

INTRODUCTION

Chapter 1: Introduction

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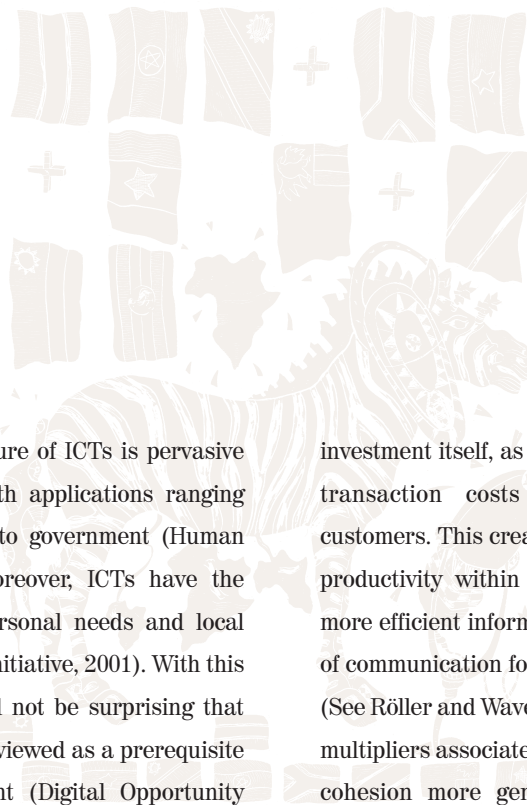
GLOBAL ECONOMIC AND SOCIAL CHANGE. Over the past decade, there has been an increasing commentary on the economic, political, and social potential of information communication technologies (ICTs) under the right political and economic conditions. The development of the harmonised, globally interconnected communications infrastructure that is transforming economy and society is highly uneven, and the benefits of instant communication and information-sharing between geographically remote areas at steadily declining costs to the user that characterise it, are far from the experience of most Africans. Despite the improvements in access to voice telephony made possible by mobile phones over the last half a decade, most of the people on the continent continue not to own any type of phone and many more have no regular access to communications. The remarkable gains made towards universal access through the introduction of mobile telephony, and more particularly competition, masks the fact that Africa continues to lag global averages on major ICT indicators. Indeed, since 2003 there has been a growing gap between those countries with access to communications services and those countries without. In terms of a range of ICT indicators, African countries, including South Africa, score lower than the global average, and although progress was made throughout the period, the gaps between African and other developed countries and emerging economies persist; indeed, they have intensified over the last decade, indicative of a growing digital divide (Sciadas 2005).

THE DIGITAL DIVIDE. The significance of this growing digital divide, in which Rodriguez and Wilson (2000) include both ICT products and outputs (Internet access, cellphones) and inputs (engineers, scientists), is that as

information becomes ever more central to human activity, the lack of it could make other development gaps impossible to bridge (WSIS Executive Secretariat, 2002). Grace et al (2001) and Rodriguez and Wilson (2000) highlight the potential existence of a poverty trap, where a certain threshold of national communications infrastructure rollout and skilled individuals have to be in place for the positive network effects of these technologies to reach a takeoff point and multiply through the national economies. The danger of the digital divide is that certain countries or regions may fall behind the rest of the world and never reach this threshold point, thereby being permanently excluded from the numerous potential economic and social benefits of ICTs.

What also characterises these global developments is the gap not only between countries – historically between those of the North and those of the South – but within countries, primarily between the urban centres and the rural periphery. Domestic digital divides often mirror existing inequities within developing and developed countries and are therefore likely to reinforce them. The characteristic user of the Internet and other ICTs, for example, is often young, male, well-educated, relatively wealthy, tends to live in the capital city of their country, and is likely to be a member of the dominant ethnic group of their country (Kenny 2002; Human Development Report, 2001; Goldstuck 2001). The continuation of this gap has the ability to exacerbate existing inequities (Kenny et al 2001) and social problems and possibly even lead to conflict (Rodriguez and Wilson 2000).

To best understand the full potential of ICTs, one needs to look beyond their direct impact and understand that they make possible “the access to information that lies at the heart of most human activity” (WSIS Executive



Secretariat, 2002). The very nature of ICTs is pervasive and cuts across all sectors, with applications ranging from personal use to business to government (Human Development Report, 2001). Moreover, ICTs have the ability to be customised for personal needs and local conditions (Digital Opportunity Initiative, 2001). With this pervasiveness in mind, it should not be surprising that that ICTs are increasingly being viewed as a prerequisite for modern human development (Digital Opportunity Task Force, 2002) and the role that they can play in development is being recognised outside of the ICT and development sphere.

