

Evidence for ICT Policy Action

Policy Paper 11, 2013

Understanding what is happening in ICT in Tanzania

A supply- and demand-
side analysis of the
ICT sector

*Steve Esselaar and
Lishan Adam*

Research ICT Africa

Research ICT Africa (RIA) is an information and communication technology (ICT) policy and regulation research network based in Cape Town, South Africa, under the directorship of Dr. Alison Gillwald. As a public interest think tank, RIA fills a strategic gap in the development of a sustainable information society and knowledge economy. The network builds the ICT policy and regulatory research capacity needed to inform effective ICT governance in Africa. RIA was launched a decade ago and has extended its activities through national, regional and continental partnerships. The network emanates from the growing demand for data and analysis necessary for appropriate but visionary policy required to catapult the continent into the information age. Through development of its research network, RIA seeks to build an African knowledge base in support of sound ICT policy and regulatory design, transparent implementation processes, and monitoring and review of policy and regulatory developments on the continent. The research, arising from a public interest agenda, is made available in the public domain, and individuals and entities from the public sector, private sector and civil society are encouraged to use it for purposes of teaching and further research or to enable them to participate more effectively in national, regional and global ICT policymaking and governance.

Series Editor: Alison Gillwald

Editorial assistance: Broc Rademan

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This research is made possible by significant funding received from the International Development Research Centre (IDRC), Ottawa, Canada, and RIA network members express their gratitude to the IDRC for its support. The network consists of members in 18 African countries, and RIA researchers in 12 countries were able to participate in the 2012 supply- and demand-side reviews of their national ICT sectors (as detailed in this and other country reports). The 2012 national studies were led by the following RIA network members: Dr. Patricia Makepe (Botswana); Prof. Olivier Nana Nzépa (Cameroon); Dr. Lishan Adam (Ethiopia); Dr. Godfred Frempong (Ghana); Prof. Tim Waema (Kenya); Francisco Mabila (Mozambique); Dr. Christoph Stork (Namibia); Fola Odufuwa (Nigeria); Louise Karamage (Rwanda); Dr. Alison Gillwald (South Africa); Mary Materu-Behitsa (Tanzania); and Ali Ndiwalana (Uganda).

RIA's 2012 Household and Individual ICT Access and Use Surveys and Informal Sector ICT Access and Use Surveys were led by Dr. Christoph Stork who, together with Mariama Deen-Swarray, was responsible for the preparation of the statistical data and data analysis for the 12 sets of national findings and the comparative analyses across the 12 countries. The 2012 Telecom Regulatory Environment (TRE) assessments, the compilation of supply-side indicators, and the collection and presentation of the pricing data, were coordinated across the 12 study countries by Enrico Calandro and Mpho Moyo. Additional peer-reviewing to that done amongst partners was undertaken by Steve Esselaar and Enrico Calandro.

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Executive summary

Tanzania's score on the World Economic Forum's (WEF) Networked Readiness Index (NRI) was low (ranked 118 in 2012) and it continues to lag behind countries such as Uganda (107), Nigeria (104) and Kenya (81). Use is particularly poor amongst individuals and in the business sector. The 2012 RIA Informal Business ICT Survey highlights the challenges that informal businesses face in using broadband and the negative impact of high prices.

Tanzania has the third-lowest prepaid mobile voice prices

However, two critical events have had an enormous effect on the Tanzanian ICT sector: the linking to the SEACOM and the Eastern Africa Submarine Cable System (EASSy) networks in 2009-10; and the launch of the National ICT Broadband Backbone (NICTBB), in two phases (2010 and 2012). Allied with the increase in competition in both the voice and data markets, Tanzanians are slowly benefitting from reduced prices. Based on a prepaid mobile voice basket, Tanzania has the third lowest prices after Kenya and South Africa. Based on a prepaid mobile broadband basket, Tanzania is also ranked third, behind Kenya and Ghana. In addition, Tanzania has successfully – though controversially – completed the digital migration process ahead of time, freeing up the 700 MHz frequency band. Tanzania can build on the gains in the broadband market by making the “digital dividend” frequencies available to broadband suppliers.

Tanzania is a useful case study for similar countries in Africa for two reasons:

- Tanzania's digital migration process provides several lessons and insights and
- The NICTBB has played a role in reducing prices within Tanzania, but how effectively it is managed will be a significant determinant of its future success.

According to a study by Analysys Mason (2013), there are several lessons that can be learnt from the digital migration process in Tanzania:

- The cost of digital reception set-top boxes is a challenge, unless a subsidy system is made available to lower-income households. (Tanzania did not have a subsidy, contributing to the low rate of digital adoption.)
- The primary challenge is one of consumer awareness – to make consumers aware of the benefits of digital transmission and aware of how to correctly install and use a digital set-top box.
- For countries starting from a low base of digital TV signal reception (e.g. most sub-Saharan African countries), meeting the June 2015 deadline will unavoidably result in a certain percentage of households losing signal.

While the Government of Tanzania needs to recoup the USD250million cost of building the NICTBB, it must balance this with the need for relatively low-cost wholesale access in order to accelerate broadband adoption. The ability of the Government of Tanzania to reconcile these opposing points is going to be a big test of the success of the NICTBB and its effects on broadband access and use.

Within this rapidly changing environment, the Tanzanian Communications Regulatory Authority (TCRA) has been under pressure to keep pace. The 2012 RIA Tanzania Telecom Regulatory Environment (TRE) assessment shows that stakeholders' perceptions of the policy and regulatory environment have significantly declined since the 2009 TRE assessment. The decline has been most precipitous in the areas of universal service obligations (USO), quality of service (QoS), tariff regulation and regulation of anti-competitive practices. Retail prices, for example, are extremely volatile and can jump by as much as 30% between months, and there are indications that dominant operators are using their positions to undermine entrance into their respective markets. Several important regulatory challenges face Tanzania for the coming years.

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Acronyms and abbreviations

ARPU	average revenue per user	PPP	purchasing power parity
BOCRA	Botswana Communications Regulatory Authority	QoS	quality of service
BOL	Benson Online	RIA	Research ICT Africa
CAD	Canadian dollar	STM	Synchronous Transport Module
CCK	Communications Commission of Kenya	TANZIT	The Information Society and ICT Sector Development Project in Tanzania
CDMA	code division multiple access	TCRA	Tanzania Communications Regulatory Authority
COSTECH	Tanzania Commission for Science and Technology	TTCL	Tanzania Telecommunications Company Ltd.
DTBI	Dar Teknohama Business Incubator	TZA	Tanzanian shillings
EASSy	Eastern Africa Submarine Cable System	TRE	Telecom Regulatory Environment
EPOCA	Electronic and Postal Communications Act	UCSAF	Universal Communications Service Access Fund
EUR	euro currency	USD	US dollar
GDP	gross domestic product	USO	universal service obligations
GSM	global system for mobile communications	UNDP	United Nations Development Programme
ICT	information and communication technology	WEF	World Economic Forum
ISP	internet service provider		
ITU	International Telecommunication Union		
MCST	Ministry of Communication, Science and Technology		
MTR	mobile termination rates		
MVNO	mobile virtual network operator		
NBS	National Bureau of Statistics		
NCA	National Communications Authority		
NICTBB	National ICT Broadband Backbone		
NRI	Networked Readiness Index		

Introduction

Some ICT development in Tanzania belies the fact that of the countries that were part of the 2012 Research ICT Africa (RIA) ICT Access and Use Survey, Tanzania was found to have the lowest average household income at approximately USD95 a month. By way of comparison, in Tanzania's neighbour to the south Mozambique, the average household income was found to be roughly USD156 per month, and the figure in East African neighbour Uganda was found to be USD489 per month (more than four times Tanzania's). The figure for the richest country in the 2012 RIA ICT Survey, South Africa, was found to be approximately USD1 032 per month. (RIA ICT Survey data 2011-12)

Allied with the low household income, Tanzania has extremely poor electricity infrastructure, with only 15% of the population having access to grid electricity (World Bank, 2012). These two factors have had an effect on mobile and internet penetration, with Tanzania regularly lagging on information and communication technology (ICT) rankings. However, recent developments have had the effect of rejuvenating the sector and dramatically speeding up mobile voice and mobile broadband penetration. These developments include:

- expanded undersea cable connectivity, leading to much lower wholesale broadband prices – estimates (Pazi and Chatwin, 2014) are that international connectivity prices have declined by more than 88%;
- the launch of the National ICT Broadband Backbone (NICTBB) (a series of fibre-optic cables around Tanzania), which has lowered internal wholesale rates significantly, with some estimates putting the broadband price reductions, for Synchronous Transport Module (STM) 1 to 4, at more than 30% since the launch of the NICTBB; and
- the introduction of a number of new entrants to the market, leading to increased price competition and much lower tariffs for consumers, with the total number of operators across the mobile and fixed-line sectors now numbering ten.

Lower wholesale pricing and more competition in the retail sector have meant that Tanzania's ICT sector has changed quite rapidly since the RIA ICT Survey was completed in 2012. Significant portions of the sector's growth have taken place in 2013 and 2014, after the completion of the ICT Survey.

Nevertheless, there are several difficult challenges that Tanzania has to face. Internet penetration is still low, even though pricing is competitive (as measured by RIA's Broadband Pricing Index [RIA, 2014]). While interconnection rates and mobile prices are declining and Tanzania is still ranked above the average in RIA's Prepaid Mobile Price Index (RIA, n.d.), mobile retail prices are extremely volatile as operators jockey for position and subscribers. The larger operators, namely Airtel and Tigo, have lowered retail prices significantly below new entrants' prices, placing added pressure on the margins of new entrants as they try to roll out networks.

Despite the continuity in the regulator and its identification of key competitive issues requiring attention, the TCRA, like other regulators, has been under pressure to keep pace. The 2012 RIA Tanzania Telecom Regulatory Environment (TRE) assessment shows that stakeholders' perceptions of the policy and regulatory environment have significantly declined since the TRE assessment of 2008. The decline has been most precipitous in the areas of universal service obligations (USO), quality of service (QoS), tariff regulation and regulation of anti-competitive practices. Comments from stakeholders who participated in the TRE survey lament the lack of focus on extending access to rural and semi-urban areas. Meanwhile, QoS has declined as operators compete for subscribers, retail prices are extremely volatile and can jump by as much as 30% between months, and there are indications that dominant operators are using their positions to undermine entrance into their markets. Several important regulatory challenges face Tanzania for the coming years.

