IMPROVING COMPETITIVENESS AND INCREASING ECONOMIC GROWTH IN TANZANIA

The Role of Information and Communication Technologies
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Executive Summary

Introduction

Driving along the stretch of road that connects the city of Arusha to the coffee growers and association offices in Moshi, Tanzania's contrasts are visibly striking. Looking out at the lush lowlands against the backdrop of the magnificent Kilimanjaro region, the magnificent of the country's ecological resources is overwhelming. This vast area is home to a wealth of mineral resources, including newly exploited gold deposits and precious stones such as the rare Tanzanite gem. The region's fertile soil produces a rich Arabica coffee sold in specialty stores in the US and Europe. But a closer look reveals a dilapidated and poorly maintained infrastructure. Farmers in the field use manual hoes or livestock to tend to their crops. It is a stark contrast, one that captures the country's unrealized potential.

Tanzania faces enormous challenges in reaching this potential, even relative to its African neighbors. GDP per capita in 2004 was just US$322, 28% lower than the average for low income countries. Already one of the poorest countries in the world, Tanzania experienced negligible growth over the last decade. GDP per capita compound annual growth from 1990 to 2003 was just 1.0%. Dramatic export growth in mining and minerals, driven by market forces outside Tanzania's control, masks disappointing results in the agricultural sector, which contributes much higher proportions of GDP and is responsible for the livelihood of more than 80% of the population. Significant economic growth is necessary to improve the wealth of the average Tanzanian, and yet this goal remains elusive.

The aim of this study is to define the appropriate role of Information and Communications Technologies (ICT) in elevating the growth and competitiveness of Tanzania, and to identify actions that will facilitate this role. Used effectively, ICT can be a powerful economic tool, helping firms and industries reach new markets, reduce communication and coordination costs, increase transparency—and among other benefits. But this tool will only be useful to firms and industries committed to pursuing innovative, competitive strategies. In order for ICT to contribute to the economy's expansion, this study's fundamental premise is that Tanzania's leaders must also commit to building a stronger foundation for economic competitiveness.

The study begins by dissecting Tanzania's current economic situation and exploring the barriers to growth and competitiveness, followed by a broader discussion of growth and competitiveness as models for revealing a nation's unique development path. Applying this model to Tanzania, it focuses on a direction for the country, and finally, how this direction can inform future action. A perspective on the most urgent choices facing Tanzania today is captured in a recommendations section at the end of the study.

Tanzanian Growth and Competitiveness

To ensure that future generations enjoy greater opportunities and increased prosperity, Tanzania must transform the way it competes. Tanzania's historic model has been to compete on its abundant basic natural resources or factor inputs and cheap labor. This pattern is both clear and understandable. Its agricultural sector has benefited from favorable climatic conditions and rich soil. Its tourist industry has capitalized on such natural endowments as the Serengeti and Mount Kilimanjaro. Its mining sector has extracted precious minerals and gemstones, exporting large amounts of Tanzania's natural wealth in its raw form, without capturing much of the value.

Countries following such a model are competing on comparative advantage. Comparative advantage in the age of globalization and innovation is no longer an effective platform for increasing prosperity. In today's global economy, these types of resources are more plentiful or less important than in the past, reducing their value and undermining the wealth of societies built on comparative advantage economies. It is clear that this model is no longer working for Tanzania. Despite favorable conditions, most of the population is engaged in subsistence farming on small plots, and the country's few cash crops such as coffee and cashews have lost significant value.

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over the last decade. As commodity prices have fallen, most producers have been caught in a cycle of declining quality and quantity. Exports in cashews have fallen by 50% CAGR in the last five years, and coffee exports fell by 8% over the same period. Tanzanian tourism offerings have also been commoditized, easily replaced by regional competition. Visitor arrival numbers and spend-per-day are falling, even as these indicators improve in the rest of the region. Similar commodity dynamics in the mining industry, where most of the value is accrued outside the country, confirm this trend: competing exclusively on comparative advantage will ensure the poverty of the average Tanzanian.

The most successful countries in today’s global economy invest in developing competitive advantage, in creating wealth by exporting complex products and services created by highly skilled people. A nation’s ability to build and sustain these advantage—a nation’s competitiveness—is a key driver of growth and prosperity. In order to create and distribute new wealth, Tanzania must build sectors and firms that can innovate in response to market demand, and begin the transition from a subsistence economy to an export economy. The country must focus on creating an environment in which the number of competitive firms, both export-oriented and domestic, can expand quickly.

This is not a simple task in an economy such as Tanzania, where exports are currently only 12% of GDP. For Tanzania to achieve accelerated rates of economic growth, two sets of objectives must be pursued simultaneously. The first is to develop the competitiveness of Tanzania’s key industries. The second is to develop support programs and initiatives that strengthen Tanzania’s SMEs and the Tanzanian private sector overall. This will create the kind of virtuous cycle the country needs to transform its economy, a path followed by many formerly developing economies: key industries ‘pull’ the rest of the economy, while business development services and an improved enabling environment ‘push’ the capacity of the private sector to respond to new opportunities.

In targeting key sector initiatives, Tanzania’s public and private sector leaders must choose industries that have the resources and employment potential to help the country reach its national objectives. Ideally, the data and analysis in this report—which focuses on the coffee, cashews, minerals and tourism sectors—can be used as a foundation to formalize support for priority sectors and test hypotheses about how to upgrade these industries.

All four of these sectors show exciting growth potential. In agriculture, the economy’s largest sector, the government of Tanzania (GOT) has already recognized the need to move toward value added products and specialty markets, but lacks informed national strategies for the major agricultural subsectors. Specialty coffee exports by the growers’ associations, KILICAFE, have proven that coffee can be upgraded to reap premium prices.6 The opportunity is similar in cashews, where currently only 10% of Tanzania’s production is processed in country. Investing in vertically integrating this industry would create over 30,000 direct jobs, and increase the average price per ton from a current US$580 to US$2,934 for processed nuts.7

The mining sector is another potential economic bright spot. Production grew at an astounding compound annual growth rate of 56.1% from 1999 to 2003, even though margins are small due to the concentration of raw minerals. Impending regulatory changes forcing forward integration into lapidary and jewelry may have positive effects, but only if the industry is sufficiently prepared for these changes.

Finally, tourism is a key industry with unrealized value to contribute to the Tanzanian economy. Tanzania has a strong consumer brand and average length of stay has grown from 7.7 days in 2003, due to the stabilization of Zanzibar.8 If Tanzania continues to invest in upgrading its competitiveness in tourism, the industry’s multiplier effects could touch every citizen in the country. But this process will require a shift in strategy to compete in today’s global tourism game—to create the kinds of complex, unique experiences for which international visitors are willing to pay a premium from a supplier who can consistently provide a very high quality coffee.

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tourists will pay a premium. It will depend on deeper
knowledge of customer preferences, an increasing
ability to create customized offerings, and a greater
investment in operational efficiency.

Information, Communications
and Competitiveness

As Tanzanian firms begin improving their strategies
and operations, ICT play a vital role. Technology
cannot offer a miracle cure for dormant industries
and businesses, but without the ability to consume
information and communicate—both internally and
externally—Tanzania cannot continue to
strengthen its position in the global economy. In
other words, in a competitiveness model of growth,
investments in ICT must be guided by strategy. A
major part of this study, therefore, is devoted to
exploring how Tanzania can develop more competi-
tive industries and firms, followed by the specific
role that ICT can play in that transition.

The value of ICT grows as firms adopt more competi-
tive strategies and vertically integrate into value-added
offerings. As a result, ICT needs can vary significantly
across firms and industries, often driven by an organi-
ization’s place in the value chain. While coffee growers
might benefit from mobile communications to make
price comparisons, for example, exporters will need
e-commerce capabilities to transact with sophisticated
buyers abroad. The early adopters in Tanzania and
the experience of successfully developing economies show
a path where ICT—broadly defined—can become a
ubiquitous economic tool, customized to the needs
and sophistication of a particular user.

Many SMEs, however, remain unconvinced of the
value of ICT. Only 28.2% of SMEs in one survey
used a computer-based medium such as email, and
76% of SMEs make no annual investment in ICT.7
This is a rational trend. The benefits of SME usage
of ICT have been ambiguous, at best. But as tacti-
cal support helps these firms to upgrade their oper-
ations and strategies, this dynamic will shift. Below
are recent examples of this trend in Tanzania, as
well as some promising opportunities:

Improving Logistics: The growth of “traceability” sys-
tems in agribusiness and mining reflect a response
to consumer demand for knowing the source and
treatment of food products, coffee and gems.

Connecting with Customers: Website marketing
of specialty coffee producers is helping to build
strong relationships with importers and roasters by
showing the coffee’s origins and its benefit to
local communities.

Increasing Efficiency: Tourism companies would
benefit greatly from using ICT to network with
financial institutions and allow for credit card
transactions, a major input into tourists’ choice of
hotels, tour operators and other major purchases.

Creating Differentiation: In the gemstone indus-
ytry, investments in computer-aided manufactur-
ing (CAD CAM) products are being explored,
which could be leveraged to create unique, dis-
tinctly Tanzanian designs, enhancing differentia-
tion and increasing the value of jewelry exports.

These illustrations of the potential value of ICT in
improving the competitiveness of Tanzanian firms
capture only one part of the equation, the role of
firm-level strategy and operations. These upgrades
cannot happen, however, without an effective
enabling environment—one that makes ICT relevant,
reliable and affordable. The GOT and multilateral
donor organizations must partner with the private
sector to create an environment where innovative
Tanzanian businesses can use ICT as a tool for
building competitiveness and capturing market
opportunities. The following is an overview of the
report’s recommendations for building this type of
environment.

RECOMMENDATIONS

1. Strengthen SMEs through Incubation
and Business Development Services
(BDS)

One approach to jumpstarting the capacity and
competitiveness of SMEs is to create additional
support mechanisms such as BDS and incubation
services. These services can help SMEs target better,
often niche markets, improve productivity, and
serve more sophisticated customers. By providing
hands-on technical assistance, service providers can

7 Kijo-Ringo, Hutahayi Dato., “Impact of Investment in and Utilization of Information and Communication Technologies on Market E xtension: Overview of
Small and Medium Enterprises in Tanzania”, University of Dar es Salaam, November 2004
help firms work through the complex process of understanding markets, planning for multiple sce-
narios, and capturing their firms' potential worth in the specific structure and language of a business plan that can be used to facilitate financing.

One challenge for Tanzania is that access to BDS offerings has been concentrated in Dar es Salaam, provided in an uncoordinated manner, and focused on either very basic micro-enterprises or large companies. The development of a national BDS network that serves as a one-stop-shop for the SME sector would help to address some of these gaps. A special focus on agribusinesses and rural areas could have a significant impact on the productivity of the largest and poorest sectors of the population.

A greater investment in business incubators would also help entrepreneurs to survive the risky start-up phase by providing a range of services, from hands-on management/technical assistance and access to finance, to support services and infrastructure such as office space and communication facilities. These incubators would also serve as powerful, high-profile mechanisms for supporting technology-based firms and nurturing innovation and entrepreneurship, both urgently needed in Tanzania.

2. Increase the Efficiency and Responsiveness of the Public Sector

Creating a more efficient, more responsive public sector is an important aspect of building an enabling environment. While the onus of the responsibility falls on the private sector to make their businesses more successful, governments and their donor partners can help limit or eliminate barriers to the effective use of ICT (such as high telecomm prices and import tariffs on ICT goods), and can use ICT themselves to facilitate transactions (e-procurement, customs and ports' logistic, etc).

ICT coordination within the government needs to be reinforced to exploit potential synergies and make ICT policy more focused and relevant to the rest of the economy. As a tool for strengthening the economy as a whole, ICT should be represented across ministries. Moving ICT policy from the Ministry of Communications and Transport to a

cross-cutting competence across ministries would allow the government to be more responsive to the needs of different sectors.

The recommendations also stress the need for forums that foster public-private dialogue and give the private sector a seat at the table in policy making. Issues like e-commerce and facilitating credit card transactions rank high among the Tanzanian private sector's priorities. These needs illustrate a fundamental truth about successful economies: a strong competitive environment for the private sector rests on an informed and responsive public sector.

There are some relatively quick potential wins. By sharing best practices in the region and abroad, Tanzania's government could increase the speed of its transition from paper to electronic systems and centralize back office systems. The effective provi-
cion of citizen services will become increasingly dependent on the government's ability to digitize its processes.

3. Create an ICT Alliance

The ICT sector itself is nascent, but it will grow as domestic firms pursuing competitive strategies generate local demand for ICT solutions. This will shift the focus of the sector away from large government or donor contracts and towards providing cus-
tomized solutions to innovative Tanzanian firms. One way to encourage this transition is to create an "ICT Alliance" between ICT service providers and buyers in order to communicate more effectively and promote 'solution-based selling', where providers understand their customers' problems at an intimate level. These working groups allow ICT providers (hardware, software and training), as well as govern-
ment as the regulator, to engage ICT stakeholders in a structured manner. As part of the Alliance Partnership, private sector advocacy and awareness can also be elevated by funding workshops in which SMEs explore ICT solutions.

Like any sector poised for growth, the ICT sector will require investment capital. This can be a major stumbling block for local firms as they can be viewed by financial institutions as riskier invest-
ments than more established industries. The forums

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created by the Alliance, could also help to bring ICT firms, donors, government and financial institu-
tions together to discuss the unique challenges that ICT firms face. Incubation of SMEs in the ICT sector will help with the specific training needs of this group such as basic writing skills in English, customer service skills and training of trainers.

4. Build the Technical Platform for Growth
A critical part of developing Tanzania’s global competitiveness will be building the actual platform for that growth. The limited use of ICT among Tanzanians today reveals the enormity of this barrier. Less than 2% of the population has access to mobile telephony, measured by handset ownership, and fixed lines are used by a dismal 1%. The country’s computing story is similar. Tanzania has one of the lowest usage rates in the region in terms of Internet hosts and computers. Internet density is particularly low at 0.23 users per 100 inhabitants. The broadening of access to ICT can be accomplished by improving international connectivity, building out the national backbone infrastructure and addressing the digital divide between urban and rural areas.

The high cost of connectivity is due primarily to the use of satellite rather than cable to connect internationally. There are massive projects underway to connect more of the country with fiber-optic cable, both through the mainland and to the international underwater backbone. These projects will make domestic connectivity more affordable and reliable. Ensuring the success of these initiatives and limiting duplication of efforts should be a priority. The Tanzania Communications Regulatory Authority (TCRA) will play a critical role in oper-
tating these networks, and this institution must also be able to enforce a fair playing field for telecom and data services providers so that new entrants can generate lower prices for consumers.

5. Invest in Human Capital
While access to appropriate technology and connectivity are key elements of the growth equation, the capacity of individual entrepreneurs and citizens to benefit from these tools is also critical. Tanzania’s current education levels prevent them from engaging in more complex transactions. Less than 1% of the population attends tertiary education, mostly due to the low returns from such investment. The government needs to address this reality, and begin to incorporate ICT into its education objectives. Secondary schools present a good opportunity to introduce students to the value of ICT.

Improving ability in the private sector requires a different approach, and should be focused on enhancing training in applied ICT business skills. One mechanism would be to strengthen the con-
nection between academia and the private sector. However, the first step must be to conduct a needs assessment of the private sector, particularly SMEs, to understand the specific needs of Tanzania businesses that must inform the design of appropriate ICT training programs. These trainings could ultimately be implemented by academia, the private sector and/or members of the ICT Alliance.

6. Develop and Execute Competitive Strategies in Key Sectors
Tanzania’s biggest challenge to achieving sustained growth and competitiveness will be the dynamic, non-
linear process of upgrading its products and services. Given the reality of limited resources, minimal growth and significant barriers to global competitiveness, Tanzania must be prepared not only to create a platform for all businesses, but also to focus additional resources on those key sectors of the economy that will create the largest short-term gains in productivity and employment. Focusing in a structured way on the most promising sectors will increase Tanzania’s chances of gaining the expertise and income to rein-
vest in growing the rest of the economy.

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CONCLUSION
The ultimate transformation of Tanzania’s economy will require more than strategic vision and resources. It will also require leadership. Building firm-level competitiveness across sectors is a formidable task.

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linear process of upgrading its products and services. Given the reality of limited resources, minimal growth and significant barriers to global competitiveness, Tanzania must be prepared not only to create a platform for all businesses, but also to focus additional resources on those key sectors of the economy that will create the largest short-term gains in productivity and employment. Focusing in a structured way on the most promising sectors will increase Tanzania’s chances of gaining the expertise and income to rein-
vest in growing the rest of the economy.

The high cost of connectivity is due primarily to the use of satellite rather than cable to connect internationally. There are massive projects underway to connect more of the country with fiber-optic cable, both through the mainland and to the international underwater backbone. These projects will make domestic connectivity more affordable and reliable. Ensuring the success of these initiatives and limiting duplication of efforts should be a priority. The Tanzania Communications Regulatory Authority (TCRA) will play a critical role in oper-
tating these networks, and this institution must also be able to enforce a fair playing field for telecom and data services providers so that new entrants can generate lower prices for consumers.

CONCLUSION
The ultimate transformation of Tanzania’s economy will require more than strategic vision and resources. It will also require leadership. Building firm-level competitiveness across sectors is a formidable task.
even in a stable macroeconomic environment, which Tanzania has succeeded in fostering. Among other critical tasks, public and private sector leaders will need to work together to develop complex national sector strategies that can guide the micro-level strategies of hundreds of firms. It will require cultivating the less tangible, but no less critical resources for managing successful change processes, including creativity, energy and courage. With these ingredients in place, the magnificence of the road from Arusha to Moshi will become the only striking feature of the journey. Its current contrasts, symbols of unrealized prosperity, will be a distant memory for Tanzanians.
The challenges to economic growth in Tanzania are as vast as the country itself, which encompasses 945,000 sq. km. Like many lower-income African countries, Tanzania is grappling with low levels of education, poor infrastructure, limited healthcare, and economic reliance on commodity-based natural resources. On Artadi & Martin’s “Global Competitiveness Index,” which classifies countries into three stages based on means of production and ability to attract foreign direct investment, Tanzania scores on the low end of Stage 1 countries with a score of 3.12. To benchmark this number, Angola ranks the lowest at 2.55 while the U.S. ranks the highest at 5.21. Tanzania’s score is well below Sub-Saharan African countries that will be used for comparison throughout the study, including South Africa (4.08), Mauritius (3.86), Uganda (3.50), Kenya (3.37) and Zambia (3.25). By both regional and global standards, the snapshot of Tanzanian development is stark.

In addition to some of the more common challenges, Tanzania is facing a complex transition from a socialist to democratic forms of governance. Political stability in Zanzibar has been elusive, leading to lower investor confidence. The historically strong role of government in economic planning has led to a low level of private sector sophistication, as a well as a lack of public and private sector cooperation in achieving economic development goals. The shift to a market-based economy will require the private sector to become the engine of growth, and this will be a shift that will take time and effort in Tanzania.

The impact of these issues is clear in the recent performance of the economy. Tanzania’s relative economic performance is lagging by both global and regional standards, with GDP per capita standing at US$ 332 in 2004.12 But there is reason for cautious optimism. The country’s macro indicators show a positive trend, and growth has been steady over the past five years. GDP, climbed from US$ 9.1 billion in 1999 to US$ 11.1 billion in 2003. Tanzania also experienced growth in the total value of its exports, from US$ 663.3 million in 2000 to US$ 1,255.1 million in 2004, while inflation dropped during this same period from 5.9% to 5.0%. Stripping out the dramatic growth in mineral exports total exports, however, reveals a compound annual growth rate of exports from 2001 to 2003 of just 4.6%.13 At the same time, the country experienced growth in its foreign reserves, from US$ 974.2 million to US$ 2,080 million.14

These positive economic indicators coupled with recent political stability create an opportunity for Tanzania to embrace change, beginning its transformation from a nation focused primarily on subsistence farming and commodity exporting into one that produces complex products and services that command premiums on world markets. With the revenues that these activities generate, prosperity then comes into focus as a realistic goal. If these resources are invested in education, healthcare, financial and physical infrastructure, then future generations of Tanzanians will have access to increased purchasing power and a higher standard of living.

