation policies in telecommunications markets across various countries. Taxation policies can have a robust effect on the extent to which the retail prices of cross-border services differ, as well as on efforts to harmonize regulation across the region, due to their inflationary effects. Consequently, this affects regional integration and productivity across countries

[31] Interview with CRASA, 22 February 2021

[32] Interview with CRASA, 22 February 2021; interview with MACRA, 11 February 2021.

Another issue of significance is the asymmetry of information surrounding costs to operators and the extent to which these are translated into retail prices. This is concerning, as the lack of tangible information on costs has a direct effect on the degree to which regulators can develop effective regulations and constructively enforce them. For instance, in order to enforce a glide path for the reduction of wholesale and retail prices, regulators need to have a full picture of the costs that operators have to bear in order to understand how reasonably prices can be reduced over a period of time.

At the heart of addressing these issues is the need for ongoing consultations and coordination within the SADC as well as directly between regulators, competition agencies, and stakeholders in the region. Importantly, there is a need for the sharing of information and best practice across the region. This is vital because while there is much to learn from other regions across the globe, the SADC region has many cultural, political, and economic nuances of its own. As a result, a one-size-fits-all approach to regional regulation may in many instances not prove to be beneficial. Furthermore, there is a need to explore ways in which CRASA can be afforded the necessary legal powers for the purposes of the enforcement of regulations at a regional level. This will be instrumental in the harmonization of regulations by ensuring that policies that are implemented at a national level also take into consideration the effects that they have on regional integration.

Advances in technology have meant increases in demand for broadband and data services, resulting from a surge in demand for OTT services. While roaming prices for data have been shown to be relatively high and possibly need regulatory attention, the shift in consumer behaviour towards the increased use of Internet services is a strong indication that attention also needs to be paid to the harmonization of regulation regarding Internet-related services generally. Given the competition concerns that have arisen due to the conduct of larger, vertically integrated firms in different countries, there is also merit in directing resources to the harmonization of regulation and the fostering of competition in fixed and broadband services, as this can impact on the costs of other services as well. Fixed services can play a valuable role in providing high speeds and high volumes of data at a lower cost, which is important considering the difficulties that landlocked SADC countries have in providing low-cost Internet.

Therefore, while there is a need to harmonize regulation in cross-border telecommunications services in the SADC region generally, the manner in which technology has changed and shaped livelihoods means that the harmonization of regulations governing data services needs to become even more of a priority for the region. In addition, while coordination on economic regulation in telecoms markets in the SADC already exists in the form of CRASA, further consideration needs to be given to its ability to enforce regulations to ensure that the benefits of regional integration through harmonized regulations can be realized.

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