ECONOMIC GROWTH AND SOCIAL DEVELOPMENT.

With the correct policies and regulatory environment, telecommunications has long been understood as an enabler of economic growth and development. It has increasingly been viewed not only as a significant sector within the economy by itself, but also a vital service to business and industry more generally. With the rise of the information economy, the assumed role of telecommunications, and ICTs more generally, has been expanded to include it being a necessary condition for everything from national innovation and entrepreneurialism to effective government service delivery.

For this reason, governments across the continent unable to capitalise the expansion and modernisation of their networks have privatised them and liberalised their markets, with differing degrees of success. In all cases it has highlighted the pent-up demand for communications – even in the vast areas of the continent that have traditionally been regarded as uneconomic to service.

The rationale for seeking investment in telecommunications infrastructure, that such reforms are meant to induce, is not only the contribution directly to economic activity through demand for the high-cost products used in the build-out of the network. Economic returns on such infrastructure investments are much greater than the

investment itself, as they have the potential to reduce the transaction costs between businesses and with customers. This creates positive economic multipliers, as productivity within the economy is increased through more efficient information-gathering and the substitution of communication for higher transactional cost activities. (See Röller and Waverman 2002; and Laffont 2003). Social multipliers associated with safety and survival, and social cohesion more generally, are also well-documented, although not costed or quantified.

A large part of the research concerning the quest for national development revolves around achieving higher rates of economic growth. A 2001 OECD study on the impact of ICT capital accumulation on output growth in Australia, Canada, Finland, France, Germany, Italy, Japan, the United Kingdom and the United States found that investments in national communications infrastructure over the past 20 years resulted in an increase in GDP growth of 0.2% to 0.5% per year over the period studied and that this growth accelerated to 0.3% to 0.9% in the latter half of the 1990s (Colecchia and Schreyer 2001). These findings would indicate that it is possible for countries to accelerate the growth rates of their economies through effective deployment of ICTs.

While there is a growing body of literature delineating potential causal links between telecommunications services and faster rates of economic growth, until recently the empirical evidence of a causal link between ICTs and economic growth remained tentative and very little has focused on developing countries, and Africa in particular. Generally, it is argued that ICTs have the ability both to increase efficiency (by improving the functioning of markets) and productivity (by adding value as an input in the production process), lower costs in the economy (reduce communications costs, improve supply chain management, etc.), and open access to new markets (e-commerce, better provision of information to foreign

INTRODUCTION

INTRODUCTION

investors). The crucial point made in Grace et al (2001) and Laffont (2003) is that while it is unlikely that there will be conclusive econometric evidence on the direction and size of the effect of ICTs on economic growth in the near future, it would be dangerous for developing countries to use this as an excuse for not developing national e-strategies. The relationship between economic growth and telecommunications services may not be as strongly positive as some of its more optimistic proponents believe, but the balance of the evidence does indicate that such a relationship is present.

In 1996, Lars-Hendrik Röller and Leonard Waverman confirmed what has long been assumed, but not conclusively proven: a positive correlation between communications infrastructure and economic growth. However, they were unable to demonstrate causality. In 2000, after an extensive study of 21 OECD countries over 20 years, they concluded that investments in telecommunications infrastructure had strong growth effects and were able to clarify two vital qualifiers to this correlation around critical mass phenomena associated with network industries and the direction of the causality. The question that had been raised in earlier studies was: did extensive communications infrastructures enable economic growth, or did economic growth create demand for communications?