In mapping Tanzania’s transition to a more complex and prosperous economy, analysis of GDP and export data can offer useful insight into the country’s path. GDP growth rates do not suggest an optimistic outlook, given the low starting base of Tanzania’s per capita income. Tanzania has experienced modest GDP growth from 1999 to 2003 with year-on-year growth staying above 3.6% and peaking at 6.2% from 2001 to 2002.15 Over the same time period, the population increased from 32.9 million to 35.9 million.16 GDP growth did not show a positive trend, and growth has been steady over the past five years. GDP, climbed from US$ 9.1 billion in 1999 to US$ 11.1 billion in 2003. Tanzania also experienced growth in the total value of its exports, from US$ 663.3 million in 2000 to US$ 1,255.1 million in 2004, while inflation dropped during this same period from 5.9% to 5.0%. Stripping out the dramatic growth in mineral exports total exports, however, reveals a compound annual growth rate of exports from 2001 to 2003 of just 4.6%.13 At the same time, the country experienced growth in its foreign reserves, from US$ 974.2 million to US$ 2,080 million.14

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2.3 Sector Economic Performance and Trade Statistics

A key component of building the competitiveness of developing economies—in which, by definition, needs are significant and resources limited—is the not keep pace, therefore, generating a GDP per Capita compound annual growth rate of just 3.3%, from US$ 262.40 in 1999 to US$ 308.70 in 2003.17 Although this growth seems positive, a longer view reveals that GDP per capita growth has been muted with a compound annual growth rate of 1.0% from 1998 to 2003.

Compared to the other African countries reviewed in this report, Tanzania’s 2003 GDP per capita is the second lowest, see Figure 1, with Mauritius the highest at US$ 4,161 in 2003. Encouragingly, Tanzania’s CAGR from 1999 to 2003 is the highest.

The three primary components of GDP on the mainland are Agriculture, Forestry & Fishing; Trade & Tourism; and, Financial & Business Services, as depicted in Figure 2. Agriculture, Forestry & Fishing has remained stable at around 45% from 1999 to 2003, while Trade & Tourism has gradually declined from 12.6% to 11.8%, and Financial & Business Services has steadily increased from 13.7% to 14.3% over the same time period. Manufacturing, a GOT priority, consistently dropped from 7.5% in 2000 to 7.2% in 2003. Mining’s share of GDP, in spite of its ascendency in exports, is still low, growing from 1.4% in 1999 to 1.9% in 2003. Some estimates show mining eventually growing to 10% of GDP.18 Although this contribution is small, mining remains a leader in exports, with gold accounting for US$ 442 million in 2002.19

As expected, Zanzibar relies less on agriculture as a driver of GDP than does the mainland, reference Figure 3. Instead, Wholesale & Retail Trade, Restaurants and Hotels hold the largest percentage of GDP at 32.7% in 2002, although this number has consistently declined since a peak of 40.1% in 1999. This decline mirrors revenue deterioration in the mainland’s tourism sector, and will be explored further in the section on Tourism.

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FIGURE 2. GDP by sector (Mainland)

source: Planning Commission, Economic Survey 2003

FIGURE 3. GDP by sector (Zanzibar)

source: Planning Commission, Economic Survey 2003
To illustrate trade patterns and export flows, trade charts are calculated for Tanzania over the 1992–2002 period (see the Appendices for complete trade chart). These trade flows are presented in a chart separated by 3 broad cluster bands that reflect consumption patterns in the economy. As illustrated in Figure 4, the first broad cluster band is depicted in the top row and shows upstream-sectors characterized by industries whose primary products are inputs into products in other industries. Most of these industries are resource-based, with the exception of semiconductors/computers, and competition is mostly based on costs (i.e. gold, timber, oil, memory chips).

Across the middle row are broad end-use sectors involving industrial or supporting functions. These clusters are centers of complex operations and conduits of innovation and upgrading, characterized by competition on differentiation as much as costs (i.e. power generators, motor vehicles, and scientific instruments). Finally, the bottom row contains end-use sectors mostly associated with final consumption goods and services. In these sectors, competition is mostly driven by product differentiation (i.e. breakfast cereals, cloth, furniture).

The link between these three horizontal bands and productivity upgrading is relatively straightforward. Economies generally begin the upgrading process from initial positions at the top (upstream industries, usually extractive natural resource-intensive industries) or the bottom (final consumption goods and services) bands of the trade chart. Resource-rich countries typically begin with upstream industries, and gradually develop competitive industries in the mid-band (industrial and supporting goods) or the services sector by investing the rents extracted from their resource exports into developing human and ability to prioritize investment in industries based on their relative potential to be globally competitive. To that end, this section builds on GDP statistics and analyzes Tanzania’s trade patterns in relation to comparative and competitive advantage models of competition. The analysis of trade statistics is explained and, finally, the data for Tanzania is presented.

This analysis is built on the idea that increasing Tanzania’s competitiveness is linked directly to the ability of Tanzanian firms to increase exports. By exporting, Tanzanian firms will expand their markets beyond their own economy, increasing foreign exchange earnings and driving a net increase in the population’s purchasing power and standard of living.

2.3.1 Methodology and Theory
To illustrate trade patterns and export flows, trade charts are calculated for Tanzania over the 1992–2002 period (see the Appendices for complete trade chart). These trade flows are presented in a chart separated by 3 broad cluster bands that reflect consumption patterns in the economy. As illustrated in Figure 4, the first broad cluster band is depicted in the top row and shows upstream-sectors characterized by industries whose primary products are inputs into products in other industries. Most of these industries are resource-based, with the exception of semiconductors/computers, and competition is mostly based on costs (i.e. gold, timber, oil, memory chips).

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knowledge capital that allows them to make this transition. This process of transformation allows countries to leverage the foundations of a complex industrial core or a thriving services sector that relies on skilled human capital. 22

Resource-poor nations, in contrast, typically start exporting labor-intensive final consumption goods derived from basic agricultural products or simple manufacturing. As these products are commoditized and price competition becomes fierce, countries should start focusing on a number of niche markets and, in parallel, invest in human and knowledge capital to develop a competitive service sector. Tanzania’s current situation, where the small level of exports is divided among minerals and final consumption goods and where no cluster now exist in the middle band, helps to create the need for a clear national growth and competitiveness strategy.

2.3 Broad Economic Performance and Trade Statistics

A deeper analysis of trade statistics allows us to delineate the broad economic and export patterns that emerge across Tanzania’s existing manufacturing clusters. The analysis also provides insights into the evolution of an economy towards higher levels of productivity and value-added products. As a starting point, Tanzania has a trade balance of US$44.9 million.21 Its export receipts are very small relative to the overall economy, equaling just 12.7% of GDP.12

There are two broad export patterns emerging in Tanzania. See Figure 5. Both of these patterns are alarming and underscore the urgency for Tanzania to evolve its economy.

Increasing reliance on extractive, upstream industries. Tanzania increasingly exports resources almost directly from the ground with very limited processing or value added. The increase in this band is due to mining exports which have increased dramatically over recent years due to a liberalization of policy by the GOT. Foreign investment has poured into the country as firms capitalize on Tanzania’s rich mineral deposits, especially gold. The government had benefited from increased tax revenue, but much of the value of these minerals is being captured by foreign companies who own the mines and process the minerals outside of Tanzania.

High export concentration in commodity products. Tanzania’s export base consists primarily of traditional crops that add very limited processing and value to their products (i.e. coffee, tea, cotton, cashews, fishing and tobacco); though trending down relatively due to the increase in extraction upstream industries. Sectors located in this band provide a starting point for earning foreign exchange. However, Tanzania’s current model of competition hinges on comparative advantages. Exporting unprocessed crops, such as the high volume of cashews shipped to India for value addition, prevents Tanzania from capturing more than a small percentage of the cashew’s potential value. Through forward integration and investment in higher value products, Tanzanian firms can increase export revenue. This transition is beginning to happen in the coffee industry, where a shift towards premium coffee, branded products and a focus on serving more demanding, higher-paying customer segments rewards coffee farmers and processors with increased profits.

2.3.3 Regional Trade Statistics

Tanzania currently participates in two major regional trade schemes: the East African Community (EAC) and the Southern Africa Development Community (SADC). The EAC partnership was built in 2000 between Tanzania, Uganda and Kenya, with the intent of furthering regional integration. However, intra EAC trade is still low. Both Uganda and Kenya accounted for less than 9% of Tanzania’s exports in 2003, with Ugandan trade making up less than 1% of this total.23 Imports to Tanzania from its EAC partners accounted for less than 6% of total imports in the same year.

Likewise, trade with other African nations outside of the EAC has been meager. Trade with South Africa, Tanzania's most important trade partner in SADC, offers a revealing example. In 2003, Tanzania was exporting slightly more than 3% of total exports value to South Africa. Imports from South Africa comprised only 3.6% of total imports.

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FIGURE 5. Tanzania trade statistics by broad cluster

- **Materials/Metals**
  - 1998: 2%, 2001: 5%, 2003: 4%

- **Forest Products**
  - 1998: 1%, 2001: 0%, 2003: 1%

- **Petroleum/Chemicals**
  - 1998: 2%, 2001: 0%, 2003: 0%

- **Semiconductors/Computers**
  - 1998: 0%, 2001: 0%, 2003: 0%

- **Upstream Industries**

- **Multiple Business**
  - 1998: 0%, 2001: 0%, 2003: 0%

- **Transportation**
  - 1998: 1%, 2001: 0%, 2003: 0%

- **Power Generation and Distribution**
  - 1998: 0%, 2001: 0%, 2003: 0%

- **Office**
  - 1998: 0%, 2001: 0%, 2003: 0%

- **Telecommunications**
  - 1998: 0%, 2001: 0%, 2003: 0%

- **Defense**
  - 1998: 1%, 2001: 0%, 2003: 0%

- **Industrial and Supporting Functions**
  - 1998: 1%, 2001: 0%, 2003: 0%

- **Food/Beverages**
  - 1998: 1%, 2001: 0%, 2003: 0%

- **Housing/Household**
  - 1998: 57%, 2001: 3%, 2003: 0%

- **Textiles/Apparel**
  - 1998: 3%, 2001: 1%, 2003: 0%

- **Health Care**
  - 1998: 11%, 2001: 0%, 2003: 0%

- **Personal**
  - 1998: 0%, 2001: 0%, 2003: 0%

- **Entertainment/Leisure**
  - 1998: 0%, 2001: 0%, 2003: 0%

- **Final Consumption Goods and Services**
  - 1998: 0%, 2001: 0%, 2003: 0%
in its total exports to South Africa, while imports were close to 14%. Comparing these numbers to the magnitude of inter-regional trade with the EU and other non-African countries—exports to the EU amounted to 56.7% of total exports, while imports were 19.7% of total imports in 2003—it becomes clear that progress in this realm has been restrained.

Although intra-regional trade and integration are seen as potential drivers of growth for Tanzania, efforts to further this process continue to face obstacles. The first problem is the homogeneity of products, especially between EAC countries. Tanzania, Kenya and Uganda produce similar goods particularly primary agricultural goods, including coffee, tea, cotton and fish. This lack of product differentiation makes trade less attractive between neighbors, and is further evidence of the need to produce higher-quality products that are not only competitive within the region, but also on world markets. In pursuit of this goal, one approach

### Table 1: Tanzania: destination of exports and imports, 2000–2003 (% of total exports)

<table>
<thead>
<tr>
<th></th>
<th>Exports</th>
<th>Imports</th>
</tr>
</thead>
<tbody>
<tr>
<td>European Union</td>
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<td>56.1</td>
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<td>United Kingdom</td>
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<td>18.3</td>
</tr>
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<td>5.0</td>
</tr>
<tr>
<td>Netherlands</td>
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<td>6.7</td>
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<td>1.4</td>
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<tr>
<td>Italy</td>
<td>1.3</td>
<td>1.0</td>
</tr>
<tr>
<td>Other EU</td>
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<td>23.7</td>
</tr>
<tr>
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<td>2.0</td>
</tr>
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<td>India</td>
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<td>Zimbabwe</td>
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<td>0.1</td>
</tr>
<tr>
<td>Other</td>
<td>8.1</td>
<td>13.9</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: IMF Country Report 2004 (from Tanzanian Authorities)
would be a regional effort to increase competitiveness in world markets, which is more likely to succeed than promoting each country individually in the market.

Another factor that affects not only the extent of regional trade, but also trade in world markets is the existence of non-tariff barriers. Exporting and importing from Tanzania is hampered by, among other things: (i) health certificates for agricultural commodities; (ii) bureaucratic export procedures; (iii) time consuming customs clearance; and (iv) lack of transportation and logistical infrastructure.25 Although these are many of the challenges faced by other African nations in furthering their trade ties with world markets, the situation in Tanzania is slightly bleaker. Two recent World Bank reports on the country’s investment climate place Tanzania on the lower end of the scale in terms of ports and customs delays.26 For instance, while companies in Kenya (another EAC member) reported delays in imports and exports of 7 and 4 days respectively, in Tanzania, enterprises that engaged in foreign trade said delays were on average 14 days for imports and 7 days for exports.

The GDP and export data confirm the diagnosis: Tanzania must be prepared to take deliberate actions to change its economic course in order to achieve broad growth and increased competitiveness. The following section explores a way for Tanzania to begin this process. This section is focused on the theory of competitiveness, grounded in Tanzania’s specific experience. Its goal is to outline a development path that Tanzania can use as a template going forward. It will highlight the role of competitive firms, including SMEs, that are domestic, regionally and internationally focused, and will show how adopting this model can increase the prosperity of the average Tanzanian citizen.

26 Ibid
The transition from an economy that creates commodity, low value products to one which responds to market conditions and innovates to produce high value, complex goods and services is an intricate and dynamic process. However, if we were to imagine that in 50 years, Ph.D. candidates in economics at the University of Dar es Salaam will study the evolution of Tanzania from a Heavily Indebted Poor Country (HIPC) state to a prosperous and upper-middle income country, they will see three significant changes.

First, they will note the changing roles of the government and private sector, as the government moves from player to referee, and the private sector emerges from paternalism and plays the role of partner to the government in the success of the economy.

Second, historians will note that the building blocks of the economy—the tools that enable the country to prosper—become more complex. No longer will mineral deposits, cheap labor, or good roads define the economic opportunities of Tanzania. In the future, the quality of the legal system, the quality of skilled employees, and the technology that allows Tanzania to communicate with customers and suppliers around the world will drive prosperity.

Lastly, and driven by the first two changes, historians will see that the products that Tanzania creates have fundamentally changed. Whereas in the past Tanzania produced commodity products as cheaply as possible for sale to the highest bidders, in the future, products will embed unique knowledge about specific customer needs and preferences for which discerning buyers will pay a premium.

Figure 6, shows this potential transition. This path is not deterministic; in fact, most countries have not made such a transition and other paths have been followed. However, this is the path that most closely aligns with Tanzania’s current possibilities and future prospects. In this section, we introduce these concepts and highlight the primary areas on which Tanzania should focus to create the conditions for this complex change process.

First, they will note the changing roles of the government and private sector, as the government moves from player to referee, and the private sector emerges from paternalism and plays the role of partner to the government in the success of the economy.
3.1 PROSPERITY: GOVERNMENTS ENABLE IT; FIRMS CREATE IT

The experience of developed economies such as the United States, Canada and the nations of Western Europe maps to clear trends in the interactions of market dynamics and economic players over time. These patterns inform this model and offers one possible trajectory for development. Increasing globalization and the attendant shift towards a knowledge-based economy have made manufacturing-led growth, epitomized by the experience of Singapore and Asian “tiger” countries, reliant on an abundance of low-cost labor. A country that seeks to develop within these current dynamics must capitalize on its existing natural and comparative advantages, but must also use competitive strategy to innovate, create products of greater value, and remain flexible enough to respond to changes in the global marketplace. This model can serve as a guide for Tanzania, which possesses a wealth of resources, but which has failed to successfully use its endowments to develop its economy in a significant way.

In applying this model of economic development to Tanzania, the first area that must be addressed is economic leadership. The roles of economic players generally evolve and become more clearly delineated as the countries and economies develop. In an economy’s nascent stages, when limited capital is focused entirely on natural resources, infrastructure, and hard currency, the government often plays a commanding role in allocating limited resources to create a stable macroeconomic environment, including low rates of inflation, appropriate regulatory regimes, and transparent governance. The government’s current challenge is to ensure that a vibrant private sector develops over time, to which it can gradually hand over economic leadership.

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3.2 THE EVOLUTION FROM BASIC TO COMPLEX PRODUCTS

Developing countries that compete on comparative advantage, relying on basic factor advantages such as cheap labor and sub-soil assets, tend to export commodity products. Since competition in these exports is fierce and the products are largely undifferentiated, countries and firms typically compete on price: the lowest-cost producer becomes the market leader. This dynamic is the principal cause of the steady decline in real prices of most major commodities over the last 150 years, see Figure 7. In order to keep costs low, producers choose not to invest in human capital; in contrast, they often pay workers as little as they can. As a result, competition in basic products can increase poverty and lead countries into a downward spiral of wealth destruction. Sole reliance on comparative advantage is no longer a viable path to prosperity.

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As competitive industries emerge and the private sector becomes stronger and less fragmented, the government should begin handing off economic leadership to the private sector. At this point, the government’s role needs to shift from being a nurturing parent to being an impartial referee. Figure 6 highlights how the changing roles of leadership, along with the increasing investment in higher forms of capital, have the ability to create a more complex, secure and sustainable economy. Ideally, the government begins to craft policy and regulation that creates an enabling environment for business, offering tactical support without impairing competition. Without this transition of leadership to guide the growth of the economy, the forces of paternalism and protectionism can undermine the economy’s ability to move beyond simple exports to complex goods—goods that can sustain an economy without decapitalizing natural resources or exploiting low-cost labor.

This pattern shows up clearly in Tanzania’s development, which followed a socialist model from the mid-1960s to the mid-1990s. During this period the agricultural sector was dominated by collective, as in other socialist countries. The DOT has made some of the necessary steps over the past ten years to provide the private sector with a stable macroeconomic environment, including low rates of inflation, appropriate regulatory regimes, and transparent governance. The government’s current challenge is to ensure that a vibrant private sector develops over time, to which it can gradually hand over economic leadership.

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Tanzania’s trade statistics clearly place the economy on the low end of the “Ability of the Economy to Sustain Complex Relationships” axis, as Tanzania competes primarily on comparative advantage, traditionally relying on basic natural resources, abundant factor inputs and cheap labor. Figure 8 shows that Tanzania’s exports in agricultural products have stagnated, partly due to the relatively little value added to them. Mining is an anomaly, which has grown due to investments from foreign companies exporting unprocessed minerals.

Why have some countries succeeded at moving beyond their agricultural roots to produce complex goods and services, while others have stagnated in an agricultural export economy—or worse, slid into a subsistence farming economy? To put it in stark terms, countries have a choice between strategy and poverty. When firms and industry clusters have strategies, they can embed their products with unique insights about customer needs that will be rewarded by the market, thereby lifting them out of the commodity trap. Countries with strategies earn the choice to participate in the Virtuous Cycle described in Figure 9, taking the rents they capture from their natural resources and low-wage labor and investing those rents in building social capital.

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in the form of educational institutions and improved governance. Over time, these institutions can support a higher-skilled workforce that can produce more complex goods, allowing the country to migrate from exploitation to innovation.

The central economic goal of any nation is to attain a high and rising standard of living for all of its citizens. This goal is measured by increased per capita income and high-paying, satisfying jobs for a large proportion of those who can work. Consequently, the pursuit of the central economic goal is driven by productivity, which is based on the nation’s stock of the seven forms of capital: cultural, human, knowledge, institutional, financial, man-made, and natural endowments. Increasingly, growing economies rely heavily on forms of capital that can encourage innovation in human capital. Tanzania must invest in its knowledge base to sustain a more complex economy.

3.2.2 Competitiveness and Poverty Alleviation

In the past, because people were not the primary source of a nation’s wealth, societies had to make tradeoffs between economic growth and social equity, with government playing a large role in determining the distribution of wealth. Because highly productive and well-compensated people are at the center of the new model of wealth creation, competitive advantage societies can look forward to making economic growth and social equity complementary, with the private sector naturally working as the primary mechanism for allocating wealth and alleviating poverty.

The greatest benefit to the economy of Tanzania will come from home-based companies that understand this dynamic, particularly SMEs. A company’s home base is the place where strategy is determined, where essential skills reside, and where some piece of sophisticated production takes place. It is the place where the most productive jobs are typically based, and where the beneficial spillovers to other parts of the economy are the greatest.