Mobile voice and broadband penetration have recently been rejuvenated

Despite competitive internet pricing penetration is still low

Socio-economic overview

Tanzania is located in East Africa, between longitude 29 and 41 degrees east and latitude 1 and 12 degrees south of the Equator. It is bordered by nine countries: Uganda and Kenya (North), Rwanda, Burundi, Democratic Republic of Congo (West), Zambia, Malawi, Mozambique (South) and the Seychelles in the Indian Ocean (East). It is a member in two sub-regional blocks: The East African Community (EAC) and the Southern African Development Community (SADC). The country occupies 447 000 square kilometres and has Mt. Kilimanjaro (5 895m), the highest peak in Africa. As of 2012, the population was estimated to be 44 928 923, with an average growth rate of 2.7% (NBS, 2012). Life expectancy at birth is 57 and there are 122 ethnic groups, each with its own local dialect. Kiswahili is the national language and medium for teaching in primary schools, and is spoken by almost everybody. English is the second main language, used for international communication and business and as the medium of instruction at the secondary and tertiary levels of education. While still predominantly an agricultural economy, about 26% of the population is urban, and the urbanisation rate is 4.7%. Adult literacy in Tanzania stands at 78%. (NBS, 2012)

Severe retail price volatility and the dominance of incumbent operators undermine the ICT sector's stability and growth

Off a relatively low base, the real gross domestic product (GDP) growth rate, according to the World Bank, was 7% in 2012-13. The major contributors to GDP growth were the capital-intensive industries of manufacturing, construction, retail and the communications sector. Labour-intensive industries had substantially lower rates of growth than the average. The agricultural sector, which employs nearly 80% of the workforce, had an annual growth rate of 4% in 2012 (World Bank, 2013a).

The World Bank estimates Tanzania's GDP per capita at USD608 for 2012, higher than Uganda and Mozambique. But the 2012 RIA ICT Survey found household income to be the second-lowest among the countries surveyed.

Table 1: Average monthly household income in RIA study countries

	Average monthly household income (USD)	Average monthly household income (USD PPP)
Ethiopia	60.29	150.55
Tanzania	95.39	245.01
Rwanda	106.52	216.15
Mozambique	156.30	276.12
Cameroon	235.01	468.58
Ghana	247.00	510.66
Nigeria	248.15	404.36
Kenya	254.35	460.30
Uganda	488.51	1 184.12
Botswana	692.39	1 175.97
Namibia	702.01	974.03
South Africa	1 032.25	1 527.88

Source: RIA ICT Survey data, 2011-12

The World Bank expects that, due to the discovery of gas reserves, Tanzania's high growth rates will continue for at least the next 10 years. Even so, Tanzania's primary challenge is in the area of human development: it ranked 152nd out of 186 countries in the 2013 UN Human Development Index, and 145th out of 189 countries in the World Bank's Ease of Doing Business Ranking (UNDP, 2013; World Bank, 2013b).

ICT sector ranking

The Tanzanian mobile market is considered to be among the most competitive in Africa. All areas of service provision, in both the mobile and fixed sub-sectors, are subject to competition, and the number of licences allocated is high. The most aggressive field of competition is mobile, with eight mobile operators competing nationally or regionally. Even with so many mobile competitors, however, Tanzania scores poorly on the World Economic Forum's (WEF) Networked Readiness Index (NRI), with the worst NRI ranking in East Africa. The Tanzanian Government's use and readiness, however, is ranked far higher than that for business or individual use and readiness. The reason for the relatively favourable government ranking is that ICTs are recognised as central to the government's vision of the future, and corresponding initiatives such as the aforementioned NICTBB push Tanzania up the rankings significantly.

Tanzania's Human Development Index and Ease of Doing Business Rankings are very poor

Table 2: NRI rankings for RIA study countries

	Overall NRI ranking	Environment sub-index ranking	Readiness sub-index ranking	Use sub-index rankings			
				Overall	Government	Business	Individual
South Africa	61	38	79	83	76	52	95
Kenya	81	99	55	88	65	67	104
Namibia	82	56	71	109	129	90	107
Botswana	91	74	93	97	84	112	101
Ghana	99	82	80	108	116	102	112
Nigeria	104	105	108	99	123	81	92
Mozambique	106	113	87	107	92	96	125
Uganda	107	102	105	118	109	111	121
Tanzania	118	104	124	125	117	120	127
Ethiopia	123	129	96	132	103	131	136
Cameroon	125	126	128	124	111	113	129

Source: WEF (2011)

ICT sector review

Two critical events that have had a large impact on the Tanzanian ICT sector, by increased broadband connectivity, are: the linking to the SEACOM and Eastern Africa Submarine Cable System (EASSy) networks in 2009-10; and the launch of the National ICT Broadband Backbone (NICTBB), in two phases (2010 and 2012).

The National ICT Broadband Backbone (NICTBB)

The NICTBB project connects Tanzania's 7 500 km fibre network to SEACOM and EASSy

Planning for deployment of a national ICT backbone started back in 2006 with rationalisation and utilisation of excess transmission capacities that already existed in the electricity, railway and natural gas companies in the country. With loans, the largest from the Chinese Government, Tanzania embarked on building the NICTBB in 2009. The project involved rolling out 7 500 kilometres of fibre cable for a network that connects with international submarine cables SEACOM and EASSy in Dar es Salaam and provides land connectivity between Tanzania and its neighbours.

Tanzania borrowed USD170million from China and raised a further USD80million to build the NICTBB. The total cost of the NICTBB is therefore USD250million – an amount that will need to be recovered and will thus have an impact on the wholesale rates offered to broadband service providers.

The incumbent Tanzania Telecommunications Company Ltd. (TTCL) manages the backbone, and all telecommunications service providers (including TTCL itself) utilise the capacity supplied on equal terms. TTCL retains a management fee, which is determined by utility levels, cost of capital and a government-determined cost-recovery period. The Ministry of Communication, Science and Technology (MCST), in collaboration with TTCL, has established a special NICTBB Unit to manage the national backbone.

All major operators in Tanzania are now connected to the backbone, and transparency in its management and operation is assured by:

- accounting separation — the accounts for backbone operation revenues, expenses and capital costs are kept separate from the accounts for TTCL's other business operations;
- independent auditing of backbone operation accounts;
- publication of backbone operation accounts and of the auditor's certificate;
- (the aforementioned) equal access, under the same terms and conditions of use, for all backbone wholesale customers, including TTCL;
- preparation of a backbone reference offer from TTCL, setting out the terms and conditions, for access and use of the backbone facility and services, applicable to all wholesale customers; and
- publication of the arrangements and processes in place to ensure the commercial confidentiality of backbone customer information and transactions.

In the mobile sector, competition has become especially aggressive in the last two years, focussing on prices and coverage. The three largest operators (Vodacom Tanzania, Airtel Tanzania and Tigo Tanzania) have each deployed over 1 000 base stations and are covering most of the same territory. Airtel and Vodacom offer the most extensive coverage. Operators, particularly Airtel, have lowered prices to attract subscribers. Vodacom, the dominant operator, is losing subscribers and therefore market share. Interconnection prices remain high, so most consumers operate multiple SIM cards. Subscriber churn is high, as consumers react to frequent price promotions.

Even with the launch of the NICTBB, broadband wholesale prices remain high and internet use is far lower than in the leading East African ICT sector countries Kenya and Uganda. Table 3 below provides data on the ICT market in Tanzania.

Table 3: ICT sector overview data

Size of ICT market	USD1billion in 2012
Mobile subscribers	Approximately 27million mobile customer SIMs
Mobile penetration (subscribers as % of population)	Approximately 61% penetration (nominal, due to high incidence of multiple-SIM ownership)
Mobile average revenue per user (ARPU) (national)	USD21/month
Population coverage (mobile networks)	89%
Geographic signal coverage (mobile networks)	54%
Rural penetration (mobile)	Approximately 25%

Source: TCRA (2013); INTELECON (2012)

Despite the NICTBB project, broadband prices are high and internet use remains low in Tanzania

Telecommunications policy

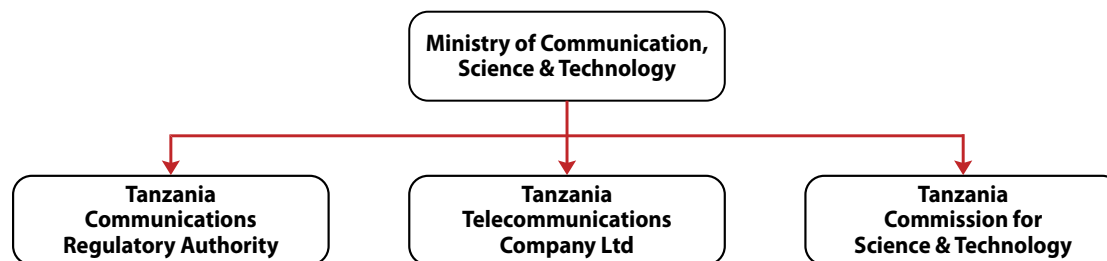
The Electronic and Postal Communications Act (EPOCA)

The Electronic and Postal Communications Act (EPOCA) (No. 3, 2010) became operational in June 2010 and replaced the Broadcasting Services Act of 1993 (No. 6, 1993a) and the Tanzania Communications Act of 1993 (No. 18, 2010). New legislation was necessary to respond to growing demand for an enabling legal framework to support the dynamic and robust communication sector in the country (liberalisation had begun in 1993, and all market exclusivity had been done away with by 2005). Since the promulgation of EPOCA in 2010, the Tanzania Communications Regulatory Authority (TCRA) has issued several licences for provision of facilities, services, applications and content.

The Electronic and Postal Communications Act has stimulated the TCRA to issue several new licences

Institutional arrangements

The MCST is responsible for the coordination of ICT development programmes in Tanzania including, *inter alia*, infrastructure development; policy formulation and overall coordination of ICT activities; and implementation and management of specific ICT programmes and projects.



The TCRA has taken on an increasingly interventionist role in Tanzania's ICT sector

TCRA

The TCRA is the regulatory authority for the ICT sector. It was established in 2003 when the Tanzania Communications Commission and the Tanzania Broadcasting Commission were merged. Over the past few years, the TCRA has been playing an increasingly interventionist role and has released over 16 new sets of regulations, mostly focussed on the telecommunications sector. These include pro-competitive measures toward cost-based mobile termination rates (see the Regulatory developments section below).

TTCL

TTCL is 65% owned by the Government of Tanzania, with the remaining 35% held by Airtel Tanzania. The government has notified Airtel of its interest in purchasing the remaining 35%, but negotiations have to date remained deadlocked (The Citizen, 2014).

