Regulatory innovations in Tanzania: the role of administrative capabilities and regulatory governance

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Abstract

Purpose – The purpose of this paper is to show that, while in many low income countries inefficient regulatory regimes have been blamed for impeding ICT market development, Tanzania constitutes a remarkable exception. This study aims to identify the organizational and contextual factors that have enabled the Tanzanian Communications Regulatory Agency (TCRA) to implement innovative regulations, including a fully converged licensing framework as the first country on the continent, and how subsequently these regulations have influenced market development.

Design/methodology/approach – The analysis is based on case study data gathered through 20 face-to-face interviews in 2006 as well as secondary data gathered from government documents, news reports and company web sites.

Findings – The research finds that the market developments and regulatory innovations were due in part to Tanzania's Communications Regulatory Authority (TCRA)'s high level of autonomy, afforded by independent funding mechanisms and lack of capacity of the Ministry, which pressed the regulator to play a greater role in policy making than is found in other countries. Further, TCRA's significant internal focus on capacity building has also enabled strong regulatory governance.

Practical implications – The results provide further evidence of the role that institutional endowments and regulatory governance play in fostering policy reform.

Originality/value – The research examines regulatory innovations in a region typically associated with regulatory inefficiencies. It identifies institutional factors and subsequently shows how in a very low income country they may be conducive to effective regulatory governance and market development.

Keywords Tanzania, Licensing, Autonomous work groups, Regulation, Governance

Paper type Case study

1. Introduction

Even though Africa's information and communications technology (ICT) connectivity has shown spectacular growth due to the advent of mobile telephony (e.g. Banerjee and Ros, 2004), it continues to lag behind the rest of the world. African regulatory authorities are struggling to find ways to fully liberalize their ICT sectors, and are frequently held back by governments that continue to protect their (partially) state owned operators through legislative and policy regimes unfavorable to the introduction of pro-competitive policies by regulatory authorities (Gillwald, 2005; Horwitz and Currie, 2007).

In this context, the East African country of Tanzania constitutes a remarkable exception on the African continent. One of sub-Saharan Africa's least developed countries, ranking 162nd out of 177 on the UN Human Development Index[1], with an average GDP per capita of only USD $268 in 2006[2], Tanzania has recently made great strides forward in its telecommunications and ICT deployment. Although teledensity in Tanzania has been traditionally low even according to African standards, over the last few years Tanzania has seen its teledensity grow exponentially from a meager 0.4 per cent in 1998 to over 17 per cent[3] in 2006, and nearly doubling it from the year 2005 to 2006.

Even though Tanzania is not alone on the continent with regard to its exponential mobile growth, the situation is remarkable not only because Tanzania is one of the lowest income countries in Africa: Managers at regulatory authorities and operators throughout the Southern African region ascribe this exponential growth to Tanzania's 2005 implementation of a fully converged, technology and service neutral licensing framework. As the first country in the region to achieve this, Tanzania is frequently referred to as a pioneer on the sub-Saharan continent[4].

This situation calls for greater insight into the underlying factors that drove these developments. Based on market analysis and interviews with regulators, policy makers, and industry players in Tanzania, this paper analyzes:

- how Tanzania's regulation has impacted ICT market development; and
- organizational and contextual factors that have led to Tanzania's regulatory authority's effective regulatory activities.

The analysis makes use of the constructs of regulatory governance and institutional endowments (Levy and Spiller, 1994; Cherry and Wildman, 1999), which offer insights into the relationship between policy making and regulatory bodies and the success of their outputs.

These constructs are briefly described in the next section, which is followed by section 3 wherein Tanzania's market developments and liberalization strategies are discussed. Section 4 then examines how these developments may be related to Tanzania's regulatory governance and administrative capabilities through a discussion of the roles, functions and competencies of both policy making and regulatory bodies – the Ministry of Infrastructure Development and the Tanzanian Communications Regulatory Authority (TCRA) respectively. Section 5 finishes with conclusions.

2. Institutional endowment, administrative capabilities and regulatory governance

Analyzing the factors responsible for the apparent success in Tanzania requires an examination of the broader factors known to influence the outcomes of telecommunications policies generally. While the extent to which any type of regulation – such as price setting, interconnection requirements, etc. – affects market performance, remains topic of debate, one factor argued to explain differences in outcomes is regulatory governance (Levy and Spiller, 1994). Regulatory governance refers to the ''mechanisms that societies use to constraint regulatory discretion and to resolve conflicts that arise in relation to these constraints'' (Levy and Spiller, 1994). Depending on a specific governance mechanism in place in a society, particular regulations will be appropriate while others are not, thereby explaining failures in transplanting ''successful'' regulations across nations (Levy and Spiller, 1994).