With the emergence of competitive firms and industries, not only will demand for higher-skilled labor increase, generating an increase in wages, but there will also be more jobs and economic opportunity. Increasing employment levels is critical in Tanzania, with an unemployment rate of 12.9% in 2000/01, reflecting a recent doubling in the number of unemployed persons, from 405,722 in 1990/91 to 912,772 in 2000/01.27

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Increasing employment in the same sectors where Tanzania has been competing for the past few decades, however, will not be enough. The current economic composition of the country and its labor force allocation are major obstacles to creating the economic transformation that Tanzania needs. As depicted in Figure 10, more than 80% of the country’s labor force is employed in the agricultural sector, which accounts for 45% of total GDP. The manufacturing sector, in contrast, employs a bit more than 1% of the labor force, but generates more than 7% of GDP.

Two things emerge from this analysis: first, it highlights a highly inefficient agricultural sector based on subsistence farming that is in urgent need of change before people can participate in more productive employment. For this change process to begin, Tanzania must launch a serious campaign to engage SMEs in the agribusiness sector in a process of product upgrading. Current agricultural practices are more labor-based than capital-based in comparison to other sectors. Moving from subsistence to cash crops will require the adoption of new techniques and technologies that will improve yields. This shift would represent value accruing not only to the Tanzanian economy, but also to the majority of Tanzania’s labor force.

The second key finding from this analysis is that as the agribusiness sector moves up the value chain, Tanzania must begin looking to more productive sectors to spur innovation and create sustained growth. In doing so, support should be extended to the SMEs in these sectors that show early signs of success. These firms, in particular, will be in a position to create economic opportunities for a new, more highly skilled labor force.

### 3.3 Creating a Competitiveness Mindset

Broad economic change cannot happen in the absence of broad commitment. People, sectors, nations, and societies have relied on comparative advantage for centuries, if not longer. For many, the principles of competitiveness are at best foreign, and at worst, threatening to traditional business thinking and strategy. To complete the transformation to a truly competitive economy, individuals must learn to think competitively, understanding the principles that drive global competition and increasing their receptivity to innovation and change. But this is not an easy shift; in fact, creating a culture of competitiveness can be the most difficult part of the journey.

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This change process typically begins with entrepreneurs, firms, industries and government officials committing to the idea that competitiveness is a path to sustainable growth. As they test competitive
Improving Competitiveness and Increasing Economic Growth in Tanzania

strategies in their businesses and policies, gradually the evolutionary process begins for the country's economy. Making mental models explicit, which are the beliefs, customs and values of a society, is a helpful starting point for government leaders. Culture is such a significant component of economic development that without understanding the beliefs and values that inform the actions of economic players, change can be virtually impossible.

A communications campaign to engage economic actors on their ideas and assumptions can help to diffuse a better understanding of competitiveness. These campaigns often focus on celebrating entrepreneurs and innovators, disseminating principles of competitiveness along with concrete examples of successful businesses executing competitive strategies. These types of campaigns, supplemented with training forums on competitive strategy, with key players from the public and private sector can also prove helpful. As businesses and government embrace competitiveness, communicating the impact of successful, data-driven strategies helps to create an environment that is receptive to change.

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ICT and Building Competitiveness

4 ICT AND BUILDING COMPETITIVENESS

ICT has a critical role to play in the transition to a more developed economy. As an economy shifts from industries focused on exporting raw materials to more complex, value-added industries, demand for ICT products and services grows. ICT improves firms' ability to communicate with customers, facilitating upgrades in their competitive positioning. It can also help to improve logistics, increase transparency and make geographic distance irrelevant in transactions. ICT is an essential tool in the evolution of a developing economy, but its value is dependent on the growth of competitive firms and industries. The benefits of ICT usage for some of Tanzania’s key industries will be explored in Section 5, while this section will focus on the central platform issues necessary to realize those benefits.

4.1 ACCESS, ABILITY AND BENEFIT MODEL

The promise of ICT to improve competitiveness cannot be realized simply through a country’s adoption of tools and services. Achieving success requires the tactical usage of ICT to inform strategy and improve productivity. If funds are invested in ICT to drive adoption without demonstrable returns in productivity and efficiency, countries will fall further behind, and future investments in ICT will be harder to justify in light of a negative track-record. When seeking to invest ICT resources in a promising industry or firm opportunity, three inputs to success must be considered, illustrated further in Figure 11:

- **Access:** Does the recipient organization have the infrastructure to use the proposed ICT? Factors that affect access are availability of services such as electricity, telephone, cellular and satellite.

- **Ability:** Do the intended beneficiaries have the skill set and resources to leverage the technology? Willingness of the organization to pay for ICT services is an ability factor, as is the level of education and technology training of an organization’s employees. In Tanzania, ability is highly stratified. Primary schooling is on par with other Sub-Saharan African countries, but there is still a lag in secondary enrollment and skilled IT labor. Most of the decision makers at the top of organizations—both public and private—remain unconvinced that significant change is required to benefit from these technologies.

- **Benefit:** Does the project increase the competitiveness of the economic actors, even after accounting for project costs? Measuring the impact of ICT is not easy. In developed countries, ICT investment has been linked clearly to growth in Total Factor Productivity. In developing countries, ICT to drive adoption without demonstrable returns in productivity and efficiency, countries will fall further behind, and future investments in ICT will be harder to justify in light of a negative track-record. When seeking to invest ICT resources in a promising industry or firm opportunity, three inputs to success must be considered, illustrated further in Figure 11:

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this methodology is difficult to use because information is not readily available, and ICT use may be too limited to effectively track its influence. However, some indicators can be used to measure ICT’s impact on competitiveness, at both a firm and institutional level:

1. **Productivity Improvements**: Has the use of ICT increased efficiency and/or reduced costs? ICT can be a fundamental tool in improving productivity by facilitating logistical improvements through faster and more efficient communication along the value chain. It can also make distance irrelevant, particularly for digitized products and services. In a service economy, the ability to provide faster services in a more customized way is a norm of competition, and ICT acts as the platform. Improving transparency through the universal availability of information can also reduce the cost of doing business and strengthen institutions.

2. **Creating Differentiation**: Has the firm/institution used technology to enter new niche markets, innovate and differentiate its products or processes? Has ICT allowed it to provide a differentiated product to new and more profitable global clients? The ability to communicate with customers, faster and more frequently, allows companies to customize their offerings to achieve a competitive edge. ICT also makes information about global competitors and clients available, helping firms to understand their true competitive position and adapt to market forces.

Each of the three keys to ICT adoption and usage is necessary for ICT initiatives to succeed, and they must be considered simultaneously. This framework is most useful in highlighting the limits of looking at access and ability metrics in the absolute. Literacy rates or number of internet users are negligible inputs into policy prescription if they are not tied to the potential benefits.

These benefits can vary greatly—as illustrated by the five levels of usage model—depending on the industry, the position of the user in the value chain, the type of product and service offered, etc. Not every firm can use or benefit from the same level of ICT adoption. This is the fundamental difference between ICT in developing countries, and ICT in developed countries, where much of the basic technology is ubiquitous in both business and personal settings. In fact, the specific type of ICT usage varies not only based on a firm’s sophistication, but also on its role in the value chain. The optimal intervention for increased usage and penetration of ICT throughout an industry’s value chain can be characterized according to the Heeks & Danosomes’ model. See Figure 12.

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These five levels are not necessarily linear. A firm or industry’s ICT usage could “leap-frog” over intermediary levels depending on its needs and capabilities. For example, as connectivity improves through satellite
and backbone networking, a firm formerly in the “ICT Only Users” category could move directly into “Networked ICT Users”. Yet, every firm and every link in an industry’s value chain will have distinct ICT needs. These levels of usage can be helpful in considering current and potential ICT usage and penetration, and should be weighed simultaneously with issues of access, capacity and potential value. These issues are explored further in the following section.

This model explores an essential truth about ICT: although usage correlates highly with improved efficiency and productivity, there is no single level of ICT usage that is appropriate to all institutions in a society. For a rural farmer, simply gaining access to a telephone may allow a significant leap in productivity. Consider the time and money the farmer could save by phoning an agronomist for advice on the proper herbicides to combat a fungus—he saves the time it takes to travel into town, plus his transport costs.

At the same time, a bank serving the entire nation may well demand state-of-the-art ICT solutions to tie together regional branches with real-time information. In the same way that a bank cannot be most efficient using only telephones, the rural farmer would not (and could not) use the management information systems to be a better farmer. Accurate measurement of the needs and capabilities of the ICT end users is necessary for ICT to create real economic value in Tanzania.

Just as an economic diagnostic should be done before identifying barriers to national growth and competitiveness, a comparable process is useful in assessing the ICT landscape. The following section offers an analysis of the current state of ICT in Tanzania, with particular focus on Tanzanians’ access to ICT and their ability to realize its value. This data will lay the groundwork for an evaluation of the current and potential ICT benefits for the private sector.

4.2 ACCESS: MIXED RESULTS

4.2.1 Limited Access to Telecom and Internet Services

Low SME and private sector ICT adoption in Tanzania can in some part be attributed to low access. In this section, we review the state of access for Tanzania compared with other African countries. The Telecommunications sector is also analyzed as a key determinant in the private sector’s ability to afford and access connectivity.

On the dimension of access, Tanzania is in a precarious situation. Fixed and mobile tele densities are some of the lowest in Africa (see Figure 13), even with the increasing use of mobiles compensating somewhat for the slow growth in fixed-line telephony. From 1997-2002 fixed lines grew at a compounded annual rate of 9%, but there was still less than one telephone user per 100 inhabitants in the country. Compared to Mauritius or South Africa, which have more than 10 users per 100 inhabitants over the same period, access to fixed telephony in Tanzania seems to benefit just a privileged few. On a relatively positive note, the compounded annual growth rate in mobile telephony has reached over 100% during the 1997-2002 period, resulting in overall mobile teledensity of almost 2%. Tanzania still runs short on telephone access in relation to other countries in the region, yet most of the projected growth in teledensity is expected to come from mobile telephony.

The slow growth in fixed telephony is a result of the telecommunications monopoly and the country’s poor infrastructure capacity. The Tanzania Post and Telecommunications Corporation (TPTC) used to be the exclusive telecoms and postal services provider up until 1993, when the state monopoly was dissolved and replaced by three separate entities: the Tanzania Telecommunications Company Limited (TTCL), the Tanzania Postal Corporation (TPC) and the Tanzania Communications Commission (TCC) in charge of overseeing regulation in both sectors. TTCL was privatized in 2001 and granted a four-year exclusivity period to meet installation targets of at least 800,100 lines by the end of this term in February 2005. The shareholding structure was 35% strategic investor (MSI/Detecom), 14% international financial institutions, 10% local financial institutions, 5% TTCL employees and 36% GOT. MSI/Detecom was awarded the 35% share at a cost of US$ 120 million, of which US$ 60 million was paid and the balance currently disputed in the courts. To date, the rollout of 800,100 has not been met. Furthermore, there have been complaints surrounding the quality of the fixed line telephony. A 2001 report by the Swedish International Development Agency (SIDA) highlighted the fact that almost 30% of telephone and backbone networking, a firm formerly in the “ICT Only Users” category could move directly into “Networked ICT Users”. Yet, every firm and every link in an industry’s value chain will have distinct ICT needs. These levels of usage can be helpful in considering current and potential ICT usage and penetration, and should be weighed simultaneously with issues of access, capacity and potential value. These issues are explored further in the following section.

This model explores an essential truth about ICT: although usage correlates highly with improved efficiency and productivity, there is no single level of ICT usage that is appropriate to all institutions in a society. For a rural farmer, simply gaining access to a telephone may allow a significant leap in productivity. Consider the time and money the farmer could save by phoning an agronomist for advice on the proper herbicides to combat a fungus—he saves the time it takes to travel into town, plus his transport costs.

At the same time, a bank serving the entire nation may well demand state-of-the-art ICT solutions to tie together regional branches with real-time information. In the same way that a bank cannot be most efficient using only telephones, the rural farmer would not (and could not) use the management information systems to be a better farmer. Accurate measurement of the needs and capabilities of the ICT end users is necessary for ICT to create real economic value in Tanzania.

Just as an economic diagnostic should be done before identifying barriers to national growth and competitiveness, a comparable process is useful in assessing the ICT landscape. The following section offers an analysis of the current state of ICT in Tanzania, with particular focus on Tanzanians’ access to ICT and their ability to realize its value. This data will lay the groundwork for an evaluation of the current and potential ICT benefits for the private sector.

4.2 ACCESS: MIXED RESULTS

4.2.1 Limited Access to Telecom and Internet Services

Low SME and private sector ICT adoption in Tanzania can in some part be attributed to low access. In this section, we review the state of access for Tanzania compared with other African countries. The Telecommunications sector is also analyzed as a key determinant in the private sector’s ability to afford and access connectivity.

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Source: ITU 2003


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lines were not working, and that rural networks posed persistent quality problems. Despite and, in part, due to the delays and difficulties with fixed telephony, there has been a dramatic surge in cellular subscribers, as people increasingly choose mobile phones as their primary telephone line. This is particularly true for prepaid mobile services, which are considered a cheaper and more flexible option, without the commitments and connection delays that a fixed line requires (fixed monthly payment whether you use the line or not, credit qualifications and connection charges, etc). As of May, 2005, there are four licensed GSM mobile operators, including: MIC Tanzania Limited (September 2001); Vodacom Communications Limited (December 1999); Zanzibar Telecom Limited (January 1997); and Celtel (July 2001). All operators have 15-year renewable licenses. There were an estimated 250,000 mobile phone subscribers in 2001, with 90% of those using prepaid cards to make calls. The percentage of the population who now report access to a mobile phone, one belonging to a family member, or part of a telecenter, is approximately 97%. 

In terms of internet hosts and computers, Tanzania has one of the lowest usage rates in the region. Internet density is particularly low at 0.23 users per 100 inhabitants. Currently, there are 21 licensed Internet Service Providers in Tanzania, although only 12 are active. While these penetration rates demonstrate that Tanzania is lagging the region and world in terms of ICT access, this gap has been somewhat alleviated by a rise in mobile telecenters and a boom in cyber cafes throughout Tanzania, particularly in urban centers. These centers and cafes provide a remedy for citizens who cannot afford a telephone, computer or internet subscription. A more comprehensive analysis of ICT costs in Tanzania reaches a similar conclusion. Although access to telecommunications and Internet services has improved slightly, telecom monopolies and small and dispersed markets drive up the cost of services and curb widespread adoption. Outbound calls are still higher priced than inbound calls, especially when compared to countries that have more developed telecom networks and that have taken greater strides towards liberalisation (Mauritius, South Africa, and the United States). For instance, a one-minute call from South Africa to Tanzania costs US$0.49, compared to almost double that price (US$0.95) is the same call originates in Tanzania. A more telling example comes from comparing the costs of calling to the US from Tanzania and Uganda. While the cost of making a one-minute call from the two countries is the same (US$0.95) the call originates in Tanzania. A more telling example comes from comparing the costs of calling to the US from Tanzania and Uganda. While the cost of making a one-minute call from the two countries is the same (US$0.95) the call originates in Tanzania. A more telling example comes from comparing the costs of calling to the US from Tanzania and Uganda.

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on the other hand, the cost of Internet access is not as high as in other countries with the same income level. For instance, the cost of 20 hr dial-up access in Tanzania is US$117, compared to US$370 in Kenya. South Africa and Mauritius, however, offer the same service for as low as US$3.33 and US$14.80, respectively, see Figure 17. High-speed connection is as high as US$1,500 per month in places like Zambia35, while Tanzania offers more modest rates (US$ 300/month) that are somewhat higher than in Mauritius (US$ 213) and South Africa (US$ 102). Notwithstanding, these figures point to an Africa-wide problem in terms of high-speed Internet access, since comparable service costs US$ 40–50 in the United States.

### 4.2.2 Infrastructure Constraints

#### 4.2.2.1 International Connectivity

International connectivity in East Africa is scarce, costly, and inconsistent in quality. Countries in western, southern, and northern Africa are connected to submarine fiber optic cable systems that provide both intra-regional access and access to the other continents. East Africa has no such connection, and thus, it only gains access to international content and communication systems via satellites. Relative to connection via fiber optic cables, broadband connection via satellites is very expensive. Satellites also have limited bandwidth capacity and experience transmission delays.

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35 Zambia and Kenya have excellent high-speed Internet costs due to the mode of connection ([mainly correct via satellite] and the monopoly from Telkom Kenya and Zambia Telecom.

---

**FIGURE 16. INTRA-REGIONAL AND US RATES**

<table>
<thead>
<tr>
<th>Country</th>
<th>Intra-Regional Inbound and Outbound Phone Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zambia</td>
<td><img src="image1" alt="Intra-Regional Inbound and Outbound Phone Rates" /></td>
</tr>
<tr>
<td>S. Africa</td>
<td><img src="image2" alt="Intra-Regional Inbound and Outbound Phone Rates" /></td>
</tr>
<tr>
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</tr>
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<tr>
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**FIGURE 17. DIAL-UP AND HIGH SPEED INTERNET MONTHLY COSTS**

<table>
<thead>
<tr>
<th>Country</th>
<th>Dial-up (20 hrs USD)</th>
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<tr>
<td>Zambia</td>
<td><img src="image7" alt="Dial-up (20 hrs USD)" /></td>
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</tr>
<tr>
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<td><img src="image9" alt="Dial-up (20 hrs USD)" /></td>
<td><img src="image10" alt="High-Speed (per/month USD)" /></td>
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<tr>
<td>Mauritius</td>
<td><img src="image11" alt="Dial-up (20 hrs USD)" /></td>
<td><img src="image12" alt="High-Speed (per/month USD)" /></td>
</tr>
<tr>
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<td><img src="image14" alt="High-Speed (per/month USD)" /></td>
</tr>
<tr>
<td>Uganda</td>
<td><img src="image15" alt="Dial-up (20 hrs USD)" /></td>
<td><img src="image16" alt="High-Speed (per/month USD)" /></td>
</tr>
<tr>
<td>Tanzania</td>
<td><img src="image17" alt="Dial-up (20 hrs USD)" /></td>
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Furthermore, some African carriers pay a tremendous amount in switching fees, translating into hundreds of millions of dollars annually to switch intra-African traffic through foreign carriers.36

The EASSY project, which is currently under discussion, aims to provide high-capacity submarine fiber optic cables to increase international connectivity between Africa and the international community. Figure 18 illustrates the proposed connection in black, connecting the SAFE cable in southern Africa to the SEA ME WE cable in northern Africa. The EASSY project would involve the construction of a 9,908 km submarine fiber optic cable system that would link the East African seaboard from Durban, South Africa through Mozambique, Madagascar, Tanzania, Kenya, and finally culminating in a connection to Djibouti.37

EASSY would help Tanzania meet the growing demand for broadband, connectivity by ISP’s, data service providers, broadcasters, and VOIP providers. It would also bolster intra-Africa trade by making regional communication easier and less expensive. A preliminary feasibility study estimates that the project would cost US$ 200 million, including a US$ 170 million for system supply and US$ 30 million for project management.

International connectivity is a critical issue in improving access to ICT in Tanzania. The EASSY project would help to decrease the cost of connectivity within Tanzania, and would also facilitate rapid access to non-locally hosted website content. It should be pointed out that although the EASSY project has gathered attention; a fiber optic link for international connectivity need not only come from underwater. A South African firm has begun to invest in providing this link from South Africa to other African countries overland.

4.2.2.2 The Backbone

Tanzania’s existing fiber optic networks are owned and operated by separate, uncoordinated institutions, namely TANESCO, TAZARA, TRC and SONGAS. Each institution has historically utilized independent network and development plans. However, growing demand for fiber optic connectivity to facilitate high capacity, quality delivery of voice, data, and image services and applications has forced the Ministry of Communications and Transport and key telecom industry stakeholders to assess the national ICT backbone infrastructure and the potential for cross-sector coordination. Figure 19 illustrates the existing and “ideal” fiber optic and microwave networks within the backbone infrastructure. This ideal network is based on work done by The Ministry of Communication and Transport, which conducted a report on the “Status of the National ICT Infrastructure Backbone” in 2004.

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This was followed by an exhaustive technical feasibility study in 2005. According to this research, the project would require the construction of 6,997 km of fiber optic cables and approximately 3,475 km of links. Once the networks have been joined and the necessary linkages built, the backbone would provide fiber optic capacity for lease and use by different operators.

The costs of building the necessary fiber optic cables and links in existing networks were estimated to be US$169 million. These costs, compiled in Table 2, are substantial, but the potential benefits in backbone infrastructure investment and coordination are great. The GOT should explore ways to spur investment in this project.