COSTECH

COSTECH is a parastatal organisation with the responsibility of coordinating and promoting technology research and development activities (COSTECH, n.d.). It plays an active role, on behalf of government, in pushing ICT development. It has several partnerships with international aid agencies and governments that have implemented various ICT initiatives, including:

- TANZICT - The Information Society and ICT Sector Development Project (or TANZICT) is a collaboration between the Governments of Tanzania and Finland. Its purpose is to strengthen ICT policy and innovation skills. As part of the programme, TANZICT launched an Innovation Space in 2011, providing aspiring innovators with co-working space, internet connectivity and training programmes. By December 2013, there were 1 400 people registered to use this facility (IST Africa, n.d.). TANZICT also launched the ICT Innovation Fund, with EUR5million in funding from the Government of Finland.
- Dar Teknohama Business Incubator (DTBI) – Launched in cooperation with the World Bank's infoDev programme, the DTBI's purpose is to support new businesses in the ICT sector.
- Tanzania ICT Park – This is an incubator targetting ICT entrepreneurs and providing working space, internet connectivity and seed funding. The ICT Park is classified as a Special Export Zone with low taxes and low import/export tariffs (IST Africa, n.d.).

Regulatory developments

Between 2011 and 2013, the regulator TCRA has issued 16 pieces of regulation for the ICT sector (and specifically telecommunications). The most important of these are:

- The Electronic and Postal Communications (Competition) Regulations, 2011 – these regulations spell out the criteria to be used to identify where market failure might exist and to determine a dominant position (United Republic of Tanzania, 2011a).
- The Electronic and Postal Communications (Tariffs) Regulations, 2011 – in terms of these regulations, tariffs are to be cost-based and may not be below the underlying cost of the service provided (United Republic of Tanzania, 2011b).

The TCRA issued 16 pieces of ICT sector regulation between 2011 and 2013

- The Electronic and Postal Communications (Interconnection) Regulations, 2011 – in terms of these regulations, interconnection tariffs are to be based on forward-looking long-run incremental costs. For dominant players, a Reference Interconnection Offer is required (United Republic of Tanzania, 2011c).
- The Electronic and Postal Communications (Accounting Separation) Regulations, 2011 – in terms of these regulations, dominant operators are required to implement account separation for wholesale, retail and other activities (United Republic of Tanzania, 2011d).
- The Electronic and Postal Communications (Access, Co-Location and Infrastructure Sharing) Regulations, 2011 – in terms of these regulations, all infrastructure licensees are obliged to enter infrastructure-sharing agreements upon request. Dominant players can have additional obligations placed on them, such as the requirement to provide infrastructure-sharing on a wholesale basis (United Republic of Tanzania, 2011e).

Interconnection tariffs are to be based on forward-looking long-run incremental costs

Digital migration

One of the critical advantages of migration to digital-only television transmission is the freeing up of frequency spectrum such as the 700MHz band, which offers increased range and lower operating and capital costs for mobile operators and is especially suited to broadband provision.

According to the International Telecommunication Union (ITU), African countries have until June 2015 to complete migration from analogue to digital transmission of terrestrial TV signals, a deadline that the ITU has set for countries in ITU (broadcast) Region 1 (which includes African countries). After June 2015, analogue terrestrial TV signals will not be protected against interference from broadcasters in neighbouring countries.

Tanzania was the first mainland sub-Saharan country to complete the switchover from analogue to digital TV transmission, starting the process in December 2012 in Dar es Salaam and moving to other major cities during the course of 2013. While the migration process has been controversial, with between 20% and 50% of viewers in Dar es Salaam losing TV reception because they did not acquire digital reception equipment, Tanzania has beaten the digital switchover date set by the ITU by more than two years and has avoided the expense of running two systems (both analogue and digital) for an extended period of time. The process was made easier, however, by the fact that only 24% of the population had access to analogue TV due to challenging terrain (Analysis Mason, 2013).

Tanzania was the first mainland sub-Saharan country to complete the switchover from analogue to digital TV transmission

According to a study by Analysys Mason (2013), there are several lessons that can be learnt from the digital migration process in Tanzania:

- The cost of digital reception set-top boxes is a challenge, unless a subsidy system is made available to lower-income households. (Tanzania did not have a subsidy, contributing to the low rate of digital adoption.)
- The primary challenge is one of consumer awareness, to make consumers aware of the benefits of digital transmission and aware of how to correctly install and use a digital set-top box.
- For countries starting from a low base of digital TV signal reception (e.g. most sub-Saharan African countries), meeting the June 2015 deadline will unavoidably result in a certain percentage of households losing signal.

The primary challenge to digital television take-up is one of consumer awareness

Market structure and market share

Fixed

The main fixed network in Tanzania is operated by the incumbent TTCL, which was initially 100% owned by the Government. TTCL was partially privatised in 2001, with a 35% share sold to private investors. The 35% share, after a series of sales to different parties, was acquired by Bharti Airtel when it took over Celtel International in 2010. The total number of fixed lines is approximately 159 000 (Tanzanian Communications Regulatory Authority, 2013a).

In Zanzibar, Zanzibar Telecom (Zantel) is a second fixed line operator and offers fixed services (in competition to TTCL). It operates about 7 000 lines in total.

The total number of fixed lines, according to the TCRA, is 164 999 (0.4% penetration) compared to the mobile penetration of approximately 27million.

Mobile

The mobile market in Tanzania has been growing rapidly in recent years. There were over 27million mobile SIM accounts by the end of 2013, representing a (nominal-only) penetration rate of 61% of the population. The reality is that an increasing number of mobile users are acquiring second, third and fourth SIMs in order to be able to place on-net calls over multiple networks and take advantage of promotional pricing. The figure of 27million SIM accounts thus does not mean there are 27million individual users.

In April 2014, Smart became the eighth mobile operator in Tanzania, joining Zantel, Airtel, Vodacom, Tigo, TTCL, Sasatel and Benson (Balancing Act, 2014b).

Figure 1 below provides the market shares of the five leading operators. (Sasatel, Smart and Benson have too few subscribers to be represented.)

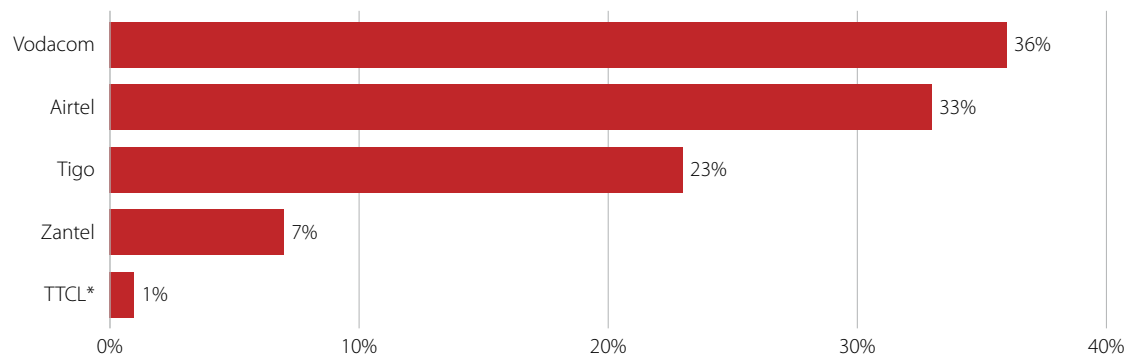


Figure 1: Mobile operator market shares

Source: TCRA (2013)

* Note: TTCL including both mobile subscriptions and fixed lines.

Fixed line penetration is dismal in comparison to that of mobile

Smart Communications became the eighth mobile operator in Tanzania in April 2014

Most of the mobile operators employ GSM technology, while TTCL operates a CDMA network and Zantel offers both CDMA- and GSM-based services, the latter partly as a mobile virtual network operator (MVNO) on Vodacom's network.

Tower-sharing has advanced significantly in Tanzania. In 2013, Helios Towers Company bought 1 149 telecommunications towers from Vodacom Tanzania, with a value of about TZS122.51 billion (USD75 million) in exchange for a 24.5% equity stake in Helios Towers Tanzania Limited (Vodacom, 2013). Helios Towers also purchased 1 180 telecommunications towers from Tigo Tanzania in December 2010 (Balancing Act, 2014a).

Internet

By the end of 2013, there were some 1.4 million internet subscribers in Tanzania, served by multiple internet service providers (ISPs). The TCRA estimates that there are 9 312 272 users of the internet in the country, translating into a penetration level of 21% (TCRA, 2013). This figure includes estimates of internet café users, organisation/institution use and household and individual use. The combination of different sources and methodologies makes this estimate very unreliable and, therefore, this high level of penetration is extremely unlikely. The 2012 RIA Tanzania ICT Survey findings put the total number of internet users at 3.5% of the population over the age of 15.

Given the lack of fixed lines, the low use of PCs (below 2%, according to RIA ICT Survey data, 2011-12) and the high cost of broadband connectivity, even 3.5% of the population using the internet represents a more likely figure. It seems clear that factors such as very low rural connectivity (where more than 70% of the population is based), limited income, relative level of education and limited internet content in local languages are likely to be limiting internet use.

The biggest ISPs are Africa Online Tanzania and Raha. Africa Online, which is based in Kenya and is a subsidiary of Telkom South Africa, also offers ISP services in Kenya, Ghana, Uganda and other African markets. Most of Tanzania's ISPs also provide fixed-wireless access, typically using CDMA-based facilities. Small local ISPs typically serve several hundred customers, while the large ISPs each have several thousand subscribers.

Tower-sharing has advanced significantly in Tanzania

In contrast to the TCRA's report, RIA found the total number of Tanzanian internet users to be 3.5% of the total population

Coverage

Mobile coverage is improving, especially as more competitors enter the market. As of 2013, 89% of population is covered to the -95dBm signal level, with 54% of geography covered (Intelecon, 2012).