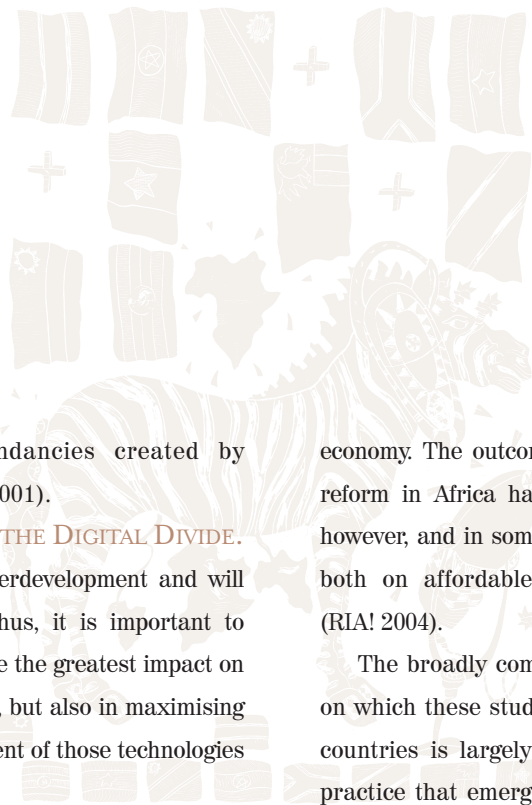
Röller and Waverman conclude from their study that the causality is two-way and that communications infrastructure development and economic growth catalyse each other. They also found, as others had theorised, that for the positive growth effects of infrastructure investment and expansion to be realised, a critical mass or a threshold of a significant size would be necessary for the network effects to kick in. This critical threshold they found was, in fact, close to universal access – around 40% of the population, assuming around 2.5 people per household. This

suggests that in developing countries the positive growth benefits associated with infrastructure investment may not be realised while teledensity remains on an average of less than 4% in non-OECD countries (2000:14).

The implications of such studies are significant for developing countries in which little data exists on which to base reform policies and the application of international models are unlikely to yield the expected dividends in different circumstances.

ICTs AND GOVERNMENT/SOCIAL SERVICES. Outside of the economic sphere, ICTs can not only improve the internal functioning and administration of government bodies, but can also increase the efficacy of service provision in the health, education, and environment sectors. In a similar vein to the findings on the impact of teledensity on economic growth, Kenny et al (2001) have found that countries with higher teledensity than expected for their income level also have significantly higher rates of literacy and life expectancy.

In the realm of e-government, ICTs can promote better governance by improving the functioning of government through the enhancement of the administrative and planning processes that form the core of government decision-making and the provision of government services (Grace et al 2001). Equally importantly, ICTs can bring government closer to the people by making it accessible through additional channels and increasing the ability of the people and civil society to make their voices heard by government (Commission on Sustainable Development, 2001; United Nations General Assembly, 2002). However, care must be taken in the prioritisation and implementation of these types of programmes. One recent study has found that up to 80% of public sector IT applications have resulted in partial or total failure due to legacies of political patronage, histories of heavily centralised government structures, and fears



of job losses due to redundancies created by technology gains (Grace et al 2001).

CONDITIONS FOR REVERSING THE DIGITAL DIVIDE.

ICTs are not a panacea to underdevelopment and will have a range of net effects. Thus, it is important to evaluate the factors that will have the greatest impact on not only ensuring access to ICTs, but also in maximising the positive impact for development of those technologies put in place.

Differences in income per capita account for around 78% of the variation in teledensity levels between countries (Kenny et al 2001). Overcoming the preponderance of this income effect will be one of the key challenges in reducing the imbalances in ICTs. Despite the size of the income effect, there are also several other factors that appear from available research to have a significant impact on the provision and impact of ICT services. Reform mechanisms of privatisation, competition and independent regulation, often only researched in resourced OECD countries, have been hailed as having resulted in price decreases, improvement in service quality, faster roll-out of infrastructure and new technology, and more choice for consumers (OECD, 2002 and Grace et al 2002). A broadly competitive macro policy environment has also been identified as an important contributing factor in increasing the provision of ICT infrastructure and maximising its impact. It is important to realise, however, that it is real competition, and not simply a liberalised environment, that can bring about tariff decreases, which in turn make accessing ICTs a realistic proposition for low-income groups, thereby combating the income effect.

It is on the basis of such studies that telecoms reform has been sold to African countries as a mechanism to transform their debilitated communications infrastructures and integrate their countries into the global

economy. The outcomes of the first phases of telecoms reform in Africa have had far more mixed outcomes, however, and in some cases have had a negative impact both on affordable access and sector development (RIA! 2004).

The broadly competitive macro policy environment on which these studies is generally premised in OECD countries is largely absent in African countries. The practice that emerged from this reform model usually focused on privatisation at the expense of other reform drivers such as fair competition and independent regulation, which are critical to secure the investment not only required for network expansion, but for ensuring competitive and affordable services on these networks.