4.2.3 The Urban/Rural Digital Divide

Much has been written about the “digital divide” between urban and rural areas. This issue is particularly evident in Tanzania, where the inadequacy and uncoordinated nature of the current infrastructure backbone is a clear obstacle to drawing commercial providers into rural areas, leaving these communities with limited or no access to ICT requiring fiber optic connections.

The penetration rates of fixed phone lines and internet users are largely skewed by the number of people who do not have access in rural areas. In considering how to improve access and ability in rural areas, it is important to think about optimizing existing ICT according to their ability to increase income or reduce costs among rural populations. In a recent survey within rural communities, respondents reported the following current uses of ICT by frequency and the relative impact of one of the most prominent ICT tools, the mobile phone, on their financial capital. See Figure 20 and Figure 21.38

It is clear that ICT in the form of mobile telephones have emerged as an import saver of cost and time in rural areas. Experts express concern, however, that this “leapfrog” effect of wireless may come at the expense of fiber optic build-out and its potential for more reliable data transfer, increasing the existing rural-urban divide. This pitfall has been tempered in part by the presence of Multipurpose Community Telecentres, such as the site in Sengerema, which provide shared ICT resources to rural populations.

The Sengerema Multipurpose Community Telecentre (MCT) began as a pilot project in 2000, sponsored by World Bank and other donors to provide shared ICT resources to rural populations. The Sengerema Multipurpose Community Telecentre (MCT) began as a pilot project in 2000, sponsored by World Bank and other donors to provide shared ICT resources to rural populations. The Sengerema Multipurpose Community Telecentre (MCT) began as a pilot project in 2000, sponsored by World Bank and other donors to provide shared ICT resources to rural populations.

TABLE 2. Estimated backbone investment costs

<table>
<thead>
<tr>
<th>Description</th>
<th>Sub total (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optical Fiber Cable Installation</td>
<td>$106,467,659</td>
</tr>
<tr>
<td>Transmission Equipment Installation</td>
<td>$35,742,135</td>
</tr>
<tr>
<td>Power Supply System Installation</td>
<td>$12,255,063</td>
</tr>
<tr>
<td>Civil Work And Others</td>
<td>$15,067,000</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>$169,531,857</strong></td>
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the Commission on Science and Technology (COSTECH) and UNESCO. Currently, the MCT serves Sengerena’s population of 500,000 with 25 computers, internet connectivity, and a broadcast radio. The launch of the MTC required an investment of US$400,000 of donor money. The MCT began as a telecentre, offering telephone access, and has since expanded its range of services to include radio, photocopying and internet access. The demand for these services is perhaps best illustrated by tracking the MTC’s growth in revenue. Its initial monthly revenue in 2001 was US$300/month, and now stands at US$3,000/month. The impact of the MCT on quality of life in Sengerena has been important. In addition to providing services that enable commerce and education—for example, providing farmers information via CD-R on increasing crop yields and rural students photocopies of national examinations—the MCT has been vital in disseminating public health information. When the MCT opened in Sengerena, fewer than 50% of babies were vaccinated. The vaccines were free of cost at local clinics, but new mothers did not have adequate information regarding the need for vaccines or their cost. As a result, the Commission on Science and Technology (COSTECH) and UNESCO. Currently, the MCT serves Sengerena’s population of 500,000 with 25 computers, internet connectivity, and a broadcast radio. The launch of the MTC required an investment of US$400,000 of donor money. The MCT began as a telecentre, offering telephone access, and has since expanded its range of services to include radio, photocopying and internet access. The demand for these services is perhaps best illustrated by tracking the MTC’s growth in revenue. Its initial monthly revenue in 2001 was US$300/month, and now stands at US$3,000/month. The impact of the MCT on quality of life in Sengerena has been important. In addition to providing services that enable commerce and education—for example, providing farmers information via CD-R on increasing crop yields and rural students photocopies of national examinations—the MCT has been vital in disseminating public health information. When the MCT opened in Sengerena, fewer than 50% of babies were vaccinated. The vaccines were free of cost at local clinics, but new mothers did not have adequate information regarding the need for vaccines or their cost. As a result,
this service was underutilized and failed to impact infant mortality rates. The MCT began broadcasting radio announcements reminding mothers to vacci-
nate their babies, and within eight weeks the vacci-
nation rate among newborn babies approached 100%.

Another important area to consider when assessing
ICT access in Tanzania is local content. Ensuring a
suitable amount of local content will increase access
for a large segment of the population that may not
read English. For instance, Microsoft sees a market
for its software among the roughly 100 million
Swahili speakers in East Africa, and the company is
now working to incorporate Swahili into Microsoft
Windows, Microsoft Office and other popular
programs. The same is true for Google, which has
launched www.google.co.ke, offering a Kenyan
version in Swahili of the popular search engine. A
major key to access is devising strategies and software
to put local languages on the screen, which will
increase the value and consumptions of information
technology. This is particularly relevant for rural
areas, which are often more limited by language.
Projects aimed at increasing awareness will need to
ensure that they endorse programs in Swahili, partic-
ularly websites for domestic commerce.

4.3 LOW LEVEL OF ABILITY

4.3.1 Basic Educational Deficiencies

In addition to minimal access, limited ability to use
ICT is also responsible for the lack of ICT penetra-
tion in Tanzania. Ability refers to the willingness and
preparation of individuals to use ICT, a direct func-
tion of their level of education and technology training.
Tanzania faces significant ability barriers. While recent
reforms in primary education have lifted enrollment
rates, secondary school enrollment and tertiary educa-
tion are among the lowest in Sub-Saharan Africa—
just 5% and 1% respectively. See Figure 22.

The primary education reforms implemented dur-
ing the 1990s have had a positive effect. Although
Tanzanian rates are on par with other Sub-Saharan
countries (Kenya and Zambia), they still lag
Botswana, Mauritius and South Africa, which have
upwards of 80% net primary enrollments.

While these primary education figures are cause for
concern, secondary enrollment is still the greatest
educational weakness in Tanzania. About 22% of
primary students have a chance to pursue secondary
education, which translates into 5% net secondary
enrollment of the relevant age group, compared
with an average of nearly 30% across Sub-Saharan
Africa.39 The secondary school system in Tanzania
facilities a number of challenges, including demands to
increase access (especially for low-income youths
and students in rural areas), improve quality and
reduce costs.40 During the 1980s and early 1990s,
increased private sector participation and communi-
ty involvement led to the rapid growth of non-
government secondary schools as a way to cope
with some of the excess demand.41 Currently, it has
been estimated that close to 40% of secondary stu-
dents are enrolled by private providers.

The recent increase in primary education, however, will
create mounting pressures from the state to provide
places in secondary schools, expanding access beyond a
small group of privileged youth. The picture becomes
even more complicated when the urgent need for
this service was underutilized and failed to impact
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areas, which are often more limited by language.
Projects aimed at increasing awareness will need to
ensure that they endorse programs in Swahili, partic-
ularly websites for domestic commerce.

4.3 LOW LEVEL OF ABILITY

4.3.1 Basic Educational Deficiencies

In addition to minimal access, limited ability to use
ICT is also responsible for the lack of ICT penetra-
tion in Tanzania. Ability refers to the willingness and
preparation of individuals to use ICT, a direct func-
tion of their level of education and technology training.
Tanzania faces significant ability barriers. While recent
reforms in primary education have lifted enrollment
rates, secondary school enrollment and tertiary educa-
tion are among the lowest in Sub-Saharan Africa—
just 5% and 1% respectively. See Figure 22.

The primary education reforms implemented dur-
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Tanzanian rates are on par with other Sub-Saharan
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While these primary education figures are cause for
concern, secondary enrollment is still the greatest
educational weakness in Tanzania. About 22% of
primary students have a chance to pursue secondary
education, which translates into 5% net secondary
enrollment of the relevant age group, compared
with an average of nearly 30% across Sub-Saharan
Africa.39 The secondary school system in Tanzania
faces a number of challenges, including demands to
increase access (especially for low-income youths
and students in rural areas), improve quality and
reduce costs.40 During the 1980s and early 1990s,
increased private sector participation and communi-
ty involvement led to the rapid growth of non-
government secondary schools as a way to cope
with some of the excess demand.41 Currently, it has
been estimated that close to 40% of secondary stu-
dents are enrolled by private providers.

The recent increase in primary education, however, will
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places in secondary schools, expanding access beyond a
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4.3.2 Incorporating ICT into the Education System

Efforts are being made to incorporate ICT tools into secondary schools in Tanzania, but the results have been mixed. The Distance Learning and Education Services (DILES) project was created to distribute secondary school information to students via the Internet. The initiative was developed with an eye towards reaching students in urban and rural areas where books are expensive and good teachers are hard to find. The project was fully funded by the International Institute for Communication and Development (IICD) and began operations in 2000.

Students who cannot afford textbooks can download curricula and syllabs from the website. The syllabs are based on the national syllabus, so they correspond with the teachings the students are receiving in the classroom. There are also twelve years of solved national examination papers. Students can order hard copies at less than cost; US$ 2.00 for a comprehensive mathematics syllabus for example and the solved national exams at US$ 0.20 per exam. The rationale was that without this service students would have difficulty accessing these documents.

Though DILES was never solely a commercial venture, as downloads of syllabs have always been free, DILES did hope to eventually commercialize the operation through selling access licenses and CDs on an offline system. The plan of creating a business based on a market of poor rural students, however, has not yet come to fruition. In very remote settings, students do not have access to the internet, and printing costs are prohibitive. DILES has had to change its strategy for reaching the students and is now making hard copies of all materials and using donor funds to distribute their database of information to more than 1,000 schools and teacher training colleges.

Another initiative aimed at incorporating ICT into secondary schools is the Thin Client Computers project implemented by the COST in collaboration with SEDA. The project is being piloted in urban settings, and is aimed at reducing the cost burden of many educational institutions in maintaining systems and software on multiple computers. Schools, in this case, use a central server or thin client system to operate several machines. This allows all software, computing power and data storage to take place on a central server, reducing power usage and allowing for low bandwidth connections. If the pilot project is effective, it would provide a cost-effective means to introduce students to ICT.

Tanzania to transform its economy is included; Tanzania is being crippled by its inability to develop the human capital it will need to drive this transformation.

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4.3.3 Tertiary Enrollment

Enrollment ratios in primary and secondary education are an indicator of the future quality of human capital. Naturally, low enrollment rates in secondary education contribute to the observed skill gap in higher education in Tanzania. The country has one of the lowest attainments in tertiary schooling in the region, with less than 1% of the population attending university. Although this is common in Sub-Saharan Africa, countries such as South Africa and Mauritius have managed to enroll more than 15% of the population in tertiary education.

One indicator of the attractiveness of investing in education in Tanzania, is the estimated rate of return on education and training. These are presented in Table 3 and are categorized by type of education and gender. As this table indicates, private rates of return with educational attainment, and become more relevant for university and vocational and technical training. For instance, wages are approximately 7% higher for someone completing secondary education than for someone just completing primary schooling. Likewise, a university degree and vocational and technical training increase earnings, on average by 9% and 19.4% respectively.

However, a recent World Bank publication points to the fact that given the relative scarcity of post-primary education in Tanzania, the reported returns to education appear low relative to international standards. This may reveal the low relevance of post-primary education in Tanzania to transform its economy is included; Tanzania is being crippled by its inability to develop the human capital it will need to drive this transformation.

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4.3.4 Training: Not Yet Driven By Private Sector Needs

In fact, the general perception of business leaders is that the disconnect between academic and training institutions and the skill set demanded by the private sector is one of the main obstacles to the development and utilization of ICT. A local Tanzanian businessman, the head of a successful group of companies that includes several ICT firms, confirmed this assertion. In response to this deficiency, he is assisting in drafting a proposal for a study to determine the appropriate ICT training needs of the private sector. By first identifying the needs of Tanzanian business in ICT, training programs can be developed that address the specific requirements of businesses. The University of Dar es Salaam has taken a proactive approach to this issue.

Although some commendable efforts have been made to make academic and training programs more relevant to the needs of the labor market and to incorporate ICT in the education system, wider ICT literacy will only become a reality when both individuals and organizations use ICT in their daily lives and when appropriate advanced training becomes available to those entering (and already in) the workforce.

Workforce ability is coupled with access as prerequisites to productive ICT usage, but they are meaningless if users do not recognize tangible benefits of ICT. Investments must be rationalized against potential ICT advantages or competing uses of time and capital. The benefits component of the AAB model is explored in the following section. In this section we investigate the current and potential role of ICT in certain sectors. Agridata, Mining & Minerals, Services and SMEs in general. In each of the three economic sectors, we also provide a sector audit and offer preliminary recommendations to improve each sector’s competitiveness.

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### TABLE 3. Annual private rates of return to education and training

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### BOX 1 The University Computing Centre Ltd.: “one student, one computer”

The University Computing Centre, Ltd is the primary provider of ICT training courses within Tanzania. It was created as a private company within the University of Dar es Salaam in 2001, to help it concentrate on service provision, revenue generation, and offer competitive compensation to its professors and staff. The UCC has five locations throughout the country and is concentrated in four lines of business: 1) ICT training, 2) Software development, 3) licensed ISP, and 4) Hardware engineering and maintenance. ICT is its primary revenue generator, and the UCC offers both basic courses in Microsoft applications and ISDL certification, as well as tailor-made courses driven by the government and private sector ICT needs. Its “one student, one computer” motto and training model have been very successful, and has forced competitors to invest in equipment and hardware.

The UCC illustrates both the importance of responding to the demand needs and customer preferences within the ICT market, as well as the potential return on investment of education and training. By customizing their offerings, UCC has grown its client base and generated US$ 2.5 million in 2004, with an expected US$ 3.5 million in 2005. Additionally, the increased earnings potential of UCC graduates is significant. An estimated 10% of UCC students complete the UCC training course, have a job at the time of graduation. The course costs $600, and starting salaries upon graduation are between $350 and $300 per month.

Source: OTF Group Interview

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5 MIGRATING TO MORE SOPHISTICATED PRODUCTS AND SERVICES

5.1 TWO PATHS: KEY SECTORS AND SMEs

At US$ 322 per capita income in 2004, Tanzania is one of the poorest countries in the world. If Tanzanians were to enjoy middle income status of, say US$ 1,000 per capita income by 2013, Tanzania’s GDP would need to grow from US$ 11.1 billion to US$ 43.0 billion in 10 years.

To achieve such accelerated rates of economic growth, two sets of economic objectives must be pursued. First, Tanzania must invest in developing the competitiveness of key, high-potential industries. Second, Tanzania must develop support programs and initiatives that broadly strengthen SMEs and the private sector overall. In essence, the double impact of key industries ‘pulling’ the rest of the economy, while business development services are ‘pushing’ the capacity of the private sector to respond to more localized opportunities is the kind of virtuous mechanism that Tanzania needs to drive a significant expansion of its economy.

It is important to clarify the first objective in light of the many failed industrial strategies throughout the developing world. This is not a process where a few government officials pick economic winners and losers. Competitiveness rests on a productive public/private sector dialogue and, ultimately, on private sector leadership of the economy with informed government support. This objective is centered on making necessary tradeoffs, tradeoffs that can only be made effectively within this type of collaborative environment.

Leaders in developing countries such as Tanzania live and work in environments where literally everything needs urgent attention. Despite such a context, the need to focus on a few industries in order to drive sustainable economic transformation is paramount because—by definition—human, financial, and institutional resources are scarce in developing economies. Focusing these resources on ensuring that two or three local industries get the support they need to compete successfully and generate income and employment is essential. In the case of Tanzania, where many local industries present real income generation and employment opportunities, the need to combine support for a few nascent industries with a focused and targeted investment promotion effort, is crucial. Neglecting to see this reality and diverting time, effort, and resources on too many industries may be today’s greatest mistake in economic development.

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In parallel, competitiveness-building programs for key local industries, Tanzanian leaders should also launch initiatives to strengthen the private sector overall with a particular focus on SMEs, the segment that now needs the most support. Private sector and enterprise development relies heavily on the competitiveness of key local industries. In Africa, as in many other parts of the world, three primary categories of local enterprises exist. The first category directly drives the main industries of the economy. These would include hotels, lodges, and the private sector overall. In essence, the double impact of key industries ‘pulling’ the rest of the economy, while business development services are ‘pushing’ the capacity of the private sector to respond to more localized opportunities is the kind of virtuous mechanism that Tanzania needs to drive a significant expansion of its economy.

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or airlines in a tourism-dependent country. The second category supports larger businesses operating in key local industries; these could be spares part manufacturers or leather seat suppliers to a strong local automotive cluster. The third category refers to SMEs that indirectly benefit from the increased purchasing power that successful local industries are generating. These would include local retail and grocery stores in a prosperous mining town or neighborhoods restaurants and bars in a thriving coffee export town.

By building strong key industries, therefore, Tanzanian leaders will also be driving private sector and enterprise development directly or indirectly. In order to achieve such diffused impact, however, Tanzanian leaders will also have to strengthen the ability of local SMEs to exploit the opportunity that this type of growth presents. One mechanism is to develop a stronger platform of institutions that can provide business development and incubation support services. ICT are critical to these types of initiatives, as well, in two primary ways: 1) the dissemination of assistance and information to a large number of geographically dispersed SMEs and 2) facilitating the upgrade in SME efficiency and strategic capacity.

ICT’s role in the migration to more sophisticated products and services, therefore, is vital to both key sectors and SMEs. But these technologies will only be effective once competitive strategies are in place. The following sections begin with a discussion of each sector’s strategic challenges and opportunities. Then, within this context, targeted ICT interventions are proposed as part of the process of sector upgrading to differentiated products. ICT interventions are discussed first at a firm or value chain level, according to the Heeks & Duncombe* Five Levels of ICT Usage model, and then at an industry level, addressing the systemic ICT needs and opportunities. In most cases, recommendations center on upgrading to the next level of value creation. This should be interpreted as the next step in a long process, and not as a final destination. In identifying ever higher value markets, and developing ever more specialized processing abilities, increasing levels of ICT usage will continue to be fundamental. Following these sections will be a broader discussion of the SME environment grounded in ICT adoption data and an analysis on how both types of SMEs mentioned above can benefit from ICT.

Finally models are discussed that can provide SMEs with the support required to drive the economy.

5.2 AGRIBUSINESS

To be clear, this section is labeled “Agris-business” and not “Agriculture” to reflect the role of agriculture as inputs into more sophisticated products. This perspective highlights the need for strong linkages between the agricultural inputs, the manufacturing processing centers and final markets. Increasing agricultural productivity goes hand in hand with increasing productivity in manufacturing. Success in the agris-business sub-sectors described in this section will rely on increased value-added processing/manufacturing.

In general, agriculture exports now rely on very limited processing of the primary agricultural goods. Raw materials such as coffee, cashews, tobacco and tea are exported to international markets with very little value added to them. Total exports in these major sectors have also decreased, as shown in Table 4, partly due to global trends in commodity prices. Agriculture, Fishing and Forestry constitute a significant portion of Tanzania’s economy, responsible for 40-50% of GDP. Thus, strategies that increase the value of these sectors’ products could have a particularly broad impact on the prosperity of Tanzania.

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Migrating to More Sophisticated Products and Services

5.2.1 Coffee

Coffee, a major component of Tanzanian exports, is a sector that can have significant impact on the rural population. The coffee industry in Tanzania provides employment to approximately 400,000 families, as 95% of production is grown by small holders.64 Regrettably, it is also a classic example of a commodity sector that has undergone dramatic upheaval in recent years, as seen by the price volatility in Figure 23. A slight shift in supply, primarily driven by Vietnam and Brazil, caused the market price for commodity coffee to fall spectacularly.65 The effect in Tanzania was a drop in export receipts from US$ 76.6 million in 1999 to US$ 35.3 million in 2002.66 In commodity coffee, Tanzania will never be a market-setting country; it is a commodity sector that has undergone dramatic upheaval in recent years, as seen by the price volatility in Figure 23. A slight shift in supply, primarily driven by Vietnam and Brazil, caused the market price for commodity coffee to fall spectacularly.65 The effect in Tanzania was a drop in export receipts from US$ 76.6 million in 1999 to US$ 35.3 million in 2002.66

Fortunately Tanzania recognizes this fact and is taking several positive steps to compete more effectively. In the coffee market, a sustainable non-reactive strategy is to improve quality so that sales are not dependent on world commodity prices, but focus on higher quality coffee markets, including specialty coffee. Customers in these markets are sophisticated and demanding, but are willing to pay a premium from a supplier who can consistently provide a very high quality coffee.