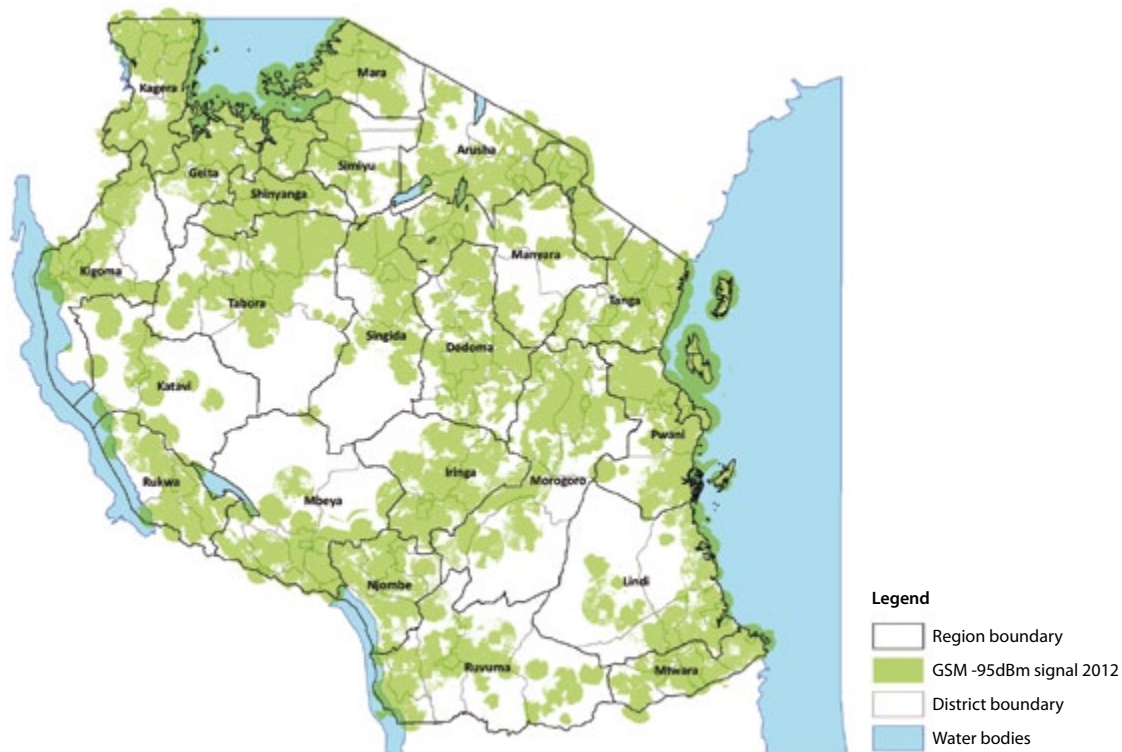


Figure 2: Mobile GSM coverage

Source: Intelecon (2012)

Summary of ICT sector challenges

Tanzania is facing the following bottlenecks in ICT sector development:

- lack of well-trained local experts and users;
- poor infrastructure, e.g. inadequate and unreliable access to electricity – only 10% of the 40million population in urban areas, with less than 2% in rural areas (Msyani, 2013), have access to grid electricity (World Bank, 2012); and
- pronounced rural/urban divide in ICT access and use.

Poor infrastructure such as the lack of access to electricity hinders ICT sector development in Tanzania

Telecom Regulatory Environment

Stakeholder perceptions of Tanzanian ICT sector regulation were surveyed through the 2012 RIA Telecom Regulatory Environment (TRE) assessment. The aim of a TRE survey, based on the LIRNEasia methodology (LIRNEasia, 2008), is to assess (in a qualitative manner, based on perceptions) the performance of laws and policies affecting the sector and the performance of the institutions implementing those laws and policies.

The TRE method gathers stakeholder perceptions on regulatory performance in relation to seven key dimensions, namely: market entry, allocation of scarce resources, interconnection, regulation of anti-competitive practices, USO, regulation of tariffs and regulation of QoS. The 2012 RIA Tanzania TRE assessment was conducted between December 2011 and January 2012, and surveyed individuals from institutions grouped according to the following three broad categories:

- stakeholders directly affected by telecommunications sector regulation;
- stakeholders who analyse the sector with broader interest; and
- stakeholders with an interest in improving the sector to help the public.

A TRE questionnaire captures both general comments and closed responses. Respondents are asked to rate the seven aspects of telecommunications regulation on a scale between “highly ineffective” and “highly effective”, as follows:

- highly ineffective;
- ineffective;
- average;
- effective; and
- highly effective.

In relation to the other RIA study countries for which a TRE assessment was conducted for 2012, Tanzania’s overall TRE assessment score for 2012 (see Figure 3 below) ranks relatively well, behind only Rwanda and Namibia. It is followed closely by Kenya and Ghana.

The aim of a TRE survey is to assess the performance of laws and policies affecting the sector

Tanzania’s overall TRE assessment score for 2012 ranks relatively well, behind only Rwanda and Namibia

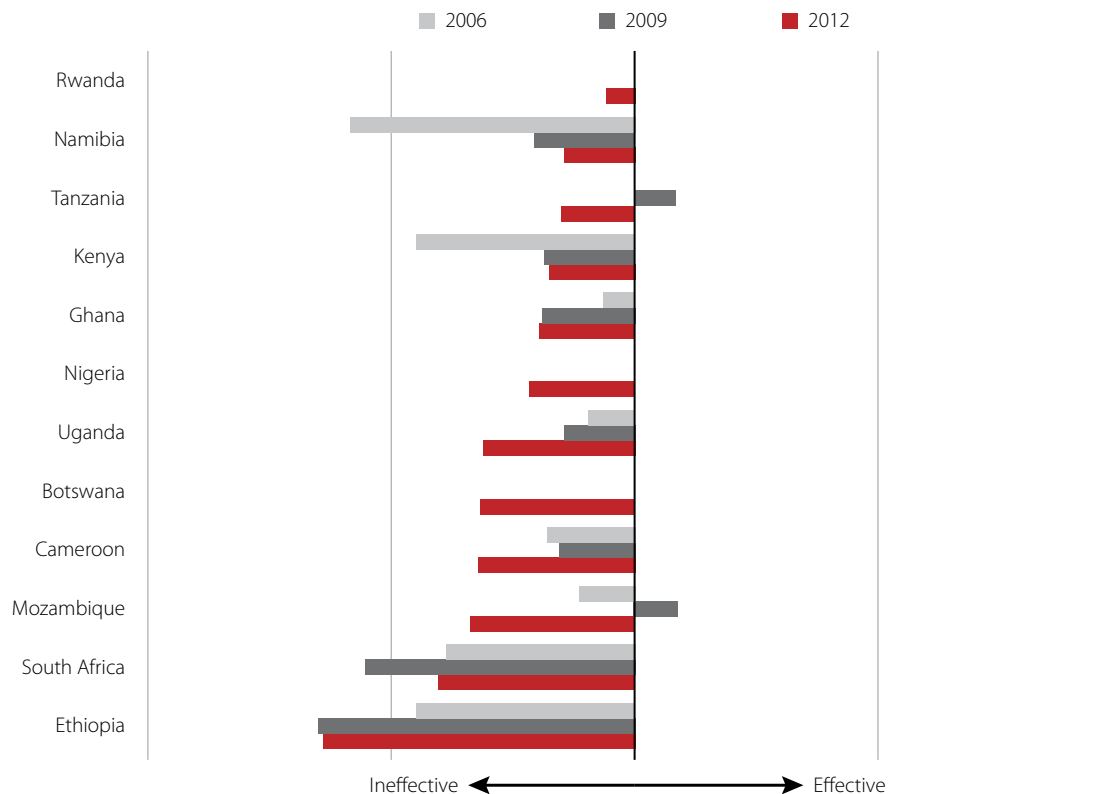


Figure 3: TRE assessment scores in RIA countries

Source: RIA TRE assessment data, 2006-07, 2008-09, 2011-12

Figure 3 shows the overall TRE scores from 2006 to 2012, for RIA TRE assessment countries assessed across the seven measures of the TRE assessment. The results suggest that the perceptions of stakeholders on how these telecommunications sectors are being regulated in RIA countries have shifted negatively in all cases (including Tanzania).

Figure 4 below compares Tanzania's scores for each of the seven TRE dimensions in the 2009 and 2012 TRE assessments respectively. All seven of Tanzania's regulatory dimensions received negative scores in 2012, in contrast to the results of the 2009 TRE assessment in which four regulatory dimensions – market entry, interconnection, access to scarce resources and QoS – received positive scores.

All seven of Tanzania's regulatory dimensions received negative scores in 2012

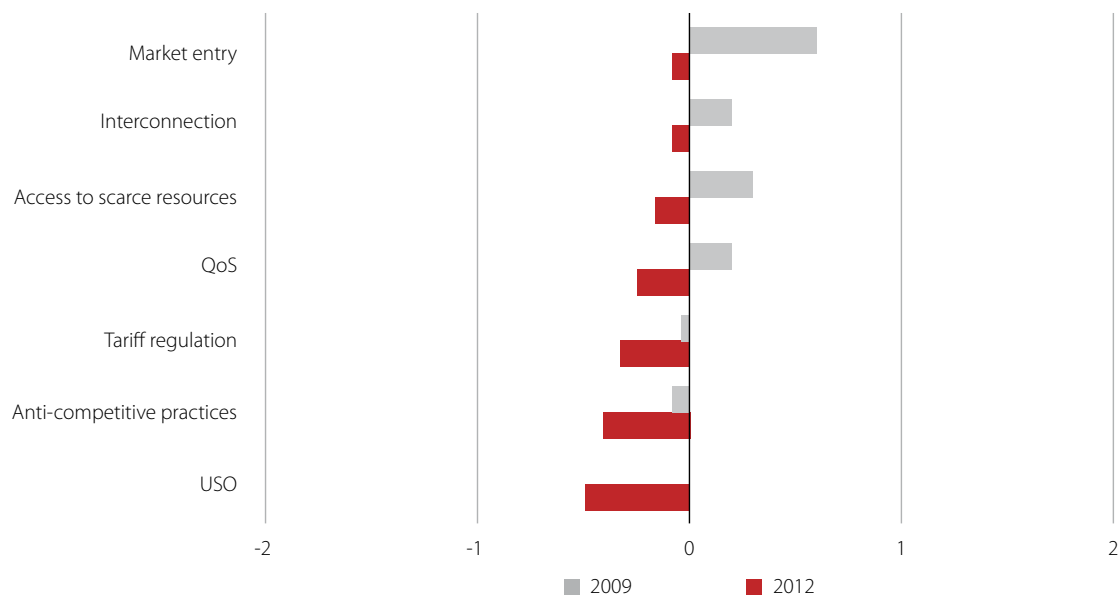


Figure 4: Tanzania's overall TRE scores for seven regulatory dimensions, 2009 and 2012

Source: RIA TRE assessment data 2008-09, 2011-12

Even with the launch of the Universal Communication Access Fund (since re-named the Universal Communications Service Access Fund [UCSAF]), perception of USO regulation suffered the largest drop in TRE score between 2009 and 2012, with the second-largest drop being in perception of regulation of anti-competitive practices. Once one gets out of the major cities, use of telecommunications services becomes problematic. Fixed-line services do not reach rural areas, and mobile coverage is poor when one moves away from the main roads. Another main reason for the low score in USO regulation was the poor design of the tender in 2011 for subsidisation of rollout to designated underserved rural areas. According to operators, the tender overestimated ARPUs and underestimated costs in addition to the tender response time being too short. As a result, only one bid was received, and the bid was for more than the maximum allowable subsidy (Msimang, 2012).