In addition, both regulatory governance and regulations themselves are driven, or constrained, by a nation's ''institutional endowment'', which comprises a country's:

1. legislative and executive institutions;

2. judicial institutions;

3. the customs and norms that constrain action;

4. the character of contending social interests, including ideology; and

5. administrative capabilities (Cherry and Wildman, 1999; Levy and Spiller, 1994).

These five elements determine the choices open to regulators. Thus, while regulations directly affect sector performance, their impact is determined through the effectiveness of regulatory governance and the institutional endowment (Levy and Spiller, 1994).

Research on institutional endowments has predominantly focused on the formal structures of legislative, executive, and judicial institutions (see, e.g. Cherry and Wildman, 1999). However, the role of administrative capabilities has gained less attention. Capabilities of both the regulatory authority and the ministry responsible for communications influence

regulatory governance, and are likely to be a particularly important factor in lower income regions, where resource constraints may affect the number of policy making and regulatory staff as well as regulatory capacity (skills) building efforts (Lodge and Stirton, 2002a, b; Van Gorp, 2008; Van Gorp and Maitland, 2008). Further, these administrative capabilities may influence regulatory governance, of which a key aspect is the relation between policy making and regulatory bodies – i.e. the ministry responsible for communications, which makes higher level policies and initiates legislation, vs. the regulatory authority, which develops more detailed regulation based on this legislation and higher level policy (Van Gorp and Maitland, 2008). Both formal and informal aspects determine the autonomy or independence of the regulatory authority (Levy and Spiller, 1994, 1996; Lodge and Stirton, 2002a, b), and consequently regulatory effectiveness. Particularly in developing countries this regulatory autonomy is often weak, due to ministers protecting their partially state-owned incumbents. This situation generates policy environments unfavorable to regulatory innovations that stimulate competition (see, e.g. Galperin, 2005; Galperin and Bar, 2006; Gillwald, 2005; Horwitz and Currie, 2007; Neto, 2004; Van Gorp and Morris, 2008).

Hence, in this study, the combined impact of Tanzania's institutional endowment (administrative capabilities), regulatory governance, and resulting regulation, on Tanzania's telecommunication market development, will be examined. The following two sections examine Tanzania's market liberalization and development as well as the circumstances of and relationships between the regulator and the ministry. The data was collected through 20 face-to-face interviews with regulators and operators in Tanzania conducted in 2006 and secondary sources (government documents, news reports, company web sites) collected between 2006 and 2008.

3. Tanzania's market liberalization strategy and market development

The United Republic of Tanzania came into existence in 1964 shortly after gaining independence from Britain. Located in East Africa, and with its population of over 39 million, the country has a history of colonial rule and extreme poverty. Since the mid 1980s Tanzania has been slowly moving from a socialist society toward a more open market-driven economy. In the following sections telecommunications sector reform and market development, which have occurred within this broader trend, are examined. To begin, the periods between 1993 and 2000, and then 2001 to present are examined. This is followed by a discussion of recent market developments and current regulatory challenges.

3.1 The early telecommunications market: privatization and the rise of competition

In 1993 Tanzania started its telecommunications sector liberalization process. The then Tanzania Posts and Telecommunications Corporation (TPTC), a parastatal, was split into three separate entities, namely the Tanzania Posts Corporation, the Tanzania Telecommunications Company Limited (TTCL), and the Tanzania Communication Commission (TCC). With regard to its telecommunications sector, separation between operation (by incumbent TTCL) and regulation (TCC) was thus introduced. In addition, higher level policy making tasks were assigned to Tanzania's ministry responsible for communications (currently known as the Ministry of Infrastructure Development). The establishment of TCC was based on *The Communications Act* of 1993, and the establishment of TTCL was based on a Parliamentary Act, ''The Tanzania Telecommunication Company Incorporation Act of 1993''[5]. TTCL, under its new mandate, officially started operations on January 1, 1994.

Tanzania's establishment of a regulator in 1993 was for Africa, and even worldwide, an early endeavor at regulating the telecommunications market: TCC was among the first 30 autonomous regulatory authorities in the world. The establishment of TCC took place at a time of economic restructuring when reform programs were introduced across many sectors in the Tanzanian economy. While originally established purely as a telecommunications regulator, a new Act in 2003 led to TCC's merger with the broadcasting and postal regulators into TCRA, the Tanzania Communication Regulatory Authority.

After the establishment of TTCL – whose rollout stagnated and was facing escalating maintenance costs of its network that dates back to the 1960s – competition was slowly introduced by the entry of mobile operators. Shortly before TTCL was operational the regulator introduced a licensing framework for mobile operators. The country was divided into four zones, where each zone could be licensed to two mobile operators (Moshiro, 2005). As a result, in 1994 the first operator to start business on the mainland was Mobitel (which at the time was partially state owned, and is currently known as MIC Tanzania-Tigo), followed shortly thereafter by TriTel. Meanwhile, ZanTel entered the market in Zanzibar (Moshiro, 2005)[6].