National strategy in the coffee sector is coordinated by the Tanzania Coffee Board (TCB). Broadly, the TCB’s strategy is to increase both production and quality, but importantly not to increase production at the expense of quality. Among its responsibilities, TCB controls the auction in Moshi, cups coffee to ensure quality and conducts farmer extension efforts. The coffee industry has taken steps towards accessing this higher priced specialty coffee market, which include the investment in primary processing stations, a restructuring of marketing policies to diversify channels from the state-run auction and the successful targeting of specialty buyers.

Primary processing stations, also known as pulperies or washing stations, are required to treat and triage coffee cherries in order to produce a consistently high-quality green coffee bean. TCB estimates that there are currently approximately 150 of these processing stations in Tanzania and has a national goal of reaching 500 stations in the coming years. Investment funds are being channeled by the GOT through the local governments within coffee producing districts.

TCB recently agreed to allow the direct export of premium, specialty coffee instead of the traditional channel through state-run auction. This was an important decision as it allowed producers to market their coffee directly to specialty coffee buyers in the US and Europe. The purchasing dynamics of the specialty coffee market are very different from those of commodity-grade coffee. Customers in these markets are sophisticated and demanding, but are willing to pay a premium from a supplier who can consistently provide a very high quality coffee.

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5.2.2 Cashews

The world seems to be eating more cashews, given that cashews took first place in world nut crop production in 2003. In 2002, Tanzania was being left behind as the market shifted with the entrance of Vietnam as the largest producer of cashews in the world. Vietnam drove global production to increase nearly 70% from 1998 to 2003, see Figure 24. Historically Tanzania’s cashew sector has been a leading foreign exchange earner, but the sector has plummeted from its number one ranking in export receipts in 1998. Export receipts have fallen dramatically by 47.7% from 1998 to 2003 from US$101.9 million to US$54.9 million. Tanzania, which was fourth in global production in 1998 and delivered 7.5% of the global supply, has fallen to the sixth largest producer providing 4.8% of the global supply.

Though reliable price data is difficult to obtain for raw cashew nuts, as there is no international indicative price for cashews, it is clear that prices in Tanzania have fallen. The decline in export receipts in Tanzania was experienced over a period when production in Tanzania fluctuated marginally (93,200 tons in 1998 to 121,980 tons in 2001 and back to 100,000 tons in 2003). The Tanzanian cashew industry must change the way it competes in the international cashew market or it will generate less and less profit from this important sector. In short, Tanzania can no longer afford to send its unprocessed cashew nuts to India for processing.

In spite of these recent disappointing results, the cashew sector presents opportunities for Tanzania to capture value through processing and increasing productivity. Only 15% of Tanzania’s production is currently processed in country, with the balance processed in India. According to experts quoted in the East African newspaper, a viable processing industry in the country could create 30,000 direct jobs and generate US$40 million in incremental processing revenues annually. Unprocessed cashew nuts from Tanzania currently trade at an average f.o.b. price of US$580 per ton in the world market, compared with an average of US$2,934 for a ton of processed cashew nuts.

Tanzania has a factory infrastructure, albeit dated, that can leverage to enact a processing value- addition strategy. The GOF is taking appropriate first steps in upgrading and privatizing the cashew industry in the country could create 30,000 direct jobs and generate US$40 million in incremental processing revenues annually. Unprocessed cashew nuts from Tanzania currently trade at an average f.o.b. price of US$580 per ton in the world market, compared with an average of US$2,934 for a ton of processed cashew nuts.

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dormant cashew processing factories that have been owned by the Cashew Board of Tanzania (CBT). These factories range from those built in the 1960s to early 1990s. One reason that these factories were abandoned was that the type of technology used caused too much breakage. Processing cashew nuts involves breaking the cashew nut to access the kernel, the edible portion. Kernels that are broken during the breaking process are less valuable than unbroken kernels. The loss of value per break is approximately 50%.

There are two dominant technologies employed to break cashew nuts. One is a capital intensive, mechanized process that is primarily used in Brazil and was installed in the older Tanzania processing centers. The second is a much more labor intensive procedure, but leads to less kernel breakage, resulting in a higher value product. Newer processing centers in Tanzania use this methodology; one firm that does is Olam International. This technology seems to be the most appropriate for Tanzania as it not only results in a higher value product, but is also labor intensive, creating much needed employment. If the old factories are refitted with this technology it would be possible to process almost all of the country’s production given the current production levels and installed capacity. If processors in Tanzania are as efficient and productive as Indian factories, they can be more cost competitive. Indian importers now have to cover transport costs (approximately US$ 100/ton) to ship unprocessed cashews from Tanzania before they export them to western markets. The upgrade of technology, however, will require investment in skills training for workers in the processing centers.

5.2.3 Targeted ICT Interventions

The current role of ICT in the local coffee and cashew industries is limited, although there are some opportunities in production and marketing if Tanzania continues to support the movement into high quality markets for coffee and value added processing for cashews. Some of the ICT solutions...
suggested for coffee and cashews may cross over to other industries. Applicability will depend on the dynamics of domestic production and the international market.

Production

As mentioned earlier, processing centers are required in order to produce specialty coffee. Though ICT systems are not necessary in the operation of the pulpers themselves, ICT can add value before the pulpers are even constructed. Tanzania’s neighbor, Rwanda, has followed a similar quality framework for developing a competitive coffee industry. Rwanda is using ICT to strategically locate coffee washing stations near coffee producers, water sources, electricity, and effective means of transportation. It is important when determining a site for a coffee washing station that it be located near a critical mass of coffee farmers as coffee cherries should be processed within a few hours of harvest to achieve a high quality product. The processing operations also need a large amount of water that must be of high quality. Take-in and out water are important, so it is critical to be located near a quality source. Lastly, it is critical to be located near a quality power supply, preferably the national grid rather than expensive generators.

The second objective is to use soil and weather data to customize fertilizers and plan the replacement of older coffee trees with new varieties. Though small in size, Rwanda’s mountainous topography and intense farming practices lead to a wide variation in weather patterns and soil composition. To optimize yields, appropriate fertilizers should be applied to certain areas. As the Coffee Board and the University of Rwanda test and develop new varieties of coffee trees, the soil and weather data will determine where certain types should be planted.

Marketing

The role of ICT in the marketing strategy of a firm depends heavily on the market dynamics and sophistication of the industry. For example, players in the local fishing industry in Zanzibar use their cell phones to compare market prices in Zanzibar and the mainland to determine where they should sell their catch.56 The daily harvesting and almost immediate perishability of their product requires these producers to know market prices instantly to capture the benefits of unfilled market demand. ICT can be instrumental in website marketing in more sophisticated industry strategies, though not necessarily for direct sales to export markets. For example, in the specialty coffee market it is important for producers to build strong relationships with

ICT can play a major role in each of these demand components of traceability. Electronic tracking systems for products are currently in use, and with the appropriate software, much product data can be captured and transmitted to ensure that members of the product supply chain can communicate forwards and backwards. GIS systems such as the one Rwanda built, as well as global positioning systems (GPS), allow data to be accessed remotely if it is not tracked through other means.

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importers and roasters. These importers and roasters are not inclined to purchase supply over a website, but end use consumers of higher end coffee do place a premium on knowing where their coffee comes from and whom their purchase benefits. In an effort to better inform consumers, coffee producers in Tanzania could develop websites with local information on the benefits their coffee has provided to communities. Coffee drinkers could see photos of the producers, coffee washing stations that process the coffee, discover the region in which the coffee is grown and learn how the coffee strategy has increased the prosperity of coffee farmers and the people employed by the coffee washing stations.

The specialty coffee market is moving towards adopting an appraisal framework similar to that of the wine industry. Coffee connoisseurs can detect flavor variances from relatively small geographic regions. This is due to differences in soil composition, rainfall, plant varieties and other climatic or input factors. To satisfy these very demanding customers, specialty coffee marketers will increasingly be identifying the unique characteristics of coffee growing areas and highlighting this information when communicating with consumers. The GIS and traceability systems illustrated in the Production section can be utilized by coffee growers to ensure that this differentiating information is provided to buyers.

Though a window of opportunity has been opened for specialty coffee producers in Tanzania, the vast majority of coffee sales still take place in the state-run auction in Moshi. Even for the progressive KILICAFE, the primary channel for coffee sales continues to be the state auction, which accounts for 90% of sales. The auction process is relatively simple. Buyers are sent samples of coffee that are cataloged and displayed on an electronic board. Buyers make bids by pressing buttons, which increase their bid price by US$ 1.00, 0.60 or 0.40.

At this time there is no internet-based auction procedure and constructing one for use solely in Tanzania may not make economic sense. An electronic-based auction that linked nearby countries that also use auctions such as Kenya and Ethiopia could lead to a more efficient and competitive pricing model, since it would potentially involve more players. Under the scope of work of the East African Fine Coffee Association (EAFCA), there might be an opportunity to link the auctions of these countries via the internet. Doing so would increase market efficiencies across East Africa, allowing producers in one country to supply product to buyers in another country in which there may be a shortage, either locally or beyond African borders.

ICT can also play a role in assisting Tanzanian agricultural industries and firms in conducting market research. The shift to processing cashews, for example, should be informed by the identification of demands in markets that Tanzania has not historically targeted. This also applies to new entrants into the specialty coffee market, as well as any agricultural sector that is looking to move up the value chain or target new buyers. As the market segments that could be served may vary, so will their preferences, which should determine how the industry organizes its activities. Since retailers from developed countries are the most interested in traceability of products, long-term relationships, and product range from their suppliers, for example, effectively serving these markets means that Tanzanian suppliers must be able to meet these criteria. If they do not, other countries will.

5.3 MINERALS AND MINING

Tanzania is endowed with vast mineral wealth: gold, base metals, diamonds, ferrous minerals and a wide variety of gemstones, including tanzanite, a stone only found in Tanzania. The nation’s exports are increasingly dominated by mining, growing from US$ 73 million in 1999 to more than US$ 540 million in 2005, a remarkable compound annual growth rate of 49.2%. This is more striking when compared to the compound annual growth of 4.6% for all other exports combined over the same time period.

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Improving Competitiveness and Increasing Economic Growth in Tanzania

Minerals production from legal reform and the adoption of a revised mining policy in 1997 that included domestic and export tax relief and investment incentives. This revival has helped Tanzania become the fourth largest gold producer in Sub-Saharan Africa, behind South Africa, Ghana and Mali.33 Gold has been the main driver of mineral exports, as evidenced by Table 5. Gold exports in 2003 were US$ 499 million and production grew at an astounding compound annual growth rate of 56.1% from 1999 to 2003.60

Though the government’s role in jumpstarting the mining sector is a positive example for other sectors, the sector’s spectacular performance in terms of exports and production must be tempered against its impact on increasing the prosperity of the average citizen. The GOT has certainly benefited from the increase in mining with tax revenues from the sector growing from US$ 4.5 million in 1997 to US$ 51.7 million in 2002.61 In order for mining to benefit the general population, however, the industry must move up market and include new products and services with greater value added to them. Countries only benefit from extractive industries such as mining for the fixed period of time equal to the country’s reserves, leaving ghost towns throughout-out the countryside when the wells or in this case mineral veins run dry. The increase of Tanzania’s mining receipts has also overshadowed the urgency of effectively growing other economic sectors.

In thinking about strategic reinvestment of mining revenues, the gemstones sector is an area within the Mining & Minerals industry that has the potential to migrate to more complex and valuable products, thereby increasing its global competitiveness. The next section explores this potential. While gemstones account for a smaller percentage of exports than gold, the value of this sector is likely to be greatly underestimated due to smuggling, and holds significant opportunity due to imminent regulatory changes.

5.3.1 Gemstone Industry Outlook
Tanzania possesses a rich portfolio of gemstones, including tanzanite, ruby, sapphire, rhodolite, emerald, amethyst, chrysoprase, peridot and tourmaline. Tanzanian is of particular interest, as it is unique to Tanzania and of greater value than most gemstones. In 2001, tanzanite export receipts only totaled US$16 million. This number greatly underestimates the value of the tanzanite industry, as rampant smuggling is alleged to account for 90% of production export.62 Abolishing high export taxes could help to greatly reduce this amount.

This figure of $16 million also grossly understimates the potential value of the gemstone industry. The majority of gemstone exports consist of uncut stones, absent lapidary or jewelry creation. Due to the long history of illicit trade in gemstones, it is difficult to estimate the total market value or potential. However, experts speculate that currently at least 60% of Tanzania’s gemstone exports illegally overland, mainly through Kenya, for lapidary and export.63 Figures such as these confirm that Tanzania’s gemstone strategy only captures a small percentage of end products’ value.

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The current dynamics present tremendous opportunities for forward integration. Stabile diamand, tanzanite and other gemstone extraction could be coupled with the gold mining to build an internationally competitive lapidary and jewelry industry. Unlike gold mining, gemstones in Tanzania are primarily owned by small-scale operations that are domestically owned, so the benefits of successfully moving up the value chain in lapidary and jewelry would have a significant impact on the local population.

5.3.2 Gemstone Lapidary

The first step in migrating towards higher value products is investment in the lapidary industry. More than 98% of gemstones exported through the formal economy are shipped in uncut form to overseas lapidary and polishing centers. India receives over 50% of these exports. This massive exportation of rough stones is not driven by a lack of local expertise or in a desire to capitalize on low-cost labor overseas. This trend is directly attributable to the regulatory environment. The current Value Added Tax on gemstones is 20%. Thus, it is advantageous from a tax perspective to ship uncut stones of undersupplied and presumably low value, rather than export cut, higher value stones. This VAT policy is partially responsible for the lack of development of a sophisticated local lapidary sector, as there is little demand for such expertise prior to export. This regulatory environment also creates disincentives for transparency and compliance, which contribute to gemstone smuggling.

A law due to take effect in January 2006 will ban exports of rough gemstones, a move that will effectively legislate forward integration. This regulatory change can act as a catalyst in stimulating significant growth in domestic lapidary. A hint of caution must also be mentioned in regards to this legislation. Though the government is well intentioned and has an important role in jumpstarting a nascent industry, laws such as these can have negative consequences.

For instance, although the lapidary industry may benefit, it is also possible that the amount of rough gemstones smuggled out of the country may increase as firms are not able to adequately prepare for this forward integration, and even fear bankruptcy as their main business exporting uncut stones disappears.

 Box 5 for a further explanation of this potential dynamic.

The present Tanzanian lapidary sector is extremely small relative to the size of the industry, and is focused on cutting larger gemstones (1 gram or greater). The majority of lapidary takes place in Arusha, with stones then exported or sold on the local market. Although the compensation for skilled labor is competitive, there are few workers trained in the lapidary process, as local demand is limited. With the regulatory change in 2006, the local market may grow exponentially. This would help to fuel demand for skilled labor and legislate an opportunity for Tanzania to forward integrate in the value chain, capturing—not rather than exporting—the wealth created in the lapidary process.

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5.3.3 Targeted ICT Interventions

As we see in Figure 25, ICT could help to transition Tanzania to a larger scale lapidary and jewelry industry that captures greater product value.

Traceability Systems

Tanzanite, one of Tanzania’s most precious gemstones, recently came under fire when in 2002 the Wall Street Journal alleged that it was being smuggled illegally to Dubai and other locations to finance Al-Qaeda’s terrorist network. While these allegations were never verified, the collateral damage caused by this allegation was devastating to the Tanzanian industry. Not only were the country and gemstone’s images tarnished, but Tiffany and Co., Zale Corp. and QVC Inc. all decided to boycott purchase of the precious stone. The boycotts have subsequently been dropped, but the need for greater transparency and accountability in the form of a traceability system became clear.

In response to these allegations and recognizing the potential for future incrimination, the Tanzanian government, the U.S. State Department and industry leaders convened in 2002 to assess the situation and develop possible remedies. The output of this meeting was the Tucson Tanzanite Protocols, a document that commits Tanzanian miners and dealers in Tanzania and abroad to adopt a system of written warranties to guarantee that all Tanzanite comes from officially sanctioned sources. This traceability system centers on the licensing of all Tanzanian miners and dealers, as well as the issuance of “certificates of origin” to verify that each piece of Tanzanite comes from legal sources.

Improving traceability and transparency is one area in which ICT could enhance the gemstone sector. Electronic databases and cataloging could ease the burden of accounting for all transactions and hasten the bureaucratic process.

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\[\text{Computer Aided Design / Computer Aided Manufacturing (CAD CAM Software)}\]

Jewelry industries in countries such as Sri Lanka are taking advantage of CAD CAM models to efficiently produce jewelry for domestic consumption and export. At Tanzania considers forward integration in the gemstone industry, large-scale training of jewelers could be accomplished through the use of CAD CAM products such as Gemvision. Gemvision allows users ranging from the smallest retailer to the largest manufacturer to create new, innovative jewelry designs. The software features a jeweler-friendly interface and step-by-step menus that allow users to design unique jewelry through a quick and simple process. The CAM component generates a dimensionally accurate wax model ready for casting the design. Gemvision retails at US$6,500 for its core Matrix software, and an
additional US$24,995 for the CAM equipment. The software and equipment could be owned and shared among cluster-level groups within the sector. This investment would transform the design and innovation process. Processes that used to take years of training and weeks of labor could be accomplished in a matter of hours. Additionally, CAD CAM could be leveraged to create unique, distinctly Tanzanian designs that incorporate the rare tanzanite stone. This differentiation would increase the value of jewelry exports, and could also be marketed in conjunction with the local tourism industry.

CAD CAM development is an area that could be fruitful for Tanzania’s ICT industry, particularly in tandem with increasing competitiveness in the jewelry sector. The GOT could sponsor trainings that would offer gemstone dealers and jewelry makers exposure to the potential of CAD CAM. Once its impact on productivity and profit margins is understood, CAD CAM software demand would increase within the sector. This is a powerful example of the kind of tandem growth that will take place between sectors pursuing competitive strategies and demand for complex, sophisticated ICT products.

Following through on this model of forward integration and increased competitiveness, however, will require close coordination between the public and private sector. Investment and commitment will be required by both parties for activities such as training domestic artisans, financing the purchase of appropriate technology and the in-depth primary market research required to identify underserved market needs and compete in the international marketplace.

5.4 SERVICES

5.4.1 Tourism

Tourism is a significant and promising sector of Tanzania’s economy. When done successfully, the multiplier effects of tourism touch every citizen in the country: directly through jobs or business opportunities, indirectly through additional purchasing power of the local population, or through new services and experiences available to citizens introduced because of the tourism industry. When done poorly, however, tourism exploits cheap labor, provides little or no economic multiplier to the larger economy, and deteriorates the environment.

Tanzania’s tourism sector is still recovering from the effects of the terrorist bombing at the U.S. embassy in August 1998, and in comparison with Kenya, South Africa, Mauritius, Zambia and Uganda, its progress is halting. While each of these countries experienced an increase in arrivals from 1999 to 2003, see Figure 27, Tanzania’s arrivals declined from 627,000 to 576,000, a compound annual growth rate of -1.7%. The same is true of country tourism expenditures, which grew in all of the comparison countries, but declined in Tanzania. See Figure 29.

The one positive indicator for Tanzania is that average stay has grown from 7.7 days in 1999 to 11 days in 2003. This is most likely due to tour operators adding days in Zanzibar to their travel packages. This is a sign of progress, although there is a clear risk of Tanzania falling into competition for price-sensitive tourists. The decrease in tourism receipts and increase in length of stay have led to a decrease in spend per day, from US$96.73 in 1999 to only US$71.65 in 2003. During this same period, all of the comparison countries grew in spend per day. Kenya, the recent poster child for a decaying tourism model, has closed the gap with Tanzania in terms of spend per day. In 1999 Kenya’s gap with Tanzania in spend per day was 45%. This figure has been reduced to only 8.5% in 2003. Tanzania’s tourism sector has tremendous potential, as demonstrated by positive consumer perceptions in Figure 26. But it has been underperforming due to lack of industry coordination and the absence of a sound competitive strategy.

A critical piece of creating and managing competitive strategy is the ability to incorporate sophisticated customer preferences into differentiated offerings. This is particularly true in the tourism industry, where demanding customers are willing to pay a significant premium for unique, memorable experiences that do not involve worrying about logistical details.