In 2013, a new universal service tender process was launched via a new outside consultant and operator concerns were apparently addressed. However, this was a development occurring in 2013, and as such could not be reflected in the 2012 TRE exercise.

The perception of USO regulation suffered the largest drop in TRE score between 2009 and 2012

Regulation of the mobile sector

Figure 5 below shows the TRE scores for the seven dimensions of regulation of Tanzania’s mobile sector. The results suggest a slightly more positive perception of the efficiency of mobile sector regulation than the perceptions of regulation of broadband and fixed-line sectors (both of which are covered below). However, the regulation of USO is perceived as a persistent challenge across all three sectors – including the mobile sector.

Tanzania’s high mobile data costs drew negative comments from the stakeholders involved in the TRE Survey

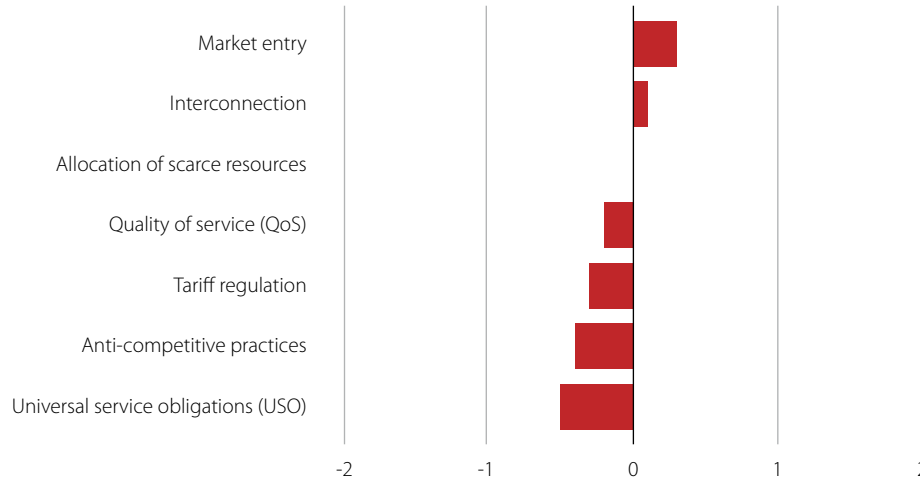


Figure 5: TRE scores for regulation of the mobile sector

Source: RIA TRE assessment data 2011-12

Market entry regulation gets the best score in the mobile sector, a rating attributable to the fact that the liberalised mobile sector has eight operators. However, the respective market shares, and survival of new entrants, are still challenges to the Tanzanian mobile market, which has witnessed the moderate to poor performance recently of operators such as Sasatel and Benson.

Also, the mobile sector has widened its scope beyond traditional voice and SMS services, expanding into mobile financial services, data services through 3G, and, recently, 4G technologies. Among the practices which drew negative comment from the stakeholders surveyed in the TRE exercise were high mobile data costs.

The excessive charging of off-net mobile calls received negative appraisal

Other practices which received negative appraisal were the tendency of mobile operators to advertise seemingly attractive promotions and subsidy schemes without sufficient information on terms and conditions; call drops and technical disruption of cross-network mobile communications; and excessive charging of off-net mobile calls (i.e. charging of calls between networks). The quality and stability of signals as well as the quality of handsets has received complaints from telecommunications consumers in Tanzania.

Regulation of the broadband sector

Figure 6 below shows the TRE scores for regulation of Tanzania's broadband sector. The aforementioned landing of submarine data cables in Tanzania has had a positive effect on market entry for ISPs, who are prominent players in this sector. The use of broadband services continues to be common among corporate consumers in the country, and the expansion of mobile data services has dramatically increased the use of broadband services by individual consumers.

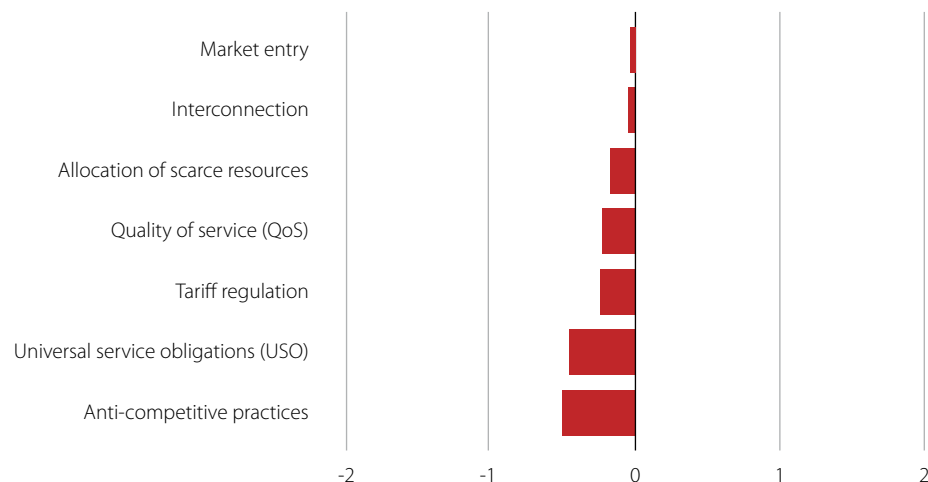


Figure 6: TRE scores for regulation of the broadband sector

Source: RIA TRE assessment data 2011-12

Figure 6 shows a strong perception that regulation of anti-competitive practices in the broadband sector remains weak. Some respondents stated that the differences between advertised and actual download speeds are significant. And even though broadband pricing has dropped drastically since the launch of connections to the submarine cables, pricing is still perceived to be generally high, especially in rural areas.

The expansion of mobile data services has dramatically increased the use of broadband services by individual consumers

There was a strong perception that regulation of anti-competitive practices in the broadband sector was weak

The regulation of Tanzania's fixed-line sector received the lowest TRE score among the three sectors

Regulation of the fixed-line sector

Figure 7 below shows the TRE scores for regulation of Tanzania's fixed-line sector, which received the lowest scores among the three sectors with especially low scores for regulation of QoS and of anti-competitive practices. The continued dominance of the incumbent operator TTCL, the poor fixed-line QoS and the poor fixed-line penetration (with concentration in urban areas) are among the features of the fixed-line sector which explain its negative TRE scores.

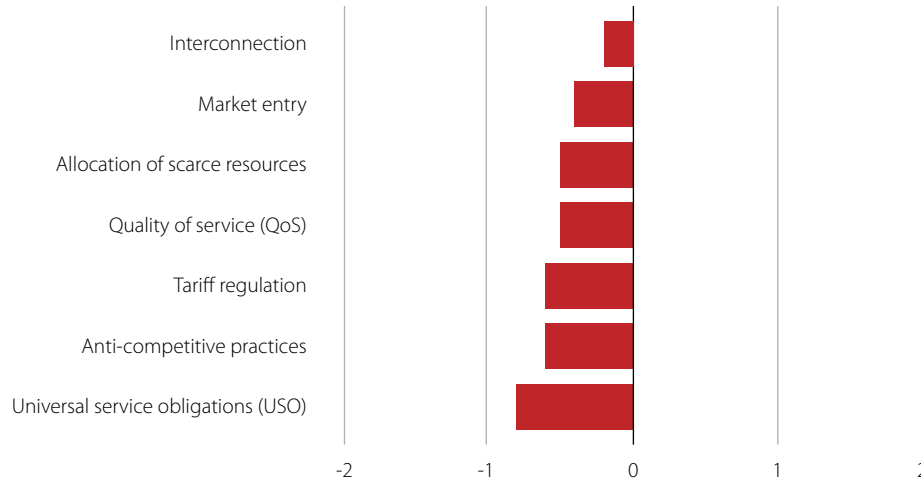


Figure 7: TRE scores for regulation of the fixed-line sector

Source: RIA TRE assessment data 2011-12

Penetration

Fixed lines

TTCL's fixed-line subscriptions increased by only 13 355 between 2006 and 2013 to a total of 164 999 fixed lines. Between 2012 and 2013, however, fixed-line subscriptions fell from 176 367 to 164 999, a decrease of 11 368. TTCL has expanded its fixed-broadband services but the service is mainly used by banks (for ATMs), government agencies, public institutions and international organisations.

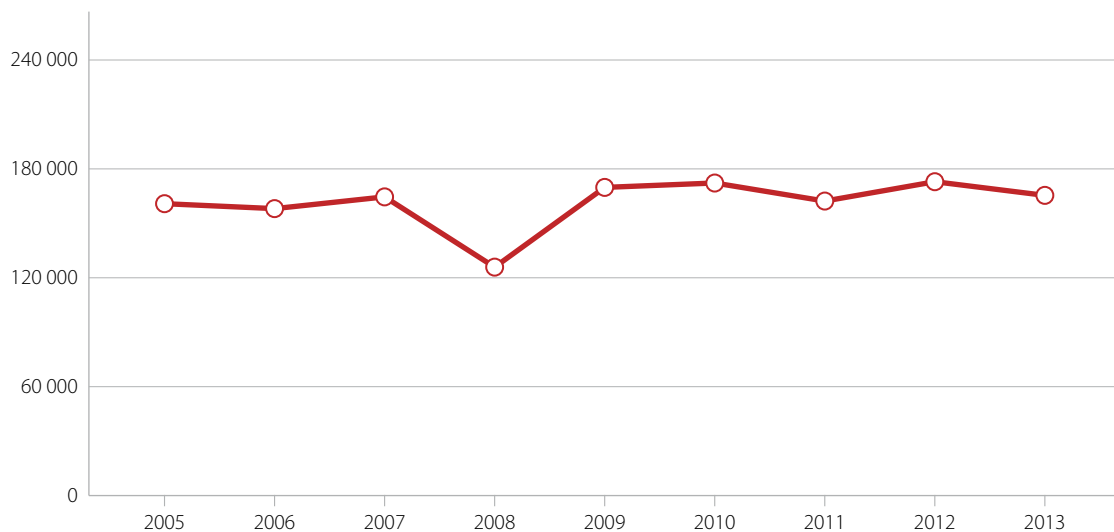


Figure 8: Fixed-line subscriptions

Source: TCRA (2013)

The SIM registration process has resulted in a slight decline in mobile subscriptions

Mobile

Mobile subscriptions increased steadily until 2013 when SIM registration was introduced, and the registration process has resulted in a slight decline in mobile subscriptions between 2012 and 2013 (see Figure 9 below).