However, as the numbers of subscribers remained low (i.e. a total of 37,940 in 1998), and operators concentrated on two zones only (i.e. the coastal area near former Capital city Dar es Salaam and Zanzibar), the regulator decided to change its zonal licenses into national licenses in 1998 (Moshiro, 2005). Thereafter, in September of 2000 Vodacom Tanzania started operating, followed by Celtel Tanzania's market entry in November 2001. Celtel International has shares not only in Celtel Tanzania but also in the incumbent TTCL. As a result, since 2000 the number of telephony users has grown exponentially[7].

Meanwhile, internet service providers (ISPs) also entered the market. While most ISPs were independent, TTCL as the only network provider also entered the internet access market. However, TTCL, much to its dislike, was only allowed to provide internet access services through subsidiaries, as license restrictions prohibited provision of value added services.

3.2 Market liberalization strategy: 2001-present

While the market entry of mobile operators, and to a lesser extent the market entry of ISPs, enhanced ICT connectivity in Tanzania, the teledensity level in 2001 was still very low at 1.3 per cent[8]. Hence, new liberalization measures were introduced to further stimulate market entry and to expand the diversity of service offerings. Indeed, prior to 2001 Tanzania's regulatory and legal environment was not perceived as conducive to market development. While telecommunications policies and TTCL's monopoly were seen as inhibiting growth of Tanzania's telecommunications sector, telecommunications policies were perceived not to be supported by a suitable legal environment[9].

One of the first steps towards full liberalization of the market was the partial privatization of TTCL on February 23, 2001. Celtel International, at that time MSI, with its headquarters in Amsterdam, The Netherlands, together with Detecon from Germany, obtained 35 per cent shares from the Government of Tanzania. The government kept 36 per cent of the shares[10], while the remaining 29 per cent of shares went to local and international financial institutions and TTCL employees.

Along with the privatization of TTCL in 2001 it was decided that TTCL was to have a four year period of exclusivity for providing fixed line telephony services, from 2001-2005. After the ending of this exclusivity period other service providers were allowed to provide fixed line services as well. As a result, in February 2005 the market became fully liberalized, with the introduction of a range of new regulations. The most famous among them was the fully converged, technology and service neutral licensing framework that arguably provided a significant boost to Tanzania's ICT growth. This new licensing framework entails a horizontal approach to licensing in that it is technology and service neutral, and allows any license holder to provide any service via any technology[11].

Currently four major categories of licenses are available, which stands in sharp contrast with the old licensing framework that had seven categories, namely:

1. basic telephone operators;

2. mobile operators;

3. public data operators;

4. internet service providers;

5. private dedicated data communications;

6. broadcasting stations; and

7. postal and courier operators.

This old licensing framework for example prohibited a fixed line operator to provide mobile telephony and internet services and vice versa, and lengthy application procedures would have to be endured to obtain such licenses. The new licensing framework takes away this burden and provides four simplified license categories, namely:

1. network facility licenses;

2. network service licenses;

3. application service licenses; and

4. content applications services licenses[12].

This means that for typical telecommunications services provision one or more of the four above stated general license categories is required, in addition to, in the case of wireless services provision, a frequency user license. All Tanzania's large operators – TTCL, Vodacom Tanzania, Celtel Tanzania, ZanTel and MIC Tanzania-Tigo[13] – now have a network facility license, network service license, and application service license, which in some instances are complemented by a content services license. Further, since all provide wireless services nowadays, they also have frequency user licenses.

This fully converged licensing scheme provides evidence of a progressive, pro-competition approach to regulation. Further evidence for TCRA's progressive approach towards new regulation for example can be found in the Access and Facilities Regulation[14], which constitutes an open approach to third party access to facilities[15]. Any owner of network facilities is enabled to resell use to third parties, be it in a non-discriminatory manner. It has to be noted that a significant number of countries (including South Africa until very recently, see, e.g. Van Gorp and Morris (2008)) restricted third parties to only use facilities provided by the incumbent telecom operator, which needless to say leads to unfair competition in favor of the incumbent.

Even though implemented recently, the new converged licensing framework has already led to significant changes in the market. As indicated by a manager at TTCL: ''The market is being redefined now''. The next section provides insights into this change.

3.3 Recent market developments

The new licensing framework has had two types of effects. First, it has led to new market entry, and second, it has expanded the range of (wireless) technologies used to provide services.