5.4.1.1 Tour Operators

The number of foreign visitors to Tanzania’s national parks jumped from 367,022 in 1999 to additional US$24,995 for the CAM equipment. The software and equipment could be owned and shared among cluster-level groups within the sector. This investment would transform the design and innovation process. Processes that used to take years of training and weeks of labor could be accomplished in a matter of hours. Additionally, CAD CAM could be leveraged to create unique, distinctly Tanzanian designs that incorporate the rare tanzanite stone. This differentiation would increase the value of jewelry exports, and could also be marketed in conjunction with the local tourism industry.

CAD CAM development is an area that could be fruitful for Tanzania’s ICT industry, particularly in tandem with increasing competitiveness in the jewelry sector. The GOT could sponsor trainings that would offer gemstone dealers and jewelry makers exposure to the potential of CAD CAM. Once its impact on productivity and profit margins is understood, CAD CAM software demand would increase within the sector. This is a powerful example of the kind of tandem growth that will take place between sectors pursuing competitive strategies and demand for complex, sophisticated ICT products.

Following through on this model of forward integration and increased competitiveness, however, will require close coordination between the public and private sector. Investment and commitment will be required by both parties for activities such as training domestic artisans, financing the purchase of appropriate technology and the in-depth primary market research required to identify underserved market needs and compete in the international marketplace.

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500,266 in 2004. This number is significant, not only as a dramatic increase, but as one which occurred despite a general decline in arrivals. The majority of these visits take place as part of an organized tour, the most popular of which is a five-day, four-night visit to the Serengeti, with an average cost of US$250/day.65 Based on interviews conducted in Tanzania, this rapid increase is most likely

65 OTF Group interviews: Takims Holidays, Leopard Tours, Multi-Choice Tours, Hima Tours

Source: OTF Group Tourism Visitor Quantitative Survey 2002 n=225

Source: World Tourism Organization

FIGURE 26. CUSTOMER PORTRAIT(TM) OF THE TRAVELER TO EAST AFRICA

FIGURE 27. INBOUND TOURISM ARRIVALS
a direct reflection of the trend towards “packaging” tour experiences, an area that could be promising, but often falls prey to commoditization and price competition.

The general structure of tourists’ experience when they travel to Tanzania is as follows: the tourist is visiting Africa for the first time and, motivated by ease and sense of security, books an all-inclusive trip through an agent in their home country. Then, once in Tanzania, all of the accommodation, logistical and entertainment needs are arranged by a Tanzanian-based tour operator on the ground. There is often a huge disconnect between the customers and operators until they arrive in Tanzania. However, the tour operators are a key component of

FIGURE 28. AVERAGE LENGTH OF STAY

Source: World Tourism Organization

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FIGURE 29. IN-COUNTRY TOURISM EXPENDITURE

Source: World Tourism Organization

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FIGURE 29. IN-COUNTRY TOURISM EXPENDITURE

Source: World Tourism Organization
transactions hinders tour operators and other players in the tourism industry from greatly increasing spend per day.

5.4.1.2 Targeted ICT Interventions
There are several areas in which ICT could play a greater role within the tourism industry, particularly regarding customer knowledge, communication, and industry-level branding. Several of the potential ICT interventions in the tourism value chain are illustrated at the industry levels of customer procurement and in-country experience in Figure 31. For the purpose of this study, a tourist's process of taking a vacation can be reduced to four primary steps. The tourist begins by planning a vacation and considering the various options. The next step is focused on selection. Based on the options and offerings, which destination and range of offerings does he or she select? The third part is the in-country experience, which encompasses all local activities and travel. Finally, post-trip, the tourist processes the high points and low points of the trip, which inform planning the next trip.

Broad Use of ICT
From an operational standpoint, limited use of ICT restricts tour operators' ability to target customer segments, move into new markets and improve their operational efficiency. Without these capabilities, operators are in a suboptimal position vis-à-vis their agents, with little bargaining power and minimal

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### Figure 31. Tourist Experience and Potential ICT Improvements

#### Stages of a Tourist’s Experience

<table>
<thead>
<tr>
<th>Planning</th>
<th>Selection</th>
<th>In-Country Experience</th>
<th>Post-Trip</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICT Interventions</td>
<td>ICT Interventions</td>
<td>ICT Interventions</td>
<td>ICT Interventions</td>
</tr>
<tr>
<td>- Customer knowledge and communication</td>
<td>- Customer knowledge and communication</td>
<td>- Customer knowledge and communication</td>
<td>- Customer knowledge and communication</td>
</tr>
<tr>
<td>- Enable electronic payment via credit and debit cards.</td>
<td>- Enable electronic payment via credit and debit cards.</td>
<td>- Enable electronic payment via credit and debit cards.</td>
<td>- Enable electronic payment via credit and debit cards.</td>
</tr>
<tr>
<td>- Improve information sharing and communication.</td>
<td>- Improve information sharing and communication.</td>
<td>- Improve information sharing and communication.</td>
<td>- Improve information sharing and communication.</td>
</tr>
<tr>
<td>- Better align in-country offerings which are differentiated from competitors’, and for which customers are willing to pay a premium.</td>
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<td>- Better align in-country offerings which are differentiated from competitors’, and for which customers are willing to pay a premium.</td>
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</tr>
<tr>
<td>- Monitor communications with customers, and leverage them for referrals and new customer procurement.</td>
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</tr>
</tbody>
</table>

#### Customer Knowledge and Communication

An important way that Tanzanian firms can leverage ICT is to increase customer knowledge and communication. ICT is a fundamental component of competitive firms and clusters, only be captured through interaction with and feedback from customers. The closer a firm is to its end customers, the easier it is to understand those customer needs and to control the processes which create those products.

ICT provides a quick and cost-effective way to maintain communication with potential and previous customers. From online surveys of customer preferences, to shared systems that allow firms to

#### Ability to determine price and margins. While most companies involved in tourism do have websites and email, these platforms for communication are underutilized. Incorporating electronic databases and optimizing current means of communication would increase Tanzania’s tour operators’ ability to control their own pricing and margins, as well as greater ability to communicate with customers, and leverage them for referrals and new customer procurement.

One prime example of enhanced competitiveness through ICT in the tourism industry is Leopard Tours. Leopard is one of the biggest ground tour operators in Tanzania, functioning with a business-to-business model where clients are secured through independent agents located worldwide. Over a decade ago, Leopard began using email to correspond with its agents, suppliers, and direct clients overseas. Initially, managers were very reluctant to embrace this new technology, and still relied on fax and telephone as the primary means of contact with foreign clients.

Over time, however, as the staff became more familiar with email and electronic communication, the fax and phone became largely irrelevant. Leopard quickly realized that this transition to email-based correspondence led to a cost reduction of over 50%. Its cost for email is now only US$ 2,800 per year. This ICT improvement

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#### Customer Knowledge and Communication

An important way that Tanzanian firms can leverage ICT is to increase customer knowledge and communication. Firms compete and win by embedding unique insights about customer needs and preferences into the products they produce and the channels they engage to sell those products. These insights, which are a fundamental component of competitive firms and clusters, can only be captured through interaction with and feedback from customers. The closer a firm is to its end customers, the easier it is to understand those customer needs and to control the processes which create those products.

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encouraged Leopard to investigate other means of embracing technology to cut its costs while still maintaining close contact with its customers and contacts. It is now in the process of setting up VOIP phone lines. They expect the cost reductions to be important, as after the US$ 3,000 installation, the cost of international and domestic calls will be reduced to the cost of their ISP subscription (-US$ 120/month).

Electronic Payment: Credit Card Payment

The ability to accept credit cards is still rare in many segments of Tanzania’s tourism sector. From lodges and hotels to retail businesses serving the tourism sector and the tour operators described above, very few businesses are capable of accepting and processing credit card payments. This impediment has a direct impact at an industry level, guiding how tourists choose hotels, tour operators, and where they choose to make purchases. This issue also has a macro effect on spend per day, as tourists are limited in their ability to make purchases by the amount of cash they are carrying.

Country Web Presence and Branding

When tourists consider their destination options, they generally think in terms of national and regional level locations, not individual hotels or tour operators. Thus, the issue of Tanzania’s image as a country, and industry level coordination of branding and publicity is essential. A tourism web portal can play a key role in building this brand. It also allows tourists who enjoy planning their own trip to build an itinerary and more easily secure bookings.

The Tanzania Tourist Board has spearheaded this type of initiative, a sign that the industry may be ready to embrace competitiveness and commit the necessary resources to sector development.

The Tanzania Tourist Board recently launched a comprehensive tourism portal, with photos, information on activities, logistics, and links to accredited hotels and lodges. The Tourist Board used the site to begin re-branding Tanzania as “Tanzania: Authentic Africa,” an attempt to project Tanzania as a one-stop tourist destination, not simply the land of Kilimanjaro or the land of Zanzibar. When done well, this type of web presence can have a significant impact on potential visitors’ impressions and desire to plan a trip to this destination.

Tanzania’s “Authentic Africa” is a nature-lover’s destination with a wide array of activities and offerings, friendly people and cultures, the unique offerings of Zanzibar and Kilimanjaro, and a range of differentiated safari experiences. This type of brand and channel-building also allows smaller players to leverage ICT without needing to invest in the creation and maintenance of an independent website and marketing efforts. This is particularly true for small guesthouses and tour operators, which can use this channel to gain new customers.

While these ICT interventions do have the potential to enhance competitiveness, it is important to recognize the parts of the industry structure for which ICT is no substitute for human interaction. Websites can be a valuable tool in terms of providing additional information to customers and building the tour operator’s brand, but they hold two important limitations in terms of driving transaction volume. The primary limitation is that most tourists coming to Africa want the legitimacy and credibility gained through meeting with an agent and initiating the transaction in their home country. Booking a trip via a website, particularly if the operator lacks certification, poses significant uncertainty and risks in the eyes of most travelers. The second area of difficulty is the inefficiency of web communication. While, most tour operators do have some direct customers via their website, this only accounts for 5% of their business on average. Their ability to generate greater volume is constrained by both the dearth of corresponding with potential customers and driving business through the website, as well as the difficulty of securing a booking with a client after correspondence. Often, correspondences that last for over 4 months with potential customers do not lead to any bookings, as the operator lacks certification, poses significant uncertainty and risks in the eyes of most travelers.

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Migrating to More Sophisticated Products and Services

One possible route for the development of the tourism sector is forward integration into the area of foreign agents. Some of the larger tour operators would likely increase their profit margins and have much greater control over targeting customers if they established a foreign presence as agents. Depending on constraints of cost and scale, industry level collaboration should also be investigated.

5.4.2 ICT in Banking and E-commerce

The development of a sophisticated financial services industry that can facilitate secure transactions and efficient capital allocation is an essential component of an enabling environment conducive to private sector growth. Tanzania is at a nascent stage in terms of financial services and products. The national banking industry consists of both foreign and local players, including Citibank Tanzania, Barclay’s, Standard Chartered, National Bank of Commerce, National Microfinance Bank, Azania Bank and CRDB Bank. These institutions respond to local market conditions and provide products and services appropriate for Tanzania’s level of ICT adoption. For example, CRDB bank just introduced two new products: SMS banking, which allows clients to use mobile phones to transfer funds and receive balance information, and the “Tumbo Card”, a type of debit card.

One significant use of ICT is to enhance competitiveness through e-commerce. Yet, e-commerce often occurs in very limited settings, and generally Tanzanians are unable to buy and sell items or services online. According to managers at Standard Chartered Bank, the absence of credit card issuance and emergence of e-commerce is fundamentally a business issue, not a technology issue. The Tanzanian market is not yet attractive for banks in terms of credit cards. However, debit card issuance is a very new phenomenon, one that usually leads to a credit card market, and can create the necessary infrastructure for e-commerce.

In addition to this evolutionary path of financial services, there are several other factors that have made the issuance of credit cards and the emergence of e-commerce difficult.

1. National Identification System. A more reliable national system for personal identification is required to identify and register people within a country. Such a system is necessary to ensure that credit can be adequately assessed and so that credit-granting institutions are aware of the risks presented in default. Tanzania has been in the process of developing a National Identification System for the past ten years, but it is not yet completed. According to Deputy Minister of Home Affairs, John Chiligiti, the GOST is currently undertaking a feasibility study to assess the implementation of this system, which will cost an estimated US$90 million.

2. National Switch. A national switch system enables connectivity and network among banks. It is one of the prerequisites to an e-commerce gateway. Without a national switch, a country’s ATM machines are not linked to the same network; similarly, it is impossible to transfer funds to someone who uses a different bank. Standard Chartered Bank is currently investing in national switch components. Other banks can join the switch and participate in network transactions.

As detailed in Table 6, the cost of website design and hosting for e-commerce is very much exorbitant. For e-commerce, however, a website also needs to acquire a credit card merchant account and an online transaction provider. Those merchants without an account in a foreign bank would need a “cardholder not present” merchant account. This account obligates the merchant to requirements specified by the acquiring bank and is generally seen as a higher risk account and thus carries merchant fees.

In 1996, Takims Holidays created its first website, consisting of eight pages at a cost of $600 for the basic design. It has since revamped the website, which can be found at www.takims.holidays.com. While website development could in some ways substitute for an agent by finding new customers, advertising services and securing bookings, Takims Holidays found that it is in no way a substitute for the business it receives through its relationships with foreign agents. ICT played a supporting role, but could not provide a substitute for the value of credibility and legitimacy conferred by home-country presence.

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5.4.3 Future Development of Services Sector: Business Process Outsourcing

The future development of an ICT Business Process Outsourcing (BPO) services industry in Tanzania could be attractive given that experts project the market will exceed US$ 90 billion by 2006. However, in order for BPO to be at all feasible or profitable, careful consideration must be given to the inputs and enabling environment necessary to foster a competitive BPO sector.

The most basic form of BPO is the call center, of which there are two major types: telemarketing, which involves outbound calling to sell products and services, and customer service, mostly inbound calls answering concerns and solving customer problems. Telemarketing centers receive commissions on sales closed. Typically a call center will purchase call lists, and are paid, for instance, by a credit card company based on how many credit cards are sold. In the telemarketing and low-level customer service industries, the ability to compete is based on low costs.

Other BPO opportunities exist that can either build upon basic forms of BPO or be developed independently. These include transaction services such as invoicing and credit/debit card services. Due to growing global threats of terrorism and natural disasters, an option for some remote locations is to become a disaster recovery center for firms operating in more sophisticated markets.

Current key issues in BPO development in Tanzania are:

- **Low Labor Productivity**: Call centers from the U.S. will only outsource operations if they are able to make at least 40% savings margins. The ability of Tanzania to provide these savings in BPO will depend on its ability to keep wages low and productivity high.

- **High Connectivity Costs**: The cost of connectivity and outbound calls remains an obstacle for Tanzania in terms of BPO competitiveness. The absolute and relative costs, as shown in Figure 32, are not competitive in supporting call centers. These costs could be reduced with the implementation of the Eastern African Submarine Cable System (EASSY) and backbone infrastructure projects discussed in Section 4.

- **Terrorism Accents**: Although it may sound trivial, OTF Group learned in its research with Caribbean firms that a major obstacle faced by telemarketing call centers has been the lack of trust from U.S. customers in giving credit card information to telemarketers with foreign accents. We anticipate that Tanzania would face this same challenge.

When considering BPO projects, the ICT sector in Tanzania must remain wary of high-profile projects that work theoretically, but may be more realistic at a later stage of growth. One such project would be the development of a disaster recovery center for firms operating in more sophisticated markets.

---

**TABLE 6. Costs of website design and hosting**

<table>
<thead>
<tr>
<th>Design Costs</th>
<th>Hosting Costs</th>
<th>International Bandwidth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Website</td>
<td>Basic, 1 Page</td>
<td>Complex Online Shop</td>
</tr>
<tr>
<td>Design Costs</td>
<td>US$100 - 1000</td>
<td>US$2500 - 3000</td>
</tr>
<tr>
<td>Hosting Costs/Month</td>
<td>$50</td>
<td>$120</td>
</tr>
<tr>
<td>International Bandwidth</td>
<td>1.5 gigabytes</td>
<td>10 gigabytes</td>
</tr>
<tr>
<td>Includes</td>
<td>25 email accounts</td>
<td>5 email accounts</td>
</tr>
<tr>
<td>Design Costs</td>
<td>US$200 - 1000</td>
<td>US$2000 - 3000</td>
</tr>
<tr>
<td>Total Annual Cost</td>
<td>US$ 800 - 1,600</td>
<td>US$ 3,440 - 4,440</td>
</tr>
</tbody>
</table>

Source: Tanzania Internet Hosting, www.tih.co.tz/hosting.shtml

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When considering BPO projects, the ICT sector in Tanzania must remain wary of high-profile projects that work theoretically, but may be more realistic at a later stage of growth. One such project would be...
Cyber Park. Successful Cyber Parks are self-sufficient "towns" of technology that encompass residential neighborhoods, shopping centers, technical universities, research centers, business incubators and technologically modern business facilities. Cyber Parks rely heavily on the sustained creation of significant intellectual capital through universities, research centers, and business incubators, all of which are costly to develop and can take years to build. Given the size and sophistication of the Tanzanian ICT sector, Tanzania would be challenged to provide not only the requisite connectivity, but also the ICT professionals required to implement such a project.

Due to the complexity of design and execution, successful Cyber parks require not only patience and commitment from the country’s leadership, but also massive investments in infrastructure as can be seen from the experience of the Cyber Park in Mauritius. What is most important for Tanzania to learn from the Mauritius example is that economic growth was first driven by sugar, then textiles and tourism. Once these sectors started generating significant revenues, the government was able to push investment in new sectors such as financial services and the Cyber City.

5.5 BUILDING COMPETITIVE SMES

In each of the key sectors previously analyzed, the role of SMES is critical. Given their impact on the local economy, they are also broadly important as a driver of individual prosperity. This section will evaluate current SME adoption of ICT in Tanzania, highlighting SMEs that are now using ICT to increase productivity and efficiency.

5.5.1 Lack of SME Adoption

SMEs in Tanzania have been slow to adopt ICT, even as a means for communication. In one survey, local economy, they are also broadly important as a driver of individual prosperity. This section will evaluate current SME adoption of ICT in Tanzania, highlighting SMEs that are now using ICT to increase productivity and efficiency. 

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FIGURE 32. OUTBOUND CALLS TO THE U.S.

<table>
<thead>
<tr>
<th>Country</th>
<th>To US Peak (US$/minute; daytime)</th>
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</thead>
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<tr>
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Though it does not indicate effective usage, another meaningful measure of ICT adoption is the amount of investment in ICT made by SMEs. The data in Figure 34 shows that more than 76% of surveyed SMEs in Tanzania have made no investment in ICT. Of the sectors surveyed in this study, SMEs in the tourism sector invested the most. Since Tanzania’s export sectors are competing on simple comparative advantages, SMEs who participate in these sectors compete mostly on a low cost model. It is not unexpected that the tourism sector has made the most investment in ICT since it is creating a more complex, value-added offering.

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71 Ibid
This data is not surprising. As discussed earlier, SMEs can be divided into two broad categories, those that directly support export sectors and those that are focused domestically. SMEs with a domestic customer focus do not need to connect with suppliers and customers overseas. Given the relatively low usage of the internet within Tanzania, firms that target domestic consumers may not be able to reach enough buyers to justify investing in ICT hardware, training and maintenance. With the low connectivity of Tanzanian society, a compelling need to use email or other computer-based means of communication does not exist. Many of these firms are making very rational decisions to not invest in ICT.

Even SMEs that have made investments in ICT do not seem to be capturing their full benefits. In Figure 35 it is clear that computer investments are primarily being used for basic programs. This could be attributed to a number of variables: a need for training, the cost of more complex software, limited options for software in local content, limited access in terms of connectivity, low awareness of the value of more sophisticated programs—or a simple cost/benefit analysis that, again, does not justify the additional investment in the current environment.

As part of its mission to understand these issues, the Tanzania Development Gateway (TDG) held a meeting in 2004 with Tanzanian SMEs. One issue that many firms raised was the difficulty of marketing and selling their products and services without a website. These firms, primarily retailers, use fairs, exhibitions and conferences to show their goods, and interested buyers increasingly wanted web addresses for additional information, follow-up communication and confirmation of the firms’ legitimacy. The firms had very little information about a website’s set-up and maintenance costs, or who could provide these types of services.