More importantly, while independent regulation made up a critical component of the multilateral agency-driven reform model, in practice the focus was on inducing the opening up of markets to foreign trade and investment rather than on the need for strong institutional arrangements to deal effectively with the regulation of the private monopoly in a partially competitive market and to counter market failure likely to arise in such imperfect markets. This has probably been the most undermining factor of reform efforts in developing countries.

While effective regulation has been a cornerstone of competitive markets in many of the developed countries calling for open access to developing country markets, it has not sufficiently accompanied the introduction of liberalisation policies, often expediently implemented by developing countries to offset debt or secure aid. Privatisation, without the regulatory capacity or political will to manage a private monopoly or, subsequently, its behaviour in a more competitive environment, can be entirely counterproductive to the achievement of the very goals intended by liberalisation, not least of all affordable access.

INTRODUCTION

INTRODUCTION

MAXIMISING THE IMPACT AND PROVISION OF ICTs.

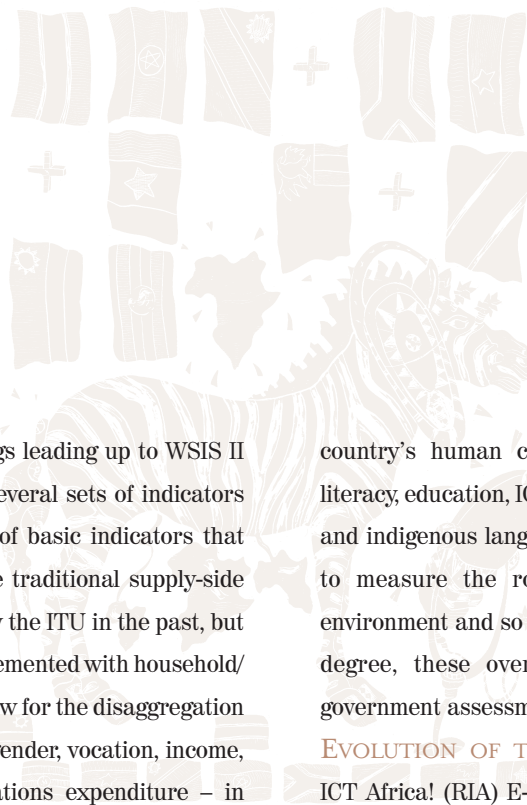
The role that ICTs can play in poverty alleviation and sustainable development has tended to focus either on infrastructure expansion to reach rural areas, or on the deployment of ICTs to sustain those marginalised from global economic and political activity. From this starting point, implementation in many developing countries has resulted in often unsustainable community projects or short-lived government initiatives. The effect of this has been to marginalise the role that ICTs themselves can play in transforming economies and societies and to raise critical questions regarding the contribution that ICTs can make to sustainable development.

For ICTs to contribute to poverty alleviation and sustainable development, they need to be located within an integrated development strategy that is both informed by and informs national policies at the macro economic and sectoral level. Every society needs a guiding vision, policy certainty and transparent regulation to promote the utilisation of ICTs to address economic growth and poverty, global competitiveness and growing employment opportunities and skills provision and to manage the digital divide. Research is critical to establishing the needs of countries and groups within them and to conceptualising approaches that are likely to be effective in resolving country-specific problems. Strengthening institutional capacity for research, analysis and debate in developing countries is an indispensable element in the construction of knowledge societies.

RESEARCH, POLICY AND MEASUREMENT. This research seeks to build an African research base to provide the data and analysis necessary for African decision-making to make informed, evidence-based appropriate policies. The paucity of information on the ICT sector in Africa is self-evident. Where research has been conducted, the data and findings are locked into proprietorial ownership rights. The asymmetries of

information between operators and national decision-makers abound, with little public data outside of the incumbent mobile and fixed line operators' annual reports and the largely dated indicators collected by multilateral agencies. Historically, the limited analysis that has been done has relied almost exclusively upon these reports to provide an assessment of the development of the sector. In the light of the growing demand for information, research and analysis on which to base informed decisions in relation to ICTs and development and the absence, by and large, of such resources, Research ICT Africa! (with the support of IDRC) undertook to gather fundamental data on access and usage to inform national public policy on the continent. A major purpose of the e-index is to draw awareness to the importance of developing national statistics and data to inform decision-making, seek to fill the gaps where possible with the development of country and regional databases and begin to develop the kind of metadata decision-makers require to be effective and achieve developmental outcomes.