3.3.1 Market entry. After the introduction of the new Converged Licensing Framework, by May 2006 already four new service providers had frequency assigned to start providing wireless and mobile services. In addition to Benson Informatics, which was founded in 2000, and has recently started providing wireless broadband internet access and voice services through CDMA technology in Dar es Salaam, as well as wireless service via VSAT in Arusha and Dar es Salaam[16], four new network providers entered the market. These four new service providers are Broadpoint, MyCell, Dovetel and Betafone[17]. MyCell is rolling out 3G services with CDMA2000 technology. DoveTel has also been assigned frequency and is planning to provide CDMA-based services, according to a TCRA staff member. Dovetel and Broadpoint are also expected to provide mobile voice services, but specifics are not available at the time of writing. Thus, even though not all are operational yet, this brings the total of mobile providers in Tanzania to ten: Vodacom, Celtel, Tigo, Zantel, TTCL, Broadpoint, Mycell, Dovetel, Benson Informatics (known as BOL Mobile) and Betafone.

Reflecting on these developments, the acting Director General of TCRA commented in May 2006: ''This is the benefit of reforms (after) the introduction of full liberalization of the market in February 2005''. He furthermore adds: ''Over the same period, radio broadcasting stations increased from 14 to 32 and internet service providers from 11 to 23''[18]. And

indeed, while to date mobile (voice) telephony is Tanzania's more popular ICT service, data services provision is increasing as well. Today's 23 ISPs stand in sharp contrast with the estimated eight ISPs that served a market of 5,000 subscribers in 2001 (Maitland, 2001). Even though not all 23 ISPs are operational, the estimated 25.000 subscribers in Dar Es Salaam by the end of 2006 constitute a significant growth. Further, at least one of Tanzania's ISPs has started deploying a broadband wireless access network[19]. Similar to other developed countries, ISPs are facing increased competition from mobile service providers, which are entering the internet access market through enhanced mobile data services provision.

3.3.2 Expansion of the wireless access technology base. The variety of communication access modes is not only increasing due to the growth of the internet access market through the increasing number of ISPs, but traditional voice operators are also expanding into data services provision as well as are expanding the diversity of access technologies they deploy. During 2006 most of Tanzania's traditional voice providers obtained their new licenses, after which a significant expansion of the deployment of (wireless) access technologies took place. Further, all operators focus on the wireless market as of now.

For example, TTCL received its new license on December 30, 2006, and started offering mobile services with CDMA technology that supports 3G. TTCL has faced problems with fixed line rollout, which has led to a market share of only 3 per cent in 2006. Since obtaining its new license, it has started offering mobile services as well. Therefore, TTCL staff indicate that they perceive the Tanzanian market as wide open, and do not see a major problem with competition.

Further, while traditionally mobile operators in Tanzania opted for GSM technology, new mobile service provision has extended to include CDMA as well (due to scarcity of GSM frequency bands). Furthermore, mobile networks are being upgraded to include third generation mobile (both UMTS and CDMA), and most operators indicate an interest in the potential for WiMax rollout, which is globally still in its infancy.

The extent to which Tanzania's population and land are covered by wireless signals remains unclear however. For example, TTCL reportedly has 100 per cent regional and district coverage in terms of ''Points of presence'', but this does not specify how deep they go from there to different villages. Managers at mobile operators indicate signal coverage ranging around 75 and 80 per cent for Celtel and MIC Tanzania-Tigo. ZanTel has its own network that largely covers Zanzibar, and has made an agreement with Vodacom Tanzania to use the latter's facilities on the mainland. However, while Tanzania has made great strides forward in its communications sector, much remains to be done. While a 2007 survey of Tanzanians reported as much as 35 per cent mobile phone ownership among adults in the country, four times as much as in 2003, the majority remains in Dar es Salaam (65 per cent) whereas only 16 per cent of people in rural areas reported to have a mobile phone (United Republic of Tanzania, 2007).

3.3.3 Celtel local calling throughout the East African community. Another interesting development, yet not related to the introduction of the converged licensing framework, is Celtel's introduction in September 2006 of local calling throughout the East African Community for both pre-paid and post-paid customers instead of expensive international roaming. Moreover, while many mobile operators in the African continent do not even provide international roaming at all to prepaid customers, Celtel's borderless mobile network, called One Network, automatically enables local calling to its users. Celtel is the first company in the world to provide such a service, and therefore has gained a lot of attention in the press throughout the world. This move constitutes an interesting service innovation in itself, as well as is indicative of effective regulatory cooperation.