TDG selected seven businesses for a pilot project in which TDG worked with the firms to design a website with logo, company profile, photos and categories of products, reference Box 7 Tanzania Development Gateway (TDG) SME Website Pilot Project. TDG recently had a one-year anniversary workshop to measure the progress of the initiative. The results have been mixed. There have been some challenges in introducing traditional artisan businesses to internet commerce. Several did not realise the importance of checking their emails frequently and using the internet to respond and correspond with customers. As discussed in Section 4, online payments are still a challenge as wire transfers are the most common form of payment and can be cost prohibitive.

Though an internet presence can open a firm to international possibilities, small or low price point orders may not be worth the transaction costs.

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62. Improving Competitiveness and Increasing Economic Growth in Tanzania

For instance, a single local artisan selling wood carvings and batiques on the internet from Tanzania will have to either pay for—or pass through—high international shipping costs that larger bulk exporters can spread across many units. She will also need to coordinate payment for the order, since the local Tanzania financial services structure does not have the capability to process credit card and payments online. Expensive wire transfers are typically the payment solution unless the firm has a trusted partner abroad.

5.5.2 Potential for SMEs to Build Competitive Advantage Through ICT

A domestic or international focus is not always the primary driver of ICT benefit, and there are many domestic-focused SMEs that have successfully used ICT. One factor in determining ICT benefit is the degree to which the business model rests on outperforming competitors on levels of service and complex logistics. There are many ways in which ICT can improve logistics, and the greatest benefits accrue when they are incorporated both inside the organization and as a way to transact across the value chain. The increased automation and reorganization of work processes incorporating efficient back up systems, knowledge-sharing databases, and building seamless communications between divisions. The latter involves connecting and integrating with others in the value chain to achieve better time-to-market, improved coordination of supply and demand, and excellent customer service.

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system in Dar es Salaam. Using this system, management can run passenger counts on each route served to determine occupancy and distribution. Upon implementing this new system, The Business Times realized savings of US$ 200-300 thousand per month. It now has a dedicated staff of free people who monitor the system, performing audits and reconciling discrepancies. The system has been such a success that a related company is being used to design similar systems for other local newspapers, and the firm is handling the distribution services for other newspapers.

Another firm that has used ICT to improve logistics is The Business Times. The Business Times is one of the leading newspapers in Tanzania and has been a first-mover in the use of ICT in the media industry. As early as the late 1980s, the company set up a network to monitor the sales of its newspapers. The network covered ten regions in the country and used telephone lines to communicate. Two factors led the firm to abandon this early initiative in 1992. First, the cost of using phone lines became prohibitive. Second, the costs associated with maintaining a wide network at that time were high and rising. Since there were few qualified professionals who could correct mistakes, the company incurred large travel expenses to send people to remote regions to make repairs.

In 1999 the company began to again consider how to implement a cost-effective monitoring system, since it had lost more than US$ 87,000 in the Tanga region alone over two years. It developed a comprehensive database using Paradox, which it eventually migrated to Access. The database tracked distribution, delivery, sales, returns, collections, and bookings. Upon implementing this new system, The Business Times realized savings of US$ 200-300 thousand per month. It now has a dedicated staff of free people who monitor the system, performing audits and reconciling discrepancies. The system has been such a success that a related company is being used to design similar systems for other local newspapers, and the firm is handling the distribution services for other newspapers.

Making Distance Irrelevant. The distance between buyers and sellers has been a strong comparative advantage since the beginning of commerce. Historically, the time and effort required to move physical goods reduced—and often prevented—distant competition. As barriers to movement and shipment reduced over time, the difficulty of coordination and communication still gave the edge to local firms. With the advent of global ICT, distance has ceased to become a major barrier to entry of competition in all but the most niche products or markets. ICT have made it easier and less expensive to stay in touch with customers and suppliers. As firm knowledge becomes an increasing percentage of the ‘value-added’ of products, ICT also create significant value by allowing the free and instant transport of digitized knowledge and insight. Geographically based clusters are still fundamentally important.
Improving Competitiveness and Increasing Economic Growth in Tanzania

5.6 STRENGTHENING THE PRIVATE SECTOR

5.6.1 Incubation

The availability of support services and financing for start-ups and SMEs, particularly for technology-based businesses, is almost non-existent in Tanzania. The failure to deliver funds and technical capabilities to small ventures is usually the largest impediment to their growth. This is a universal problem, and there are successful models throughout the developing world that Tanzania could replicate.

Business incubation is one way to target and strengthen technology-based firms, or any type of new business venture. Business incubators facilitate the process of enterprise development by helping start-ups to survive and grow when they are most vulnerable. They provide a range of services, from hands-on technical assistance and access to finance, to support services and infrastructure such as office space and communication facilities. Although their core competency is providing access to SME financing, they can be a potent mechanism for intermediating venture capital and establishing networks of investors.

Incubators usually partner with academic institutions or research centers, as well as government agencies. By being housed in a university campus, incubators are better able to target young entrepreneurs and set up partnerships with research centers that foster innovation. Sponsorship by government agencies allows incubators to be financially viable until they can transition to a more profitable business model.

Many incubators eventually generate revenue by providing training and consulting to more established firms, along with their original start-up clients. Some African countries have looked at technology incubation centers to bolster their own ICT development efforts. In 2001 Mauritius set up The National Computer Board’s ICT Incubator Center to help transform entrepreneurship into viable commercial businesses and position the country as a “cyber island.” The center focuses on four areas: e-business, Internet content development, multimedia and bio-informatics, with start-ups generating businesses in e-learning, medical transcription, software and multimedia development, e-tourism and e-commerce, among others. It operates in partnership with the University of Mauritius, but 60% of its funds come from the government, and the remaining balance is driven by rental income. A major part of this initiative’s success is the public-private cooperation in implementing a coordinated ICT policy. This partnership is guided by a clear, broadly shared vision of what Mauritius wants to become: it will not simply be a technically proficient outsider for the global economy, but it will also breed its own innovation.

5.6.2 Business Development Services

Another initiative that can strengthen SMEs and provide support for new business ventures is an invest in Business Development Services (BDS). This type of initiative begins with an analysis of what SMEs in Tanzania need in terms of technical assistance. Access to financing is regularly cited as the number one obstacle faced by new ventures in African countries, but other areas of technical assistance also surfaced: (i) access to information (market information, new processes and technologies), (ii) training on basic business skills and management skills, (iii) networking with the business community to form partnerships, and (iv) consulting on new business plan preparation, among others.

Tanzania can address these needs by developing an integrated National BDS Network that can impact SMEs through clearly defined strategy, operations and partners. The Tanzania Chamber of Commerce, Industries and Trade is a good example of an implementing partner within this network. The network

...
could serve as the first point of reference—or one-stop-shop—for the private sector. In this manner, it could be used proactively to help certain priority sectors, but would be capable of supporting all SMEs. As this study has highlighted, agribusiness will be one of the sectors that initially needs careful assistance as it transitions to more productive business models, especially in rural and provincial areas. Given the existence of limited resources, service offerings could also be progressively introduced on a demand-driven basis as determined by the location of each BDS (possibly starting with more information provision and moving towards advisory and training needs). This network can act as the first point of reference for training, information, consulting services, networking, and access to finance, as illustrated in Figure 36.

It is particularly important for BDS sites in rural areas to partner with local human resources, not only to provide relevant services and solutions, but also to guarantee the sustainability of operations in these provinces. Entrepreneurial expertise will also be a key part of upholding the legitimacy and success of these institutions. A system of checks and balances needs to be in place to drive the operational excellence of any BDS post: there must be clear performance metrics in place to assess an agency’s SME interventions, a continuous client feedback system to drive satisfaction and innovation, and a commitment to some type of “fee for service” model. This methodology has been supported by the recent work in northern Tanzania of the FAIDA SEP BDS support program, which cites market distortion of subsidized BDS providers as an issue.76

Coordination with the government, private sector and the donor community is also crucial to ensure an effective strategy and to ensure that no replication takes place in service offerings or project activities. A partnering scheme should enable a BDS post to, among other things: (i) maintain a consolidated calendar of events for SME, (ii) maintain a regional database of services, (iii) refer clients to partners and professional with key expertise, and (iv) ensure continuation of other NGO and government projects.

5.6.3 An ICT Alliance

Business incubation and BDS services can address more general firm development, but the ICT sector must also actively engage SMEs and other sectors to foster rational investment in ICT solutions. Could serve as the first point of reference— or one-stop-shop—for the private sector. In this manner, it could be used proactively to help certain priority sectors, but would be capable of supporting all SMEs. As this study has highlighted, agribusiness will be one of the sectors that initially needs careful assistance as it transitions to more productive business models, especially in rural and provincial areas. Given the existence of limited resources, service offerings could also be progressively introduced on a demand-driven basis as determined by the location of each BDS (possibly starting with more information provision and moving towards advisory and training needs). This network can act as the first point of reference for training, information, consulting services, networking, and access to finance, as illustrated in Figure 36.

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TABLE 7. ICT alliance structure

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<th>National Government</th>
<th>Local Government</th>
<th>Large Business</th>
<th>Small and Medium Enterprise</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICT Technology and Service Providers</td>
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</tr>
<tr>
<td>- Develop after-sales support programs for National Government agencies</td>
<td>- Identify economically viable solutions to rapid expansion of rural telephony and electricity services</td>
<td>- Understand their client’s business processes better as part of the solution selling process</td>
<td>- Develop and sell specific solutions to SMEs that highlight the economic value that these solutions can provide, despite the overwhelming variety of SMEs</td>
</tr>
<tr>
<td>- Learn ICT intensive aspect of National Government agency’s operations</td>
<td>- Aggregate local community demand for services (e.g., local govt., schools, payphones, businesses) to reach critical mass</td>
<td>- Design appropriate ICT solutions that demonstrate efficiency improvements to the business</td>
<td>- Given the overwhelming variety of SMEs, providers must develop a “categorized” selling approach towards SME by business type (manufacturing, commercial services, retail, etc.)</td>
</tr>
<tr>
<td>- Develop/introduce customized software</td>
<td>- Mobilize local government authorities to partly invest in local telecom infrastructure</td>
<td>- Sell solutions to both business leaders and IT implementers within the firm</td>
<td>- To serve SMEs, providers must become ICT integrators, not simple resellers of individual technology</td>
</tr>
<tr>
<td>- Set-up continuous training mechanisms</td>
<td>- Develop and sell standard ICT based solutions to common local government tasks</td>
<td>- Develop an industry association of ICT providers that can validate the trustworthiness of providers bids to business leaders</td>
<td>- To serve SMEs, providers must become ICT integrators, not simple resellers of individual technology</td>
</tr>
<tr>
<td></td>
<td>- Administration of local population (births, deaths, ID cards, notary services, etc.)</td>
<td>- Finance (budgets and capital investment)</td>
<td>-</td>
</tr>
</tbody>
</table>
Education

Develop partnerships with ICT providers before and during the solution selling process to large businesses.

- Coordinate contextual training with service providers to train users.
- Educators must work with providers to develop business-specific public seminars and workshops to train similar SME types on ICT usage.

Basic, Tertiary, and Specialized Training

- Basic ICT training on PC and application usage.
- Usage of basic ICT equipment for new installations and expansion of existing userbase.
- Build long-term, intensive, and customized training relationships with large businesses.
- Specialized training in the use of ICT to improve the efficiency of day-to-day tasks.

- Regular group training sessions to new employees on systems and applications.
- Specialized training in the use of standard local government ICT solutions.
- Specialized training on customize applications.
- One-on-one training for senior leaders to help them rapidly integrate technology into their day-to-day activities.
- Refresher courses as new ICT services are rolled-out within a business.
- Workshop on MIS systems for retail management.
- Workshop on financial software and inventory management.
- One-on-one training for senior leaders to help them rapidly integrate technology into their day-to-day activities.
- Refresher courses as new ICT services are rolled-out within a business.

Migrating to More Sophisticated Products and Services

- Develop a clear strategy and policy to facilitate investment in ICT by SMEs.
- Purchase customized ICT solutions to internal operational problems (MIS systems / common PBX systems, etc.).
- Partner with PS associations to provide advice to SMEs and ratings of ICT providers (BBB).
- Develop a clear strategy and policy to facilitate investment in ICT by SMEs.
- Purchase customized ICT solutions to internal operational problems (MIS systems / common PBX systems, etc.).
- Partner with PS associations to provide advice to SMEs and ratings of ICT providers (BBB).

Government Policy, Regulation, and Public Infrastructure

- Introduce tax credits / incentives for employee development and training as is done in many countries.
- Set-up task force with providers and educators to identify and roll out standard local government ICT solutions.
- Develop a clear strategy and policy to facilitate investment in ICT by SMEs.
- E-mail instead of paper-based memos.
- Reduce import tariffs on technology to facilitate further investment and upgrading of ICT.
- Electronic data transfer, not paper-based.
- Remove administrative, bureaucratic, and legal obstacles to rural utility service expansion.
- Purchase customized ICT solutions to internal operational problems (MIS systems / common PBX systems, etc.).
- Partner with PS associations to provide advice to SMEs and ratings of ICT providers (BBB).
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Improving Competitiveness and Increasing Economic Growth in Tanzania

The local ICT industry is now relatively weak, which affects its ability to create value for the private sector and SMEs. Profitable contracts and engagements are usually found in the public sector, either through government or donor initiatives. There is little demand from the domestic private sector for ICT solutions beyond an internet connection or an off-the-shelf software program. One of the more successful local ICT firms in Tanzania is Soft-Tech. The firm's client list is primarily government and donor organizations.

General access and ability improvements will assist in creating a more conducive environment for ICT adoption, as will increased awareness of ICT benefits. But the key will be to engage SMEs and the private sector more broadly in a new way. The challenge becomes developing and selling specific solutions that highlight the economic value that these solutions can provide, despite the overwhelming variety of firms. One way to address this challenge is to create an “ICT Alliance.”

The ICT Alliance would consist of hardware and software suppliers, ICT trainers and government in its role as regulator. These entities can be viewed as the “supplier” side of the equation. They would work together to target different types of users or “consumers” of ICT. The Alliance would not only target SMEs and larger private sector firms, but it would also include local and national government. This broadens the impact of ICT efforts in a structured manner. See Table 7 for a more thorough explanation of the roles of each supplier and the benefits they can provide to each member of the Alliance.

The supplier coordination is critical to ensuring that efforts are maximized. For example, SMEs need appropriate ICT solutions that hardware and software providers can provide, but they also need training on new systems and applications. Government has a role to play in ensuring that ICT tools are available and that taxes and regulation are not overly burdensome to SME purchasers, for whom capital is typically scarce.

This section has focused on the private sector, including SMEs and distinct economic sectors. The evolution of a developing economy also requires supporting the government, particularly as it shifts roles as the private sector becomes more sophisticated. The next section will focus on the specific role of government in employing ICT effectively—not only for its own use, but also in building private sector competitiveness.

The local ICT industry is now relatively weak, which affects its ability to create value for the private sector and SMEs. Profitable contracts and engagements are usually found in the public sector, either through government or donor initiatives. There is little demand from the domestic private sector for ICT solutions beyond an internet connection or an off-the-shelf software program. One of the more successful local ICT firms in Tanzania is Soft-Tech. The firm's client list is primarily government and donor organizations.

General access and ability improvements will assist in creating a more conducive environment for ICT adoption, as will increased awareness of ICT benefits. But the key will be to engage SMEs and the private sector more broadly in a new way. The challenge becomes developing and selling specific solutions that highlight the economic value that these solutions can provide, despite the overwhelming variety of firms. One way to address this challenge is to create an “ICT Alliance.”

The ICT Alliance would consist of hardware and software suppliers, ICT trainers and government in its role as regulator. These entities can be viewed as the “supplier” side of the equation. They would work together to target different types of users or “consumers” of ICT. The Alliance would not only target SMEs and larger private sector firms, but it would also include local and national government. This broadens the impact of ICT efforts in a structured manner. See Table 7 for a more thorough explanation of the roles of each supplier and the benefits they can provide to each member of the Alliance.

The supplier coordination is critical to ensuring that efforts are maximized. For example, SMEs need appropriate ICT solutions that hardware and software providers can provide, but they also need training on new systems and applications. Government has a role to play in ensuring that ICT tools are available and that taxes and regulation are not overly burdensome to SME purchasers, for whom capital is typically scarce.

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6 THE ROLE OF GOVERNMENT: BUILDING AND CAPITALIZING ON MOMENTUM

This report has addressed the role of government in the new competitiveness model as a partner and supporter of the private sector. The same holds true for government’s specific involvement in supporting the effective use of ICT. This section focuses on how government can facilitate an ICT platform that increases productivity for the private sector, as well as use ICT within the public sector to improve citizenry and governance. Mechanisms the GOT can use to promote this agenda include creating an actionable ICT Policy, adopting an informed role as regulator and actively using e-government solutions.

6.1 NATIONAL ICT POLICY

Tanzania has taken important first steps in documenting ICT policy, but there is room for policy improvement. On the positive side, Tanzania was the first country in the East African Community to put in place a blueprint to guide the adoption and development of ICT in March, 2003, through the adoption of National Information and Communications Technologies Policy (National ICT Policy). The National ICT Policy’s vision is for “Tanzania to become a hub of ICT infrastructure and ICT solutions that enhance sustainable socio-economic development and accelerated poverty reduction both nationally and globally.”

The objective of the National ICT Policy is to provide a national framework that enables the sector to contribute towards achieving national development goals by exploiting ICT opportunities in a sustainable way. Digging deeper into the actual impact of government interventions reveals several areas of potential improvement and investment. First, the GOT must prioritize initiatives within the National ICT Policy, rather than trying to address a prohibitively large range and number of issues simultaneously. As the GOT determines these priorities, ICT initiatives that benefit targeted sectors need to be at the top of the list. The GOT should also consider expanding the authority and scope of the office of the National ICT Coordinator to capture the full benefits of ICT policy coordination and implementation.

The breadth of the National ICT Policy is impressive, including leadership, infrastructure, legal and regulatory framework, productive and service sectors, and universal access. This reflects the relatively advanced state of the professional network. Building on the ICT Policy document, the GOT is currently drafting a document entitled “Proposed Implementation Strategies and Actions for the National ICT Policy”. This document outlines goals, strategies, actions, agencies and a timeframe for implementing the National ICT Policy. The political capital invested in this effort is commendable, but the document and its successor, National ICT Policy Implementation Strategies, need to be more focused and actionable.

For example, the latter document is detailed and comprehensive, but covers ten different policy areas, each of which includes up to twenty different components of large scale goals and actions. The areas cover all aspects of ICT, ranging from back-home infrastructure to ICT company incubation to the dangers of utilizing ICT to view pornography. These policy areas are not ranked or prioritized, and the responsible parties, financial resources, and timeline are not explicit, making action on these issues cumbersome. In order to capitalize on the momentum and resources invested in formulating ICT policy, the GOT must play a more proactive role in prioritizing its goals, actions and resources. Without this filtering process, policy will remain unfocused and resources diluted among many projects of unequal value and contribution.

Furthermore, a necessary addition to ICT policy is a more detailed and actionable plan on how the ICT platform will support the most productive sectors of the economy. The current strategies focus the discussion on issues of the ICT sector such as access, ability, training, and regulatory policy, but they do not make the connection to how these changes will advance the benefits targeted sectors need to be at the top of the list. The GOT should also consider expanding the authority and scope of the office of the National ICT Coordinator to capture the full benefits of ICT policy coordination and implementation.

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As Table 8 demonstrates, the National ICT Policy’s section on the Productive Sectors and how ICT will help them is vague and unfocused. The following strategies and actions for the productive sectors are found in the document:

Several broad GOT initiatives, such as facilitating the development of a national payment system and enacting legislation to provide a framework under which business can operate, rest within the outlined strategies. However, to fully realize the potential of ICT in the sectors that matter most to Tanzania, the GOT and the private sector would need to come together choose priority sectors, understand these sectors’ unique needs and design the appropriate government support structures. The policy statements and economic sector targets in the National Strategy for Growth and Reduction of Poverty clearly demonstrate that the GOT understands the importance of adopting these principles of competitiveness. Following this model, ICT policy and ICT solutions for the economic sectors would be informed by the sectors and firms themselves. The ICT Alliance could also be leveraged in this fashion to assist in the development of appropriate policy.