These activities are aligned with the commitment arising from the first World Summit on the Information Society (WSIS) Geneva Plan of Action, which emphasised the need to more effectively measure the information society to better understand the gaps and devise strategies to overcome them. At a series of thematic meetings since then and in preparation for WSIS II in Tunis in 2005, multilateral agencies have been meeting with national statistical offices and national regulatory agencies to develop a set of standardised ICT indicators to measure the information society that would be collected across all countries and allow for benchmarking and comparison. These meetings have agreed that the limited supply-side figures, where they do exist, do not sufficiently capture the demands and needs of different categories of users.



Various international meetings leading up to WSIS II appear to have concluded that several sets of indicators are required. The first is a set of basic indicators that would take the form of the more traditional supply-side indicators that have been used by the ITU in the past, but that these would be further supplemented with household/individual surveys that would allow for the disaggregation of users and consumers by age, gender, vocation, income, spatial location and communications expenditure – in much the same way as was done for the RIA! national household and individual surveys.

A second set of indicators is required to measure business or enterprise (e-economy) activity in the information society. These seek to establish the extent of computer, telephony and Internet usage. Some of the indicators used in the OECD measurements already being undertaken are quite sophisticated and seek to put values on e-procurement and e-sales, etc.

Within the e-economy debates, the importance of ICTs for enhancing SME competitiveness in developing countries has been identified, as has the need for indicators in this area. To this end, RIA! has embarked on this second layer of understanding of users and consumers by conducting SME surveys in 14 African countries. This makes up Vol 2 of “Towards an African e-Index”. A third level of public sector usage often forms a third area of investigation by those countries most advanced in measuring the information society, where e-government is examined separately from e-business. With government the single largest user of ICTs in many African countries, RIA! will conduct a survey of government access, usage and expenditure on communications in 2006. This will constitute Vol 3 of the e-Index.

A further set of indicators in relation to e-society has also been proposed to establish indicators for social and cultural development. This would include assessing a

country’s human capital through indicators such as literacy, education, ICT skills, availability of local websites and indigenous languages. It is also here that indicators to measure the role of ICTs in health, education, environment and so on are being grappled with. To some degree, these overlap or may be subsumed by e-government assessments.

EVOLUTION OF THE E-INDEX. The 2004 Research ICT Africa! (RIA) E-access and Usage Index evolved out of two baseline studies conducted in 2003. The first, the ICT Sector Performance Review, attempted to measure the sector outcomes of policy and regulatory strategies against national ICT objectives for various countries. The second, the Fair Access to ICT Report (FAIR), sought to assess Internet penetration against cost of services and regulatory environments. Both studies were seen as precursors to the E-access & Usage Index.

The hypothesis of the ICT Sector Performance Review was to determine the level of correlation between ICT policies and the performance of the telecommunications sector. Specifically, have the reform models followed by African countries achieved their objectives? The primary policy objective of all the countries surveyed is to increase the penetration of telephony. Various policies were implemented to try and achieve this goal. In those countries that provided the fixed line incumbent with exclusivity while liberalising the mobile sector, fixed line penetration declined and call charges increased. In virtually all countries surveyed, any increase in the penetration of telephony was achieved through mobile. This was achieved despite high mobile call charges. In fact, communication costs in Africa represent up to 10% of income, compared to the developed world average of between 2-3%. The high call charges reflect the weak regulatory regimes in place in many countries. The theme of weak regulatory bodies is repeated in areas such as international connectivity and interconnection, where

INTRODUCTION

INTRODUCTION

high prices have prevented increased penetration. The conclusion of the report was that delivering on the promise of increased telephone penetration at affordable prices can only be achieved through enlightened policies, a vital ingredient that has been missing from the African continent. The success of policies can only be determined by measuring their affect amongst their intended target audience – specifically, users and consumers of communications services. This requires further research, data and analysis.

The Fair Access to ICT Report was premised on the assumption that the regulatory environment has the potential to add costs all along the supply curve of Internet services, thereby influencing the services demanded by consumers and users and consequently having a deleterious impact on Internet penetration. What FAIR established was that the number of factors that impact on the relationship between the regulatory environment and the cost of services (and therefore Internet penetration) was substantially greater than initially anticipated. In fact, the relationship between the regulatory environment and cost of services is not linear, but is rather intermediated by several diverse factors. FAIR began the process of delineating these factors and their relationship to both the regulatory environment and cost of services.