Celtel's One Network required Celtel to synchronize billing, interconnection, and interoperability of the three countries' networks. In addition, Celtel upgraded its entire network so that it would be able to provide enhanced multimedia services and would be able to facilitate increased use of the network for an expanded customer base[20]. Besides this coordination among the semi-autonomous national Celtel operators throughout the East

African Community, this service innovation is an indicator of effective coordination with and among regulators among the East African countries of Uganda, Kenya, and Tanzania. As explained by a manager at Celtel Tanzania, Celtel's move required the regulators to implement changes, such as harmonization of phone numbers for voicemail retrieval, recharge, customer care, and access to the call center[21].

Meanwhile, other mobile telephony providers in the East African region did not want to stay behind. Within four months of the launch of One Network, Safaricom of Kenya, MTN Uganda and Vodacom Tanzania announced their plans to also launch a single regional mobile telephone network, which went live in February 2007[22]. Yet, Celtel seemed to remain a step ahead of its competition. Only nine months after the establishment of the One Network in East Africa, Celtel announced its plans for further expansion in Africa. One Network now includes the Democratic Republic of Congo (DRC), Gabon, and the Republic of Congo as well[23].

3.4 Current regulatory challenges

The newly introduced regulations, along with the new communications landscape that they have created, seemingly are well appreciated by Tanzania's service and network providers. At the end of 2006, none of the service providers expresses to face significant regulatory challenges. Managers at all operators indicate to feel strong competition, but perceive this as ''fair'', as most pressing challenges they faced before the introduction of the new licensing framework seem to have been solved. For example, a few managers at TTCL mentioned that TTCL felt treated unfairly as it had to have its tariffs approved whereas mobile operators did not, but this does not seem to be an issue anymore. Of course the market still faces continuous issues such as interference problems, but problems like this are usually sorted out in a cooperative manner with other service providers and regulator.

Since the implementation of the converged licensing framework and other regulations TCRA has been monitoring the effects on the market and has been fine-tuning rules. By the end of 2006, managers at regulator TCRA indicate that no significant challenges have come up. However, in 2007 scarcity of frequency spectrum became a constraint, as the new licensing framework did not set a limit for the number of licenses to be awarded. The increased market entry has led to a significant increase in the demand for spectrum that cannot be easily fulfilled. Consequently, TCRA released a press statement that says the following:

> An increase in the number of prospective operators has tremendously increased the amount of spectrum usage. Considering that spectrum is a scarce resource, TCRA is conducting a spectrum audit *vis-à-vis* allocation of bandwidth with the objective of determining the optimum amount of spectrum required by each service.

> In order to conduct the said audit, TCRA wishes to inform prospective applicants and the public in general that new applications requiring the following frequency resources: 450-470 MHz, 824-890 MHz, 890-960 MHz, 1710-1880 MHz, 1920-1980 MHz, 2110-2170 MHz, 2560-2790 MHz and 3400-3700 MHz shall not be considered with effect from 10 May 2007 until further notice (TCRA (n.d.), Press Statement, available at: www.tcra.go.tz/headlines/publicNoticeFrequency.pdf (accessed August 13, 2007).

TCRA was thus forced to temporarily stop frequency applications for spectrum that includes the common bands for GSM, CDMA, and WiMax provision, to review the band plan. Another year later, in 2007, these developments furthermore led to plans to comprehensively survey Tanzania's ICT infrastructure, also with an eye on determining the extent to which further opening of the market in the future is desirable[24]. Additionally, and to this end, the survey will be used to determine the optimum number of operators in the sector, and the degree of (lack of) competition in different segments of the market.

Meanwhile, in its efforts to increase rural connectivity in Tanzania, TCRA has proposed the introduction of a new license category; namely that of Closed User Groups. This proposed regulation would enable organizations such as banks, hospitals, NGOs, etc., in designated underserved areas to self expand their networks and self provide communication services (TCRA, 2007). In particular, low license application fees, initial license fees, and annual fees have been proposed for VSAT deployment. While currently application fees are USD $1.000,

initial license fees are USD $50.000, and annual fees per VSAT station are USD $1.000, as per the consultation documents application fees are proposed to become, depending on the type of organization, as low as USD $10-USD $100 for the application fee; USD $50-USD $10.000 for the initial license fee, and USD $100-USD $500 for the annual fee (TCRA, 2007).

4. Administrative capabilities and regulatory governance: TCRA and the Ministry of Infrastructure Development

Given the role of regulation in stimulating market development as discussed in the previous section, a question remains as to what factors have enabled Tanzania's regulatory agency to implement such progressive regulation. The regulator TCRA is indeed perceived as a progressive regulator not only by Tanzanians, but also by regulators and operators outside Tanzania, who have referred to Tanzania's regulation as ''worth emulation''. Tanzania was the first country in sub-Saharan Africa to introduce a fully converged licensing framework. As one manager at TCRA puts it: ''We are kind of pioneers in Africa. I think we have taken quite a bold step. Last year we were voted as best regulator in Africa. We have a vision. We want to modernize the country.'' A manager at a service provider mentions ''our regulator is one of the stronger regulators in Africa.''