Two of the most important inputs into successful policy are commitment and coordination. Currently, national ICT policy development and implementation is owned by the undersized National ICT Coordination Office in the Ministry of Communications and Transport. The office lacks financial and human resources, as well as authority over other ministries and public institutions that would benefit from deeper ICT expertise. This suggests a lack of commitment. A more appropriate seat for ICT decision-makers would be within the President’s or Vice President’s Office, where the ICT Coordinator would have greater access to resources and greater ability to coordinate cross-ministerial efforts. Increasing resources within the office is a starting place for increasing the efficacy of ICT policy. However, to truly coordinate ICT policy effectively, a network of ICT professionals should be created throughout Ministries and public institutions. These individuals would report to the ICT Coordination Office. Through these institution-level offices, ICT policy and ICT interventions in priority sectors could be strengthened through a bottom-up approach.

### 6.2 REGULATORY REGIME REFORM

Tanzania’s communications and broadcasting regulator is The Tanzania Communications Regulatory Authority (TCRA). It was established on November 1, 2003, through a merger of the Tanzania Communications Commission and the Tanzania Broadcasting Commission. TCRA now regulates telecommunications, broadcasting, ICT applications, provision of postal services, and management of the radio spectrum. Catching up to the economic sectors that will be expected to employ ICT to increase productivity and reduce poverty.

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issues facing regulators worldwide, the TCRA also needs to be vigilant in addressing new technologies and the issues they introduce into the competitive landscape. In general, TCRA actions can have a major impact on ensuring that ICT is used effectively by the private sector.

As many countries have revised telecommunications regulations due to recent privatisations, the rapid proliferation of ICT has forced policy makers to re-evaluate their current regulatory regimes. Current debates focus on the convergence of broadcast media and telecommunications. Convergence refers to the extent to which similarities exist among IT, telecommunications and other forms of media (print and broadcast) in such areas as content, infrastructure and networks. A common example is an internet site that is operated as a channel of a print or broadcast media company. Tanzania has chosen the path of convergence, and now needs clear regulation of how changes in regulation can facilitate the process. Regulation and legislation should address how to create not only a more efficient market for ICT firms, but also an environment in which ICT-enabled firms can effectively access the benefits of ICT. In this context, regulation revisions being undertaken by TCRA should be measured by how effective they are in increasing the competitiveness of both the ICT sector and other economic sectors. The TCRA and its predecessors have been historically slow in providing regulation that is appropriate for the commercial environment. One of the first effective steps TCRA is taking is to address convergence. This is the case with VOIP, which was outlawed instead of licensed until this year, impeding massive reductions in the cost of telephony.

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The following perspective on convergence can be found in another Infosys sponsored report on the issue: "ICT and media convergence issues are primarily about improving the efficiency of market economies, and how changes in regulation can facilitate the process." Regulation and legislation should address how to create not only a more efficient market for ICT firms, but also an environment in which ICT-enabled firms can effectively access the benefits of ICT. In this context, regulation revisions being undertaken by TCRA should be measured by how effective they are in increasing the competitiveness of both the ICT sector and other economic sectors. The TCRA and its predecessors have been historically slow in providing regulation that is appropriate for the commercial environment. One of the first effective steps TCRA is taking is to address convergence. This is the case with VOIP, which was outlawed instead of licensed until this year, impeding massive reductions in the cost of telephony.
The next challenge that the TCRA may face is the national infrastructure backbone that will need to be built by leveraging the ICT networks now owned by institutions such as the Tanzania Railway Corporation, the Tanzania Electric Supply Company and Songo Songo Gas Supply. Moving forward, the TCRA will need to create incentives for these stakeholders and new entrants to engage in commercial last mile build-out using existing and new fiber optic networks. In many countries, regulation often impedes the ability of networks to talk to each other, hand off communications and provide fair priced interconnectivity to increase competition. The licensing and introduction of telecom services in mainland Tanzania by Zanetel, for example, demonstrates the positive impact that competition can have on prize and service. Future opportunities will exist when Tanzania enhances its fiber optic international connectivity through the EASSY project or a comparable venture. Similar network collaboration that fosters rather than hinders competition through fair competitive regulation should be encouraged.

A final area of regulation that will become increasingly important as ICT develops in Tanzania is consumer rights regulation for the internet. This area includes privacy, governance, advertising and related regulatory issues. While these issues seem relatively tedious when compared to issues of infrastructure investment and convergence regulation, it is important that they be addressed by the TCRA as, or preferably before, ICT becomes more pervasive throughout the Tanzanian economy.

### 6.3 E-GOVERNMENT

The movement towards digitizing government operations and using the internet as a medium for service provision and extension has been loosely described as “e-government.” In the same way that private sector firms use ICT to increase productivity, government can use ICT to deliver services to businesses and citizens more efficiently and cost-effectively. This is particularly significant in terms of creating an enabling environment that is conducive to private sector growth. The IFC’s Doing Business in 2005 Report, cited that Tanzania was among the five nations where government regulation and bureaucracy placed a huge tax on doing business. For example, more than 50% of companies in Tanzania reported that more than 10% of management’s time is spent dealing with government regulation. Customs is one area that is particularly burdened by bureaucratic delays.

As Tanzania begins its evolution towards a more developed economy, the GOT will be the primary actor. As such, any ICT improvement that allows it to cut costs, increase the speed of bureaucratic processes, and enhance transparency, will generate positive effects throughout the entire economy. The GOT has been successful in adopting a few early e-government initiatives that have provided these benefits, and its success can serve as a model for continued improvement.

Governments can generally use ICT in three broad ways to improve their service delivery. First, they can improve the transparency of the business environment by making data widely and freely available. This is achieved through the use of technology such as database management and data entry systems, which can manage data and increase the speed of processing. Second, governments can help the business community become more efficient, make more informed decisions, and spend less time and money on bureaucratic procedures when launching businesses and transacting goods and services. ICT can help government simplify transactions and regulatory compliance, once the internal commitment for these changes exist.

One area that is currently under revision is the government’s procurement services. Government can use ICT to efficiently link its own need for services issued, see Figure 38. Each type is further divided by market segment and then classified as Individual, Class or Exempt, depending on the size of social and economic impact. The new licensing framework is designed to simplify procedures, ensure regulatory flexibility and efficiency, and encourage the entry of new operators, applications and services.

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with private sector suppliers, such as the potential plan for a digital market being considered by the Central Tender Board. The Economic and Social Research Foundation, the Tanzania Development Gateway and the Central Tender Board are collaborating to create a unique, open-source-based digital system to facilitate the government’s e-procurement system. Although not yet complete, the system will eventually allow suppliers to search for tender opportunities, provide a facility for contract and profiles registration, and send out tender alerts based on GOT requirements.

This new system is expected to broaden the base of bidders and suppliers worldwide as firms will be able to subscribe to receive tender alerts based on a submitted business profile of the supplier. The GOT expects a savings of 60% once the system is fully implemented. Suppliers will be able to view summaries of all tender notices for free, but the full text of tender notices (full bidding documents) will only be available for a set fee, since the government generates significant revenues from selling bidding documents. However, bidding documents will be available for local firms at no cost or at a lower price than for international firms. Due to the lack of an online payment system, purchasing the bidding documents will be done offline via wire bank transfer, cash or check.

Third, investments in information management and data integration within and between agencies can significantly improve the quality of government services. This is true for both back office and constituent-facing processes, and can translate into powerful cost and time savings. The GOT’s use of ICT to upgrade its payroll system generated an immediate return by catching more than 6,000 ghost workers. These technologies can also be used to communicate across internal boundaries, such as sharing relevant data about changes in citizen profiles. When a person registers for an identity card, the information is stored in different modules of POLIS. The system makes it possible to search MP’s by name or constituency. There are also reports presenters’ MPs by political party, region, gender and other parameters.

The parliamentary on-line acts & documents management system has an inbuilt retrieval mechanism to facilitate the overall management of statutes and other parliamentary documents, including related legislative processes. The home page has a navigation panel whose links filter information that is stored in different modules of POLIS. The system provides a unique solution for searching MP’s by name or constituency. There are also reports presenters’ MPs by political party, region, gender and other parameters.

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According to the United Nations, there are 5 stages of e-government: emerging, enhanced, interactive, transactional and seamless.28 Countries with emerging presence have a formal, but limited web presence in the form of independent government websites, with static organizational or political information. An enhanced presence is defined by an increased number of government sites with more specialized information and with links to other government pages. Countries enter the interactive stage when their websites allow for formal interactions such as discussion areas and the search of specialized databases. Countries with transactional presence have government websites that allow users to complete secure transactions such as obtaining visas and licenses, as well as pay utility bills and taxes. Digital signatures can be recognized for procurement of government contracts. Lastly, seamless or fully integrated e-governments allow for instant access to any service in a "unified package." This stage, where ministerial and departmental lines are irrelevant, has yet to be reached by any country. Tanzania is ranked with Kenya, Uganda and Zambia in the enhanced stage.

The United Nations survey concluded that Africa has the lowest regional e-government capacity index of all global regions at 0.84. The UN e-government capacity index is comprised of measures of a country's web presence, telecommunications infrastructure, and human capital. The metrics, conceived by the UN, which compare a government's potential progress in e-government given its access to connectivity with its achieved progress, are shown in Figure 39. Tanzania almost exactly reflects Africa's performance, with a score of 0.83. Among the African comparison countries, Uganda scores lower at 0.46, with Zambia nearby at 0.75. South Africa is clearly beyond the other African countries at 1.56. For context, countries such as Belgium and Denmark are in the interactive stage, averaging 2.56, and France and Spain are at the transactional stage.

As these and other metrics make clear, despite the anecdotal progress in Tanzania, there is still significant work to be done in capturing the true value of digitizing government services. The individual charged with directing Management Information

Systems and e-government sit within the President’s Office, reflecting the seriousness of Tanzania’s commitment. The next step is for the government to concentrate on e-government reforms that will have the largest impact on the ability of firms to compete. The value of these reforms is broad, but they will continue to fall into three primary categories of outputs: transparency (relevant data, widely and freely available), simplicity (streamlined procedures for private sector transactions), and information efficiency (seamless integration of data, within and between government agencies).
As this study has tried to capture, the challenges to Tanzanian growth and competitiveness are tremendous. Tanzania is burdened by an economy that generates very low GDP per capita and few competitive exports. The goal for Tanzanian leaders must be to adopt a new economic growth model that increases prosperity for the average citizen.

Achieving this goal will not be easy. Tanzania will need to break from its traditional mode of competition, exporting natural resources as commodities while capturing little value. The country must learn to replace this cycle of poverty with a virtuous cycle based on competitive advantages. In this new cycle, increasing wealth for the average citizen is fueled by the sustained capacity to build and export complex products and services. The cycle drives individual prosperity because it depends on increasing levels of productivity and innovation, which can only be achieved by investing in human capital. While taking a broad view of Tanzanian competitiveness, this report has specifically explored the role of ICT in creating this virtuous circle.

Should Tanzania’s leaders choose this new model of competition, they will need to make difficult choices. They will need to focus scarce resources on where Tanzania has competitive advantages and the potential to export added products for niche markets exist in the coffer, cashews, minerals and tourism sectors. The recommendations that follow focus on using ICT to build more productive Tanzanian firms, to help create an environment that enables competitiveness and growth. Given the nature of the study, they are biased towards actions that can be implemented in the short-term and its development partners. It is not an exhaustive list, but strives to be a useful input into an ongoing dialogue about ICT and Tanzanian competitiveness.

ICT have a critical role to play in achieving growth and competitiveness in Tanzania, but they are not a panacea. ICT are an enabler of competitive advantage and operational efficiency for firms, but they are informed by policies, infrastructure and strategies that government and the private sector help to create. The GOT has significant work to do before ICT can be a true competitive asset in Tanzania. At this moment, there are no clear competitive strategies guiding the growth of key sectors. The current ICT platform is weak and must be upgraded. Access to telephony and the internet is very limited, in comparison to other countries in Africa and beyond. Firms’ ability to use relevant ICT is also lacking, primarily due to low levels of secondary education and training. SME usage is particularly low, and while it may be a rational firms-level decision, it is also a function of the lack of coordination of ICT actors in supporting these firms.

One tension point of this study is that the real inputs to economic transformation range from the specific and measurable (increasing connectivity) to the psychological and often messy (adopting a new competitiveness mindset). This journey depends on ICT, but it also depends on increased levels of trust, creativity and leadership from disparate parts of Tanzanian society. It will require that people think differently, and then act differently. This shift is difficult for all countries, but history counters that it is possible. The timeline can vary widely, however, often driven by these less tangible factors. At the end of the day, it will require a deliberate balance of both patience and impatience from all stakeholders, including Tanzanian citizens.

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8. RECOMMENDATIONS

8.1 DEVELOP AND EXECUTE COMPETITIVE STRATEGIES IN KEY CLUSTERS

Tanzania’s biggest challenge to achieving sustained economic growth and competitiveness is the upgrade of its products and services. Given the challenges to becoming globally competitive in any industry, Tanzania’s public and private sector leaders must not only create a platform for successful firms, but also target support to key economic sectors that have the revenue and employment potential to help the country reach its national objectives. This requires developing a coherent and coordinated industry-wide strategy for each of these target clusters, and building public and private sector partnerships to attract support and investment. The initial analysis in this report of the agriculture, minerals and tourism sectors can be used as a foundation to formalize selection of priority sectors and test hypotheses about how to upgrade these industries.

Once Tanzania develops competitive strategies in promising sectors and sub-sectors with detailed action and investment plans, specific firms and institutions can then benefit from directed investment. The primary value of this directed investment is that it allows the government, donors and the private sector to prioritize high impact investments within constrained budgets. The inclusion of financial institutions and donor organizations in the strategy and implementation process facilitates the access to capital required by private sector entrepreneurs and cooperatives to execute the strategy. Local financial institutions feel more comfortable lending to investors who are following strategies that have been tested with the market, and have been explicitly endorsed by private and public sector participants. Donor organizations are assured that projects designed for the priority sectors will not be executed in a vacuum, but will be adding value to a comprehensive effort to strengthen the economy.

The outputs of this process will vary from sector to sector, as shown by the analysis in this report of several key economic sectors:

In the coffee sector, the first steps are being taken towards a more liberalized market structure with the adoption of a “second window” for direct export sales, rather than the state-run auction. Firms that are taking advantage of this opportunity are focusing on higher quality clean coffee for the specialty markets in the US and Europe. This is a sound strategy in the coffee market and should be encouraged. At a primary level this requires investment in the construction of processing centers and the training of operators to ensure a consistent high quality product. ICT solutions will have relatively limited impact, but may include a GIS study to strategically locate processing centers, websites for more sophisticated producers such as KILICAFE, and database systems to capture data for appellation models.

Experience with processing facilities in the cashew sector highlights the need to adopt appropriate technology. Value addition opportunities exist and are being successfully implemented by firms such as Olam International. The processing method adopted by Olam is different from that used in the state-built factories that have been privatized. This process ensures a higher quality product less kernel breakage, which decreases value, and is labor intensive, providing employment opportunities. Again ICT solutions are not indispensable to affect this transition, but they can help to facilitate it. One technology that can be used in cashews and agriculture generally is the adoption of traceability systems that provide information to participants along the supply chain. Demand-driven traceability requirements include certifying organic products, tracking insects/pesticide use, identifying genetically modified foods and backtracking sources in case of health hazards.

Within the minerals and mining sector there are forward integration opportunities in the lapidary and jewelry industries. A victim of smuggling and adverse regulation in the past, this industry will have a new opportunity to thrive in January, 2006, when legislation prohibiting the export of uncut gemstones goes into effect. Donors and government can prepare the domestic private sector to capture forward integration value. Activities include training domestic artisans, financing the purchase of appropriate technology and conducting in-depth primary market research. One ICT solution that could be valuable is investing in electronic traceability systems for Tanzania to efficiently conform

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82. Improving Competitiveness and Increasing Economic Growth in Tanzania

to the Tucson Tanzanite Protocols. Another is purchasing and training the jewelry industry in CAD CAM methods of jewelry design.

The tourism industry is a complex and important business in Tanzania, and one in which industry dynamics lead foreign tour agents to capture much of the total value. Most tour operators in Tanzania focus on developing relationships with tour agents in foreign countries, who direct clients to the country and maintain strong bargaining positions against the domestic operators. As such, prices and margins are not controlled by local players. Domestic operators do not focus on targeting specific customer segments that can drive a more informed and competitive strategy in an industry that is approaching saturation in terms of the number of players. Capturing valuable customer knowledge and increased communication with consumers will allow operators to customize experiences for high value clients. Market research tools such as online surveys and analytical packages are an opportunity to leverage ICT to react to and satisfy customer preferences.

Finally, new sectors will become attractive in the near future, sectors in which Tanzania is not currently competing. When these opportunities develop, it will be important to ensure that entrepreneurs launching businesses receive sufficient support.

8.2 FACILITATE ACCESS

Access to ICT is a critical part of a building a competitive platform for all firms, whether they compete domestically or internationally. Increased access can lead to better coordination and communication across the value chain, increasing productivity and efficiency. For all firms, but particularly those competing in international markets, increased access to ICT can also lower cost structures. Although this benefit may not translate into increased competitive advantage from firms from other countries, it levels the playing field for Tanzanian companies.

Access to ICT in Tanzania is currently weak. Fixed and mobile telecommunications are some of the lowest in Africa, even as the increasing use of mobile phones compensates slightly for the slow growth in fixed-line telephony. In terms of Internet hosts and computers, Tanzania has one of the lowest usage rates in the region. Internet density is particularly low at 0.23 users per 100 inhabitants. The broadening of access to the Tucson Tanzanite Protocols. Another is purchasing and training the jewelry industry in CAD CAM methods of jewelry design.

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- Form a small committee to identify priority sectors and create public/private sector workgroups for each priority sector tasked with developing detailed action and investment plans, as well as concrete timelines for final sector strategies informed by international expertise.

- Private-Public task forces should develop a system through which priority sector performance, investment and returns will be tracked against projections; this data will enhance transparency and be useful in refining resource allocation and strategy goals.

- In the coffee sector, government and institutions should encourage investment in high quality strategy, including processing infrastructure and operator training. In cashews, invest in appropriate technology for factories to process cashews for export. Research appropriate cities to invest in traceability systems that provide value to consumers and differentiate from competitors.

- Within the mining sector, prepare the domestic private sector to capture forward integration value in lapidary and jewelry industries, including training domestic artisans, financing the purchase of appropriate technology (CAD-CAM), and conducting infix-one primary market research. Invest in electronic traceability systems for Tanzania to efficiently conform to the Tucson Tanzanite Protocols.

- Build a more competitive tourism strategy through the framework discussed above. Invest in market research and analysis tools to increase customer knowledge and communications.

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- Build a more competitive tourism strategy through the framework discussed above. Invest in market research and analysis tools to increase customer knowledge and communications.
access to ICT can be accomplished by improving international connectivity, building out the national backbone infrastructure and addressing the digital divide between urban and rural areas.

The high costs of connectivity are mostly due to the expense of connecting internationally through satellite. Tanzania must invest in alternative methods to access the international fiber optic backbone, which is a key determinant in making domestic connectivity affordable and reliable. Expensive and unreliable connectivity adversely affects firms’ ability to compete in domestic, regional and international markets. In order to address these issues, Tanzania must not only focus on its infrastructure, but also on its regulatory and competitive environment.

Political support must be mobilized to facilitate regional dialogue for the EASSY project via Eastern African Community representatives and Zanzibar Telecom, Tanzania’s representative to the MOU. While the project is expected to be primarily financed by MOU parties as equity holders and strategic investors in the form of global carriers, there will also be additional funding required in the form of loans or bank guarantees to local private companies. This is an opportunity for donors to invest directly in improving Tanzanian and East African connectivity. In tandem with EASSY, Tanzania implements its national infrastructure backbone project. The government can play a key role in this endeavor and must leverage existing networks while encouraging last-mile build-out services by the private sector. With large expensive infrastructure projects such as this one, Tanzania cannot afford the duplication of effort or inefficient investments, which have plagued more developed economies. The project would require the construction of 6,997 km of fiber optic cables and approximately 3,475 km of links, at a total estimated cost of more than US$ 169 million.

An institution needs to be identified that will oversee the management of the new backbone operation and its leasing agreements. This institution will need to operate effectively and be responsive to private sector needs. The body will need to coordinate closely with TCRA and may need to be appointed by GOT. The government should also work with key stakeholders of incumbent networks, TANESCO, TTCL, TAZARA, TRC and SONGAS so that a framework can be adopted in which these owners provide access to their networks to other potential providers, so that commercial connectivity can increase around the existing networks.

In both efforts to improve international connectivity and the domestic infrastructure, TCRA play