Since the report was attempting to measure the penetration of the Internet, one of the most important indicators is the level of disposable income that individuals are prepared to commit to communications. As technologies converge, so communications must be viewed as a basket of services and the portion of disposable income that individuals will commit to this basket becomes an important indicator. What FAIR established was that the supply side of the equation (namely Internet costs) is too limited to provide a useful

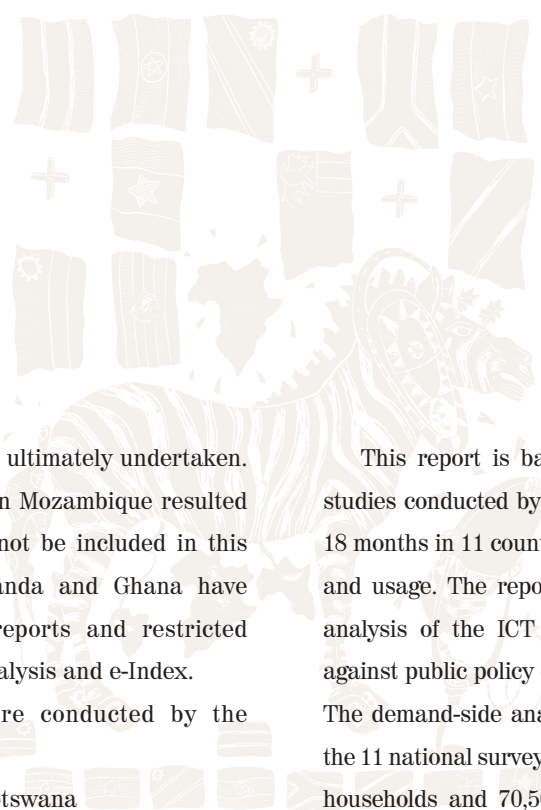
understanding of ICT development. This is particularly true on the African continent, where the informal sector is pervasive and yet seldom reflected in formal statistics and data.

Both studies developed new indicators and methodologies to explain the relations between policy and regulatory frameworks and the development of information societies and network economies in developing country contexts. Both studies also revealed the difficulties of trying to quantify and measure ICT penetration meaningfully in a developing country context and to draw correlations with pricing and regulatory practices.

CHARTING THE SUPPLY AND DEMAND SIDE OF THE ICT SECTOR. The studies nevertheless began to explore relatively uncharted territory in terms of developing assessment and analytical tools to understand what was – and what was not – working with regard to creating conditions for improved ICT access and usage in developing countries. Both studies examined the policy, strategies and practices of governments, regulators and operators against ICT practices and usage. What the E-access & Usage Index seeks to do is measure what is happening in the ICT sector from the lens of users, consumers and those marginalised from services, and to analyse access, demand and usage patterns in response to services delivered as a result of operators' responses to policy and regulatory frameworks.

In other words, the supply side of the equation must be allied with an adequate understanding of the demand side. In particular, what factors impact on users and consumers of ICT technologies? How do consumers access communications technologies? How much are users and consumers prepared to allocate to a basket of communications technologies?

RIA NETWORK MEMBERS. Organisations from 14 countries initially agreed to participate, but the studies



for Nigeria and Kenya were not ultimately undertaken. Problems with data gathering in Mozambique resulted in delays that meant it could not be included in this index. Data problems in Rwanda and Ghana have resulted in limited country reports and restricted inclusion in the comparative analysis and e-Index.

The national surveys were conducted by the following countries:

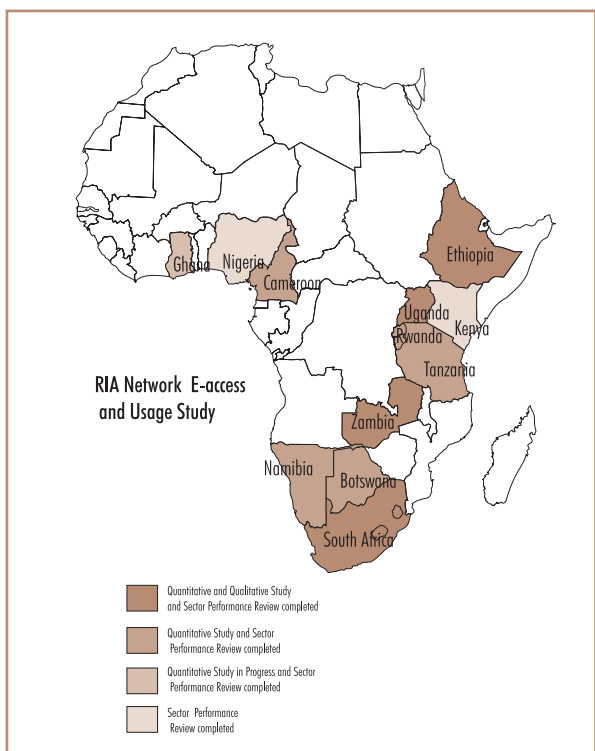
- University of Botswana – Botswana
- University of Yaoundé II – Cameroon
- University of Addis Ababa – Ethiopia
- Science and Technology Policy Research Institute – Ghana
- Namibia Economic Policy Research Unit – Namibia
- National University of Rwanda – Rwanda
- University of Witwatersrand – South Africa
- University of Dar es Salaam – Tanzania
- Makerere University – Uganda
- University of Zambia – Zambia

This report is based upon a triangulation of three studies conducted by Research ICT Africa! over the last 18 months in 11 countries to build an index of ICT access and usage. The report is initiated with the supply-side analysis of the ICT sector, assessing its performance against public policy objectives in all countries surveyed. The demand-side analysis follows and is based on both the 11 national surveys that were conducted across 14,635 households and 70,504 individuals, and incorporates a qualitative survey of over 42 focus groups undertaken in five of the countries (adding on an additional 270 individuals to those originally surveyed as part of the quantitative analysis).

METHODOLOGY¹. The research was based on a triangulation of three methodological approaches, which included a background desktop study, a quantitative survey and qualitative survey, conducted over a 24-month period.

The desktop research, which resulted in the Sector Performance Review, entailed the compilation and analyses of all ICT sector published data. This included the main operators (telecoms, VANS, ISPs, cyber cafés, etc.), regulators and ITU data. This information was collected from published annual reports, data and indicator bases, national census and annual household surveys, published government documentation, the media and various relevant consultant reports. The Sector Performance Review enabled a supply-side analysis of the ICT sector of nine countries, detailing their telecoms markets – fixed and mobile, VANS, Internet and broadband, collective access points such as cyber cafés, telecentres and multipurpose centres². However, no analysis of ICT could be based on supply-side factors alone, therefore research and analysis into the demand side was undertaken.

In an effort to understand ICT demand-side factors in each of the countries, it was necessary to collect a



Aki Stavrou

INTRODUCTION

INTRODUCTION

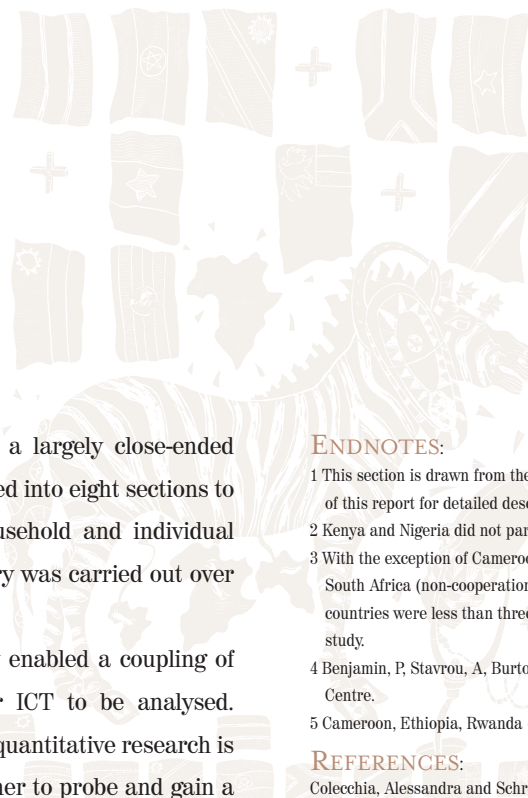
mix of hard empirical data using quantitative surveys correlated to information collected via interactive research methodologies, namely through the use of qualitative research.