This section will shed further light on the factors that enabled TCRA to implement such progressive regulation. In particular, the administrative capabilities of the regulator itself, a component of the institutional endowment, as well as the regulator's relation to the communications policy maker, the Ministry of Infrastructure Development (MoID), a component of the regulatory governance, are discussed.

4.1 Regulatory governance and administrative capabilities: The Ministry of Infrastructure Development and TCRA

While TCRA implements regulation, the Tanzanian Ministry of Infrastructure Development (MoID) is responsible for overarching policy-making and initiation of legislation. For TCRA there are guidelines whereby regulations are approved by the minister so that they will become legal documents. As such, TCRA's role thus depends on the mandate it is granted through policies developed by the ministry. The official roles and responsibilities of the regulator, and therefore also its relation to the ministry, were originally determined by *The Tanzania Communications Act* (1993), at the time that TCRA was still TCC, and has been amended by *The Tanzania Communications Regulatory Authority Act* (2003) at the time that TCRA was established.

Currently, the Ministry of Infrastructure Development employs roughly 100 people that are divided over six departments. The sub-department responsible for communications, which falls under Transport and Communications, and which deals with postal, telecom and ICT, employs ten staff members, and as such is a relatively small department. Telecom and ICT has six staff assigned, and postal four. According to a manager at the communications department at the end of 2006, there was an intention to recruit 12 more people, as well as for communication to become a department by itself.

While the ministry has a role in developing policy and approving of regulations, due to the small number of employees, the ministry realistically does not have a strong influence on ICT and telecommunications policy or regulation. As one manager from the private sector put it, ''the regulator is trying to compensate for lack of policy from the Ministry's side''. Furthermore, the manager mentions that the minister has an overseeing role, but that in practice TCRA is ''independent''. Another manager says ''frankly speaking, the ministry doesn't have enough staff. They should actually give more input''. This relative lack of involvement of the ministry in the telecommunications sector might be further reflected in the lack of engagement of operators with the ministry, as is explained by regulatory affairs managers at two mobile operators. Nevertheless, a TCRA staff member does mention that he believes that the government has very good policy, and very good legislation. This however might also be due to the TCRA's role in drafting policies. As a director at TCRA explains, while the 2005 regulations were issued by the minister, TCRA had been largely

responsible for drafting them and presenting them to the minister, after which dialogue took place until all agreed.

Finally, the limited involvement of the ministry in policy development can be observed through the limited involvement of the private sector with the ministry, while the latter does frequently interact with the regulator.

The positive result of the ministry's limited involvement in communications related matters is that many people perceive TCRA to be very ''independent'' of the ministry, as indicated by managers both at operators and regulaty agencies across the Southern African region. Another reason for this independence is the fact that TCRA has financial autonomy as licensees pay fees directly to TCRA.

4.2 Administrative capabilities: capacity building within TCRA

The lack of resources at the ministry, and the abundance of resources at TCRA have led to TCRA being capable to exert significant influence over regulation and policy development. However, this does not explain the reason for TCRA's development of such progressive regulations. A partial answer to this, we argue, lies in TCRA's internal human resource policies that have a strong focus on internal capacity and skills building. In general, organizational development and performance are strongly tied to human resource development (see, e.g. Lawler, 2005; Torraco, 2005), and as such, major tools for human resource development like training and education, will thus also influence regulators' performances and thus administrative capabilities, as well. Indeed, Goulden (2005a, b) Schware (2003) and (Lodge and Stirton, 2002a, b) have emphasized the importance of skills building and internal management within telecommunications regulatory agencies.

TCRA is characterized by a remarkably active human resources sub-department. This is observed in three ways. First, TCRA stands out in the region just by having a human resources sub-department. As one of TCRA's HR managers explains, a number of regulators in sub-Saharan Africa do not even have an HR department yet. Second, TCRA dedicates a relatively large budget to human resource development, and employs a variety of HR activities. For example, TCRA's HR department has been working on an intra-organizational policy to push its employees to pursue advanced graduate degrees at the Master's and PhD levels. Furthermore, for the year 2006 TCRA, which counted roughly 97 employees had a budget of about USD $630,000 set aside for workshops and training, on topics such as quality of service, accounting principles, and radio frequency management, as well as another $620,000 for conferences and meetings (TCRA, 2006). For comparative purposes, in the year 2006 the South African regulator ICASA, with about 300 staff, spent little over USD $380,000 on training and conferences (ICASA, 2006), and Botswana regulator BTA, with about 70 staff members, spent little over USD $320,000 (BTA, 2006)[25]. Even though these numbers might not be directly comparable as different issues might be included under these budgets, the numbers do suggest that TCRA has a relatively large budget dedicated to human resource development.