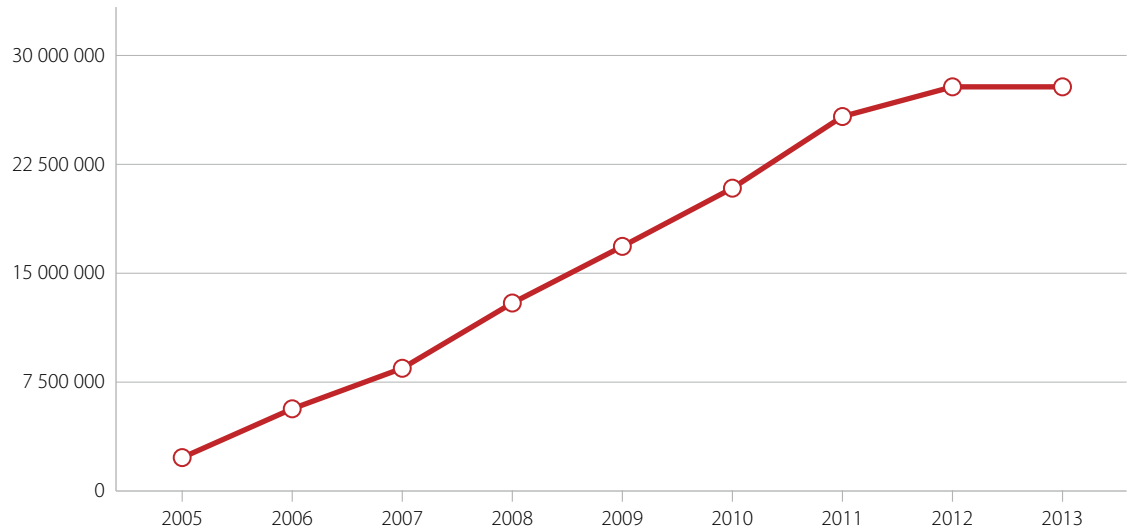


Figure 9: Mobile subscriptions (i.e. registered SIMs)

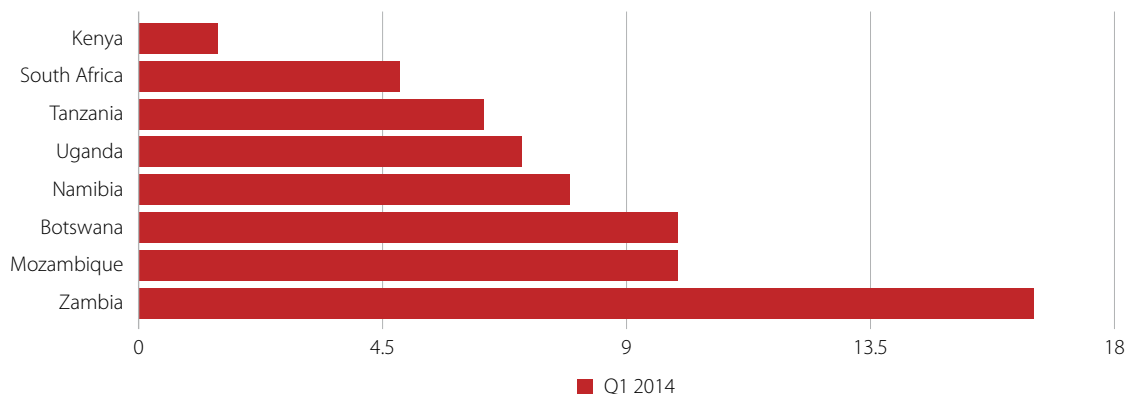
Source: TCRA (2013)

As is discussed below in the “Pricing” section, mobile prices have decreased substantially in recent years. One impact of the reduced prices has been increased customer churn as consumers acquire several SIM cards in order to take advantage of promotional pricing. Vodacom, for example, reported customer churn of 75% in 2012 and 54% in 2013 (Vodacom, 2013).

Pricing

Mobile voice

Since 2010, Tanzania's mobile pricing has been favourable in relation to other RIA study countries. In Q1 2014, Tanzania was ranked third most affordable among RIA study countries in terms of RIA's Prepaid Mobile Price Index (which is based on the OECD (2010) monthly low-user 40-call basket measurement).



A reduction in prices has increased customer churn

Figure 10: Monthly prepaid mobile costs based on OECD 40-call basket, Q1 2014 (USD)

Source: RIA (n.d.)

Figure 11 below shows that Tanzania's ranking among 46 African countries included in RIA's Prepaid Mobile Price Index – based on low-user basket measures for all its operators - ranged between third and fifth until Q3 2013 when it slipped to sixth. Tanzania's ranking slipped further down to seventh in Q4 2013 and then went back to sixth in Q1 2014.

Tanzania's mobile voice was ranked third most-affordable among RIA countries

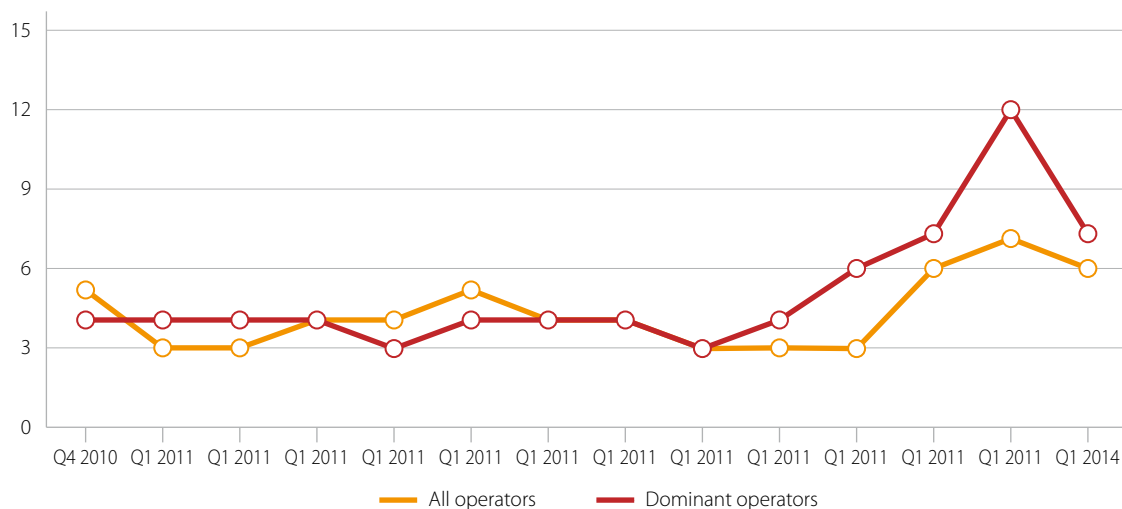


Figure 11: Tanzania's rankings for prepaid mobile costs, Q4 2010 to Q1 2014

Source: RIA (n.d.)

Tanzania's dominant operator Vodacom has higher comparative prices than its competitors

An explanation for why Tanzania's ranking slipped in 2013-14 emerges when one looks at the relatively high prices of its dominant operator Vodacom in comparison with other operators in Tanzania (see Table 4 below). The Tanzanian market has had a number of new entrants in recent years, leading to aggressive lowering of prices, particularly by Airtel and Tigo, which are about 33% cheaper (in Q1 2014) than Vodacom.

Table 4: Tanzanian operators' monthly prepaid mobile cost levels, based on the OECD 40-call basket

	Q1 2013	Q2 2013	Q3 2013	Q4 2013	Q1 2014
Airtel	8.17	10.16	10.22	8.15	6.40
Tigo	10.25	10.42	15.41	11.41	6.41
Zantel	4.92	9.28	7.28	7.34	7.22
Vodacom	8.61	11.76	11.83	15.40	9.60
Benson	5.71	5.71	5.74	14.97	10.82
TTCL	8.29	8.29	8.33	8.40	10.90
Sasatel	8.36	8.35	8.40	8.46	-

Source: RIA (2011)

As Table 4 shows, in Q1 2013, new entrant Benson was 33% cheaper than competitors. But by Q1 2014, Benson's prices were the second-highest in the market. (Prices are volatile for all operators with, for example, Vodacom's 40-call basket cost ranging from USD8.61 to USD15.40 between Q1 2013 and Q4 2013.)

Mobile broadband

As with mobile voice, Tanzania's mobile broadband price level ranking is favourable compared to other countries in Africa. As Table 5 below shows, in Q2 2013, Tanzania was ranked third among RIA ICT Survey countries, behind only Kenya and Ghana, in the RIA Broadband Pricing Index. The sudden improvement in internet penetration (21% according to the TCRA; but 5% according to RIA) can be ascribed to the rapid reduction in broadband prices.

Table 5: Cheapest monthly prepaid mobile 1GB broadband bundle (in USD)

Country	Rank	USD
Ghana	1	3.72
Kenya	2	8.52
Tanzania	3	10.17
South Africa	4	11.23
Rwanda	5	13.92
Mozambique	6	23.68
Namibia	7	31.89
Uganda	8	40.12
Cameroon	9	40.67
Nigeria	10	50.99
Botswana	11	73.48

Source: RIA (2013)

Tanzania's improvement in internet penetration can be ascribed to the rapid reduction in broadband prices

Interconnection

Tanzania's interconnection rate is second cheapest behind only Kenya

Mobile termination rates (MTRs) were reduced by 68.8% on 1 March 2013 to TZS34.92 (USD0.022) as part of the new glide path introduced by the TCRA following the conclusion of the previous five-year glide path in December 2012. This new glide path will conclude on 1 January 2017, bringing the MTR down to TZS26.96 (USD0.017). Comparing its 2013 termination rates against other countries, Tanzania ranks second among RIA study countries, behind only Kenya (Table 6 below).