A quantitative baseline access and usage survey was undertaken in 2004 and 2005 targeting different strata of ICT users – collectively within households, individual users of public telephones, individual owners and users of mobile telephony and Internet users. From the outset, it was imperative that the data collected be extrapolated to the entire country and, as such, probability sampling needed to be applied. The methodology applied has its origins in the World Health Organization's Expanded Programme on Immunisation (EPI), which was developed to be readily and easily used in developing countries and uses probability sampling, thereby ensuring that all individuals in the target population have a known chance of being selected and allowing the findings to be extrapolated to the entire population. This type of program research and monitoring capability, if provided through the conduct of periodic cluster surveys, is especially important in developing country settings, where administrative records are often incomplete. Such a methodology is particularly effective if there are different and often multiple measurement objectives within individual studies; for example, the measurement of E-Access & Usage Index usage patterns and trends, as well as evaluating the success of ICT service delivery programs.

In designing a probability sample, it was necessary to use as recent as possible census data from each of the countries to select a nationally representative sample, to draw a sample whose size was sufficient to achieve reliability requirements and create a logistics framework to enable a field implementation process that would be faithful to the sample design³. A second required feature of sample design, however, was that the

sample had to be segmented into three uniquely spatially defined strata: metropolitan and or capital city, other urban settlements and rural areas. This was deemed necessary because national records and prior research have shown there to be distinguishable differences in tele-ownership and e-usage patterns by such spatial characteristics⁴. The most obvious is the impact that the availability of infrastructure has on users, but cost, need and tele-dependence are different across the urban-rural divide, thereby influencing usage.

The sample itself was based on a three-stage, stratified, countrywide representative sample of households and individuals. Firstly, all enumerator areas (EAs) in the country were segmented into metropolitan, other urban and rural strata. Secondly, from within each of these strata, systematic random sampling was used to select between 30 and 75 EAs in each country wherein the research was undertaken. The total number of EAs selected in each country was determined by the degree of social diversity of the population. Once each EA was selected, a team was dispatched to map and produce a real-time record of all domestic and non-domestic dwellings from which the surveyed households were selected. The third stage of sampling required the systematic random selection of 30 households to be surveyed from within each EA. Within each household, one or more individuals were asked to complete either the entire interview schedule or specific modules within. The selection of these was not random, with the household head or their spouse asked to complete those sections of the interview schedule relating to household demographics and household fixed telephones. The ownership of a mobile or an Internet address and their availability during three visits dictated which of the other respondents were selected to answer the relevant modules.



The interview tool used was a largely close-ended questionnaire that was modularised into eight sections to solicit information both at a household and individual level. The research in each country was carried out over a six-week period in a year.

The findings from this survey enabled a coupling of the ICT supply and demand for ICT to be analysed. However, one of the limitations of quantitative research is that it does not allow the researcher to probe and gain a better understanding as to why certain processes occur; namely, the reasons (and dynamics) influencing decision-making for those issues that impact on adoption and changes of ICT and how usage patterns of different ICTs develop and then change over time. In addition, the quantitative survey produced certain findings that were difficult to interpret, and so it was decided to test the findings of the quantitative survey against a representative mix of various generic sub-samples of the population – youth, students, professionals, women, unemployed/ employed and foreigners – using qualitative techniques. This was undertaken via the administration of 50 focus groups administered in a sample of five of the countries to ensure a requisite spatial spread of metropolitan, urban and rural areas, which kept as close as possible to the EAs selected for the quantitative survey⁵. Once a list of possible candidates was chosen a sample, of 10 to 12 were selected. On average, between eight and 10 participants attended the 50 focus groups (a further eight focus groups are being completed in Zambia). The research was undertaken during a two-month period in mid-2005 and the findings incorporated into the previous demand side analysis.

The index based upon the findings of the three studies provides an analysis of the state of communications access in the country and a comparative analysis of the widely diverse countries, representative of Sub-Saharan Africa, which participated in the study. □

ENDNOTES:

- 1 This section is drawn from the methodology report by Aki Stavrou (see Appendix 1 of this report for detailed description).
- 2 Kenya and Nigeria did not participate in the national household surveys.
- 3 With the exception of Cameroon (20-year-old and in manual format only) and South Africa (non-cooperation because of poor data), the census' in all the other countries were less than three years old and thus still relevant to the needs of the study.
- 4 Benjamin, P, Stavrou, A, Burton, P, and McCarthy, C (2000), *Telecentre 2000*, Link Centre.
- 5 Cameroon, Ethiopia, Rwanda (pilot), South Africa, Uganda and Zambia.

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