Third, other regulators in the region refer to TCRA as having a strong human resources department. To this extent, the director is referred to by a variety of consultants and regulatory officers outside of Tanzania as having been pivotal in driving regulatory capacity building efforts in southern Africa. For example, through its role as convenor in the human resource development committee in the Communications Regulatory Association of Southern Africa (CRASA), which is a regional regulatory body of the Southern African Development Community (SADC), TCRA has been pivotal in driving capacity building in the region (Maitland and Van Gorp, 2008; Van Gorp, 2008). As convenor of the committee, TCRA has been engaged in organizing workshops and training for all regulators of the SADC region. Not only did this enable direct learning about specific regulatory topics, it also enhanced bilateral relations. To this extent, membership of CRASA has provided a basis for peering program where staff members of different regulators in the SADC region visit each other (Maitland and Van Gorp, 2008; Van Gorp, 2008).

Finally, TCRA has been pivotal within CRASA in laying the basis for the NetTel@Africa program, a program that through cooperation of regulators and universities offers online training, certificate and degree programs in telecommunications policy. With the groundwork of the program being laid in CRASA, the program now spans the continent and also includes Washington State University and the University of Maryland from the USA. While CRASA started the network development process, Washington State University provided project implementation, and was provided a sub-grant from USAID[26]. TCRA again has been very active within this program, and the University of Dar Es Salaam (in Tanzania) serves as one of the major active universities in the program[27]. With over 30 students enrolment, six have graduated by 2006, a majority of whom were Tanzanians.

To conclude, regulatory governance, as indicated by the autonomy of the regulator from the ministry, as well as institutional endowments, as indicated by the administrative capabilities of both the ministry of infrastructure development and TCRA, have influenced both the policies generated by the regulator as well as their effects in the marketplace. Further, the case demonstrates the complex relationships between regulatory governance and institutional endowments. In particular, TCRA's resource abundance (as it receives licensing fees directly and is not dependent on a budget allocated by the ministry), and at the same time the lack of resources at the ministry (i.e. understaffing) that pressed TCRA to compensate for lack of policy as well as provided the regulator with significant autonomy, have enabled TCRA to do a great deal of work on capacity building. Subsequently, capacity building enabled further organizational development, which in addition to TCRA's independence, arguably were significant drivers that enabled the development of progressive regulations.

5. Conclusions

This paper has identified a number of noteworthy aspects of Tanzania's regulatory governance and institutional endowment that have created an environment conducive to the development of innovative regulations. Of note is the country's implementation of a fully converged, technology and service neutral licensing framework that has led to a significant increase in market entry. While the full effects still remain to be seen – and particularly the extent to which rural ICT rollout will increase in the future – barriers to entry have decreased and four new network providers have been licensed. The effect of increased market entry on competition as well as spectrum availability has furthermore increased the choices of technologies available in the market, ranging from GSM to UMTS and CDMA2000, as well as stimulated interest in rolling out Wimax and other wireless broadband technologies.

Tanzania was the first sub-Saharan country to introduce such a fully converged licensing framework. As a result, people throughout southern Africa have referred to TCRA as a model regulator. TCRA's strong focus on human resource development, which includes significant budgetary allocation of the human resource department for training and workshops in addition to TCRA's role as convenor in the Human Development Committee of CRASA, provide evidence of TCRA's significant focus on capacity building. In addition, while arguably the focus on capacity building within TCRA has partially enabled TCRA's progressive attitude towards regulation development, TCRA's own relative ''abundance'' of resources versus the ministry's lack of resources due to understaffing have enabled the regulator to exert a significant influence on the development of both higher level policy and regulation as they have taken up part of the responsibilities of the ministry of infrastructure development.

These findings emphasize the influence of administrative capabilities of both regulator and ministry on national regulatory governance. Administrative capabilities include capacity building practices as well as roles and responsibilities of the regulator versus ministry. This study shows that resource constraints, an under-researched and under-theorized element of regulatory governance, play a significant role in determining the relationship between, and roles of, regulator and ministry, which in turn may have an impact on the regulatory incentives implemented in society.

Nevertheless, while this study has found seemingly positive effects of Tanzania's institutional endowment (administrative capabilities) and regulatory governance, it must also be noted that the limited role of the ministry in itself does bear risks and may become a constraint in the future, as balance in responsibilities between policy makers and regulatory authorities is key to ''good'' governance. Hence, it is imperative for Tanzania to further strengthen its policy making arm.