Table 6: Mobile termination rates (MTRs) in RIA study countries

Country	Rate in local currency	Currency	USD FX	US cents	USD
Kenya	0.99	KES	0.01151	1.11	0.011
Tanzania	34.92	TZS	0.00060	2.10	0.020
Ghana	0.045	GHS	0.51259	2.31	0.023
Nigeria	4.90	NGN	0.00624	3.06	0.030
Namibia	0.30	NAD	0.10625	3.19	0.031
Botswana	0.35	BWP	0.11921	4.17	0.041
South Africa	0.40	ZAR	0.10726	4.29	0.042

Source: CCK (2010), TCRA (2013a), NCA (n.d.), NCC (2013), BOCRA (2013), ICASA (2010)

Tanzania's lowered termination rates help explain the reductions in mobile tariffs

Tanzania's lowered termination rates help explain the reductions in mobile tariffs. In effect, lowered termination rates combined with new entrants coming into the market are having a beneficial effect on pricing. The downside is a certain level of volatility as the large number of operators in the market work towards equilibrium.

The effects of the price competition between operators can be seen in the behaviour of consumers. For Airtel, who reduced prices most aggressively, the impact has been a significant increase in the volume of consumer off-net calls, most likely to the market leader Vodacom. In spite of its overall market share of 33%, Airtel had 51% of all off-net calls in Oct-Dec, 2013. In comparison, Vodacom, with 36% of the market, had only 24% off-net traffic.

Table 7: Market shares and on-net/off-net traffic volumes

	Market share (mobile and fixed) 2013	On-net traffic (Oct-Dec 2013)	Off-net traffic (Oct-Dec 2013)
Vodacom	36%	46%	24%
Airtel	33%	22%	51%
Tigo	23%	28%	23%
Zantel	7%	4%	2%
TTCL total	1%	0.10%	1%
Total	100%*	100%*	100%*

Source: TCRA (2013)

*Note: These five operators constitute 99% of the market since others have just launched and therefore have only a few hundred subscribers or have not declared any subscriptions as of December 2013.

In the short-term, the impact of the differential between off-net pricing for Vodacom and Airtel will be that Vodacom has higher margins than Airtel. The question is, thus, how long Airtel can sustain the price reductions while losing margins to Vodacom.

Wholesale pricing

At wholesale level, there are several events that have had notable effects on the Tanzanian ICT environment:

- connection to the SEACOM and EASSy undersea cables in 2009 and 2010, respectively;
- completion of the NICTBB cables within Tanzania, with launches in 2010 and 2012 (phases 1 and 2);
- the rapid increase in wholesale bandwidth enabling, *inter alia*, lower mobile retail tariffs, lower broadband retail tariffs and also lower wholesale rates;
- reduction in the cost of international bandwidth from USD1 500 per mbps to USD180 per mbps in 2010, an 88% reduction (Stefanotti, 2010); and
- reduction in 2012, by more than 30%, of the internet bandwidth cost per annum for leasing an STMx (Pazi and Chatwin, 2014).

These price reductions, while dramatic, have not yet lowered prices to below international norms. Nevertheless, they mark an improvement, and have helped other services such as MPESA mobile money and e-Government services to launch in Tanzania.

There has been a substantial reduction in international bandwidth costs

Access and use

This section looks at the impact of supply-side developments on consumer behaviour, specifically their access to and use of ICTs in Tanzania.

Mobile

Consumers are increasingly likely to own multiple SIMs in order to take advantage of price promotions

TCRA's statistical calculation suggests that mobile penetration is greater than 61% of the population. However, this statistic does not account for multiple SIM card ownership. (The price reductions implemented by Airtel and the new entrants to the market, such as Benson, mean that consumers are increasingly likely to own multiple SIMs in order to take advantage of the price promotions – and this explains the discrepancy between the TCRA statistic and the 2012 RIA ICT Survey data, which puts mobile penetration significantly lower, at 36% (see Table 8 below).

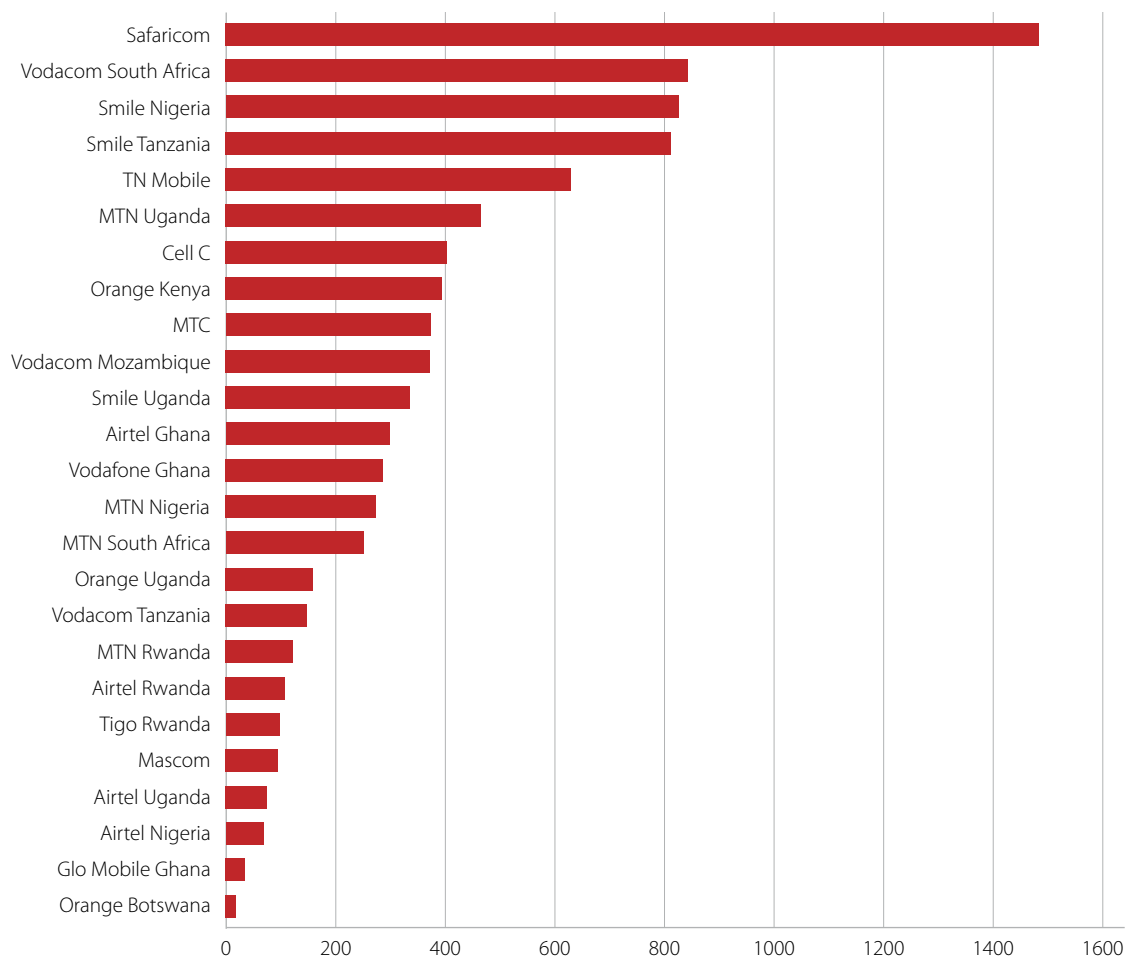
Table 8: Mobile penetration in RIA study countries, 2012

Country	Individuals that own a mobile phone
Ethiopia	18%
Rwanda	24%
Tanzania	36%
Mozambique	43%
Cameroon	45%
Uganda	47%
Namibia	56%
Ghana	60%
Nigeria	66%
Kenya	74%
Botswana	80%
South Africa	84%

Source: RIA ICT Survey data 2011-12

Quality of service (QoS)

We saw above that QoS was highlighted as a concern in TRE responses. Several research reports have highlighted the fact that there are significant differences between the QoS offered by various operators in Tanzania (oAfrica, 2012; Mtaho and Ishengoma, 2014). RIA's Value for Money Index measures the average internet speed of an operator (obtained from Ookla) against the price of 1GB of data (i.e. the higher the price, the lower the Index value; and the higher the speed, the higher the Index value, and a higher Index value is preferable to a lower one). As shown in Figure 12 below, in Tanzania there is a significant difference between Smile Communications Tanzania, which scores very highly (with a score of 810) on the Value for Money Index, and Vodacom Tanzania, which scores poorly (with a score of 148). (Smile Communications is a data-only provider and does not offer a mobile voice service).



Smile outperforms Vodacom in Tanzania's Value for Money Index

Figure 12: RIA Value for Money Index scores

Source: RIA (2014)

Computers and internet

The 2012 RIA Tanzania ICT Survey shows that computer and internet use is minuscule, in spite of the fact that the 2012 RIA ICT Survey data was collected when broadband pricing reductions were already in place in the market (major price reductions took place in 2010 and 2011).

Of concern is the low growth rates for computer and internet use in between the 2008 and the 2012 RIA Tanzania ICT Surveys. Internet use increased from essentially 0% to only 0.8% over the four-year period between the two Surveys. In contrast, internet use in Kenya grew from 2.2% to 12.7% in the same time period.

Internet use is extremely low in Tanzania

Table 9: Computer and internet use in select RIA study countries, 2008 and 2012

		Botswana	Kenya	Namibia	South Africa	Uganda	Tanzania	Mozambique
Computer	2008	4.50%	5.50%	11.20%	14.80%	1.20%	1%	3.80%
	2012	15.70%	12.70%	14.70%	24.50%	2.20%	1.60%	7.20%
Internet	2008	0.10%	2.20%	3.30%	4.80%	0%	0%	0.90%
	2012	8.60%	12.70%	11.50%	19.70%	0.90%	0.80%	3.60%

Source: RIA ICT Survey data 2007-08 and 2011-12

Meanwhile, TCRA statistics suggest that internet use exceeded 21% by the end of 2013. But as with the TCRA mobile voice statistics, these figures are overstated – they include all internet-enabled phones. The effect of this over-counting is to under-emphasise the huge challenge Tanzania faces in its need for improved internet penetration.

Public payphones

Public payphones have become virtually irrelevant in Tanzania

Payphones are now essentially irrelevant in Tanzania. While in 2008, the RIA ICT Survey found payphone use to be 97.3% among respondents, use in 2012 was found to be only 1.1% (see Table 10 below). The results are even more significant when compared to other RIA study countries: in Uganda, payphone use is still at 14.9%; and in South Africa it is at 28.7%. While payphones have a role to play in South Africa because of their lower call charges, payphones in Tanzania do not have this advantage.