Notes

1. See http://hdr.undp.org/hdr2006/pdfs/report/HDR06-complete.pdf (p. 286) (last accessed August 2007).

2. See ITU indicators: www.itu.int/ITU-D/icteye/Reporting/ShowReportFrame.aspx?ReportName = /WTI/BasicIndicatorsPublic&RP_intYear = 2007&RP_intLanguageID = 1 (last accessed July 29, 2008).

3. 2006 shows a total of 6,398,070 mobile and fixed line telephony users (see www.tcra.go.tz/Market%20info/statsTelecom.htm), over a total population of 37.4 million (see www.cia.gov/cia/publications/factbook/geos/tz.html) (last accessed August 2007).

4. This has been indicated in various interviews held in Botswana and South Africa from May-December 2006. See Van Gorp (2008) for greater detail.

5. See www.ttcl.co.tz/about_history.asp (last accessed August 6, 2007).

6. See also www.uneca.org/aisi/NICI/country_profiles/tanzania/tanzinfra.htm (last accessed August 15, 2007).

7. For a detailed overview of number of subscribers over time, see also www.tcra.go.tz/publications/telecom.html (last accessed August 6, 2007).

8. See www.tcra.go.tz/publications/telecom.html (last accessed July 25, 2008).

9. See for example a discussion on government policy: www.afrol.com/News2001/tan003_internet_growth.htm (last accessed July 23, 2008).

10. See www.ttcl.co.tz/about_history.asp (last accessed August 6, 2007).

11. This approach is similar to that of the European Union. The European Union's 2002 Regulatory Framework for Electronic Communications adopted such a policy (see, e.g. ITU, 2002). Since that time a number of countries are considering changing to their licensing structure (e.g. Japan). Tanzania has been the first country in sub-Saharan Africa to do so.

12. In more detail, the converged licenses currently available are: network facility licenses that allow ''the holder to construct, maintain, own and make available one or more network facilities''; network service licenses that allow ''the holder to provide one or more network services'', i.e. ''a service for the carrying of information in the form of speech or other sound, data, text or images''; application service licenses that allow the holder to provide a service ''by means of one or more network services but does not include such a service provided solely on the customer side of the network boundary''; and content applications service licenses that allow ''the holder to provide one or more content applications services'', i.e. ''an applications service which also supplies content'' (The Tanzania Communications (Licensing) Regulations, 2005, pp. 3-4).

13. As newly licensed providers are still rolling out networks, by August 2007 major market shares for voice providers still were in favor of the established providers, namely: Vodacom with 3.2 million users (51 per cent marketshare); Celtel with about 1.7 million users (26 per cent marketshare); MIC Tanzania-Tigo with little over 800.000 users (13 per cent marketshare); Zantel with about 414.000 users (7 per cent market share); and TTCL with almost 150.000 (fixed line) users (3 per cent market share) see www.tcra.go.tz/publications/telecom.html (last accessed 6 August, 2007).

14. The Communications (Access and Facilities) Regulations, 2005)

15. While in many countries all telecom operators are required to provide access, in many developing countries this is not yet the case (Hodge, 2002). Examples of these countries include South Africa and Botswana (e.g. Van Gorp, 2008; Van Gorp and Morris, 2008).

16. See also www.bol.co.tz/products.htm and www.bolmobile.co.tz/ (last accessed 29 May 2008).

17. See, e.g. www.busiweek.com/index.php?option = com_content&task = view&id = 1582& Itemid = 39 and www.redorbit.com/news/technology/288569/tanzania_telecom_regulatory_ authority_licences_five_new_telephone_operators/ (last accessed 29 May 2008).

18. Quote taken from *East African Business Week*, ''TZ okays more cellular firms'', 22 May 2006. See www.busiweek.com/index.php?option = com_content&task = view&id = 1582&Itemid = 39 (last accessed 11 August 2007).

19. ISP Catsnet Tanzania deploys a broadband wireless access network. See www.wimax.com/ commentary/spotlight/wimaxspotlight2005_06_15_part1 (last accessed 11 August 2007).

20. See *East African Business Week*, ''Safaricom, MTN, Vodacom in single network this week'', www.busiweek.com/index.php?option = com_content&task = view&id = 2759&Itemid = 9 (last accessed 13 August 2007).

21. Personal communication November 2006.

22. See *East African Business Week*, ''Safaricom, MTN, Vodacom in single network this week'', www. busiweek.com/index.php?option = com_content&task = view&id = 2759&Itemid = 9 (last accessed 13 August 2007).

23. See http://allafrica.com/stories/200706070001.html (last accessed 13 August 2007).

24. See www.cellular-news.com/story/31356.php?source = newsletter (last accessed 30 May 2008).

25. Exchange rates of 13 August 2007.

26. See www.dot-com-alliance.org/newsletter/article.php?article_id = 138 (last accessed 23 July 2008).

27. See www.nettelafrica.org

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