Table 10: Payphone use (in the last 3 months)

	2008	2012
Tanzania	97.3%	1.1%
Namibia	14.5%	1.3%
Kenya	24.1%	5.4%
Rwanda	73%	5.7%
Botswana	27.4%	6.5%
Mozambique	3%	9.4%
Ethiopia	14.7%	9.6%
Ghana	6%	12.8%
Uganda	39.5%	14.8%
Nigeria	No data	21%
South Africa	42.2%	28.7%
Cameroon	44.1%	49.4%

Source: RIA ICT Survey data 2007-08 and 2011-12

Mobile money

After Kenya, the next most successful mobile money market among RIA study countries is in Tanzania (see Figure 13). Tanzania's mobile money use stands at 14.1%. There is a long way to go to match Kenya at 60.3% mobile money use, but Tanzania's mobile money penetration is much higher than in South Africa, Namibia, Ghana, Nigeria and Mozambique, all of which have mobile money use below 4%.

Tanzania's mobile money use is second-highest behind only Kenya

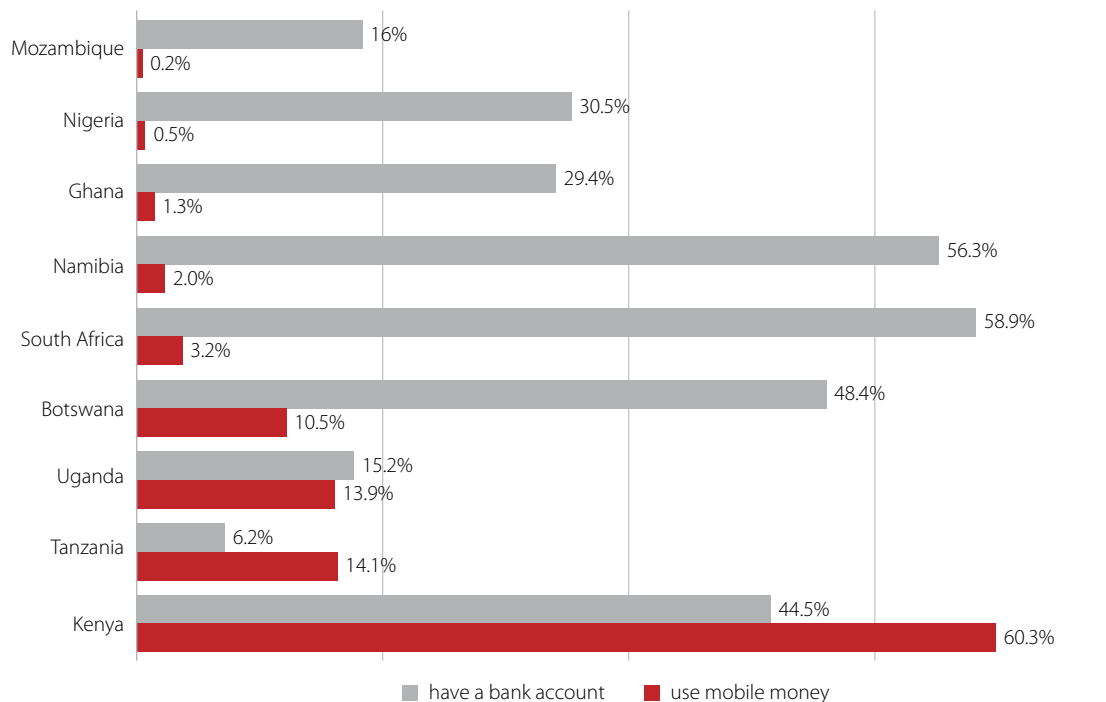


Figure 13: Ownership of a bank account and mobile money use in RIA countries

Source: RIA ICT Survey data 2011-12

About 10million Tanzanians use mobile phone money transfer services , almost twice the number of people who have bank accounts. The dominant mobile money service is Vodacom's M-Pesa service, with over half the total number of mobile money subscribers at 5.5million. M-Pesa contributes 18.7% of service revenues for Vodacom (Vodacom, 2013).

Social networks via mobile phone

The low level of use of social networks such as Facebook is indicative of the constraints on internet access and use in Tanzania. Social media such as Facebook drive mobile internet use, but Tanzania ranks second-last among RIA study countries with only 5% of individuals using Facebook via mobile phone. In comparison, 25% of individuals in Kenya and South Africa use Facebook via a mobile phone.

Table 11: Use of social networking (Facebook, etc.) on a mobile phone

South Africa	25%
Kenya	25%
Botswana	18%
Namibia	17%
Nigeria	16%
Rwanda	14%
Mozambique	12%
Ghana	11%
Cameroon	8%
Uganda	7%
Tanzania	5%
Ethiopia	2%

Source: RIA ICT Survey data 2011-12

Although social networking contributes strongly to internet use in Tanzania, it ranks second-last

Informal business

Like in most other countries in Africa, mobile money use in Tanzania is primarily based on person-to-person (P2P) transfers and has not significantly migrated to supplier and customer payments for informal businesses. Tanzania has the third highest mobile money penetration amongst informal businesses at 5.7%, but 54.5% of the country's informal businesses still send cash with someone to pay suppliers and to receive payments from customers (see Table 12 below).

Table 12: What means of sending and receiving money does the business use most?

	Mobile money	Send cash with someone	Go myself
Ethiopia	0%	0%	100%
South Africa	0.4%	13.6%	56.5%
Kenya	22.5%	14.4%	59.7%
Cameroon	1%	16.4%	68.7%
Mozambique	1%	16.4%	77%
Ghana	1.1%	18.8%	75.4%
Nigeria	0.4%	19.7%	74.3%
Botswana	1%	27.7%	47.9%
Uganda	6.5%	32.4%	50.4%
Rwanda	4.5%	35.2%	57.7%
Tanzania	5.7%	54.5%	39.3%
Namibia	0%	66%	2.2%

Source: RIA Informal Business ICT Survey data 2011-12

About 39% of Tanzanian informal business owners go themselves to pay suppliers or to receive money from customers. The opportunity cost alone, of going physically to receive and make payments, is significant and indicative of the potential for growth of mobile money use in the informal business sector.

In Table 17 below, the difference between Kenya's and Tanzania's levels of mobile money use is stark, with 50.7% of Kenyan informal businesses saying that they use mobile money to send and receive money compared to only 13.4% of informal businesses in Tanzania.

Tanzania has the third highest mobile money penetration amongst businesses

A substantial portion of Tanzanian informal business owners go to pay suppliers themselves

Table 13: Does the business send or receive money via mobile phones?

	No	Yes
Uganda	83.5	16.5
Kenya	49.3	50.7
Tanzania	86.6	13.4
Rwanda	93.0	7.0
Ethiopia	100.0	0.0
Ghana	99.9	0.1
Cameroon	99.7	0.3
Nigeria	99.9	0.1
Namibia	99.4	0.6
South Africa	99.2	0.8
Botswana	98.7	1.3
Mozambique	100.0	0.0

Source: RIA Informal Business ICT Survey data 2007-08 and 2011-12

More than half of informal businesses say that their mobile money use has increased sales

Of Tanzanian informal businesses that do use mobile money, 58% (higher than in both Uganda and Kenya) say that sales have increased as a result of using mobile money (Table 14). Using mobile money is allowing Tanzanian informal businesses to lower the opportunity cost of physically sending and receiving money, and to allocate more time to increasing sales or developing new products.

Table 14: Sales increase through using mobile money

	Uganda	Kenya	Tanzania
Disagree	22.5%	16.2%	22.9%
Not sure	29.4%	33.8%	19.1%
Agree	48.1%	50%	58%

Source: RIA Informal Business ICT Survey data 2011-12

Conclusion and recommendations

The two key events that have taken place in Tanzania over the last two years, one in the area of infrastructure and the other in the market structure, are the launch of the National ICT broadband backbone (NICTBB), and the introduction of new competition to the mobile retail sector. These events have reduced voice and data prices, leading to increased use and penetration, as well as supporting the dramatic improvement of mobile money use. However, these positive impacts have come at a cost: there is significant price volatility and the increased possibility of anti-competitive behaviour on the part of dominant operators.

In addition, the ICT policy and regulatory environment has struggled to keep pace. The 2012 RIA TRE assessment had found that the perception of Tanzania's telecommunications regulatory environment has gone from mixed to sharply negative since the 2009 assessment. However, it continues to be amongst the better performing countries in the TRE index, supporting the regulator's continuity and the regulatory interventions made under challenging conditions despite being one of the poorest markets in Africa.

There are several steps that Tanzanian ICT policymakers and regulators can adopt in order to support rapid growth of the ICT sector in the coming years, found in Table 15.

Significant price volatility damages Tanzania's ICT sector

Table 15: Policy recommendations and proposed interventions

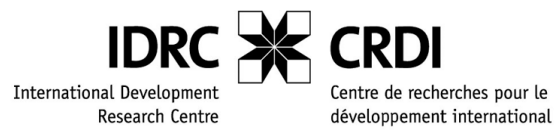
Policy recommendation	Proposed intervention/area of study
Ensure that UCSAF promotes access to underserved urban and rural poor communities, reducing the urban/rural connectivity divide.	Redesign of universal service strategy, ensuring that realistic assumptions are made around ARPU and cost estimates, and providing longer consultation periods.
Enforce QoS standards in both broadband and voice sectors.	As RIA's Value for Money Index shows, there is a significant difference between operators within Tanzania when it comes to QoS. The TCRA can ensure that all operators meet clearly defined QoS standards.
Monitor and intervene in retail pricing based on potential market failure and anticompetitive conduct on the part of dominant operators.	RIA's Prepaid Mobile Price Index shows high volatility as operators manoeuvre for market share. The TCRA needs to monitor prices and ensure that there is no anti-competitive conduct on the part of dominant operators.
Ensure non-discriminatory allocation of spectrum, frequencies and telephone masts and towers, in order to support network rollout, especially for new entrants.	Broadcast digital migration has been a success and Tanzania needs to build on this success by allocating 700MHz frequency for broadband rollout. In order to do this, the TCRA needs to conduct a spectrum audit and provide clear use-it-or-lose-it regulations to ensure that operators do not sit on valuable spectrum.
Monitor wholesale prices for the NICTBB to ensure that access is provided on non-discriminatory terms, especially for new entrants.	While the Government of Tanzania needs to recoup the USD250million cost of building the NICTBB, it must balance this with the need for relatively low-cost wholesale access in order to accelerate broadband adoption. Use of the NICTBB will need to be monitored to ensure that it does not become a white elephant.
Encourage the NICTBB to expand fibre access to rural and semi-urban areas.	A combination of the NICTBB and effective infrastructure rollout subsidies from UCSAF should be investigated in order to establish whether it is feasible to rollout fibre access to rural and semi-urban areas.

Source: RIA ICT Survey data 2011-12

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ISSN: 2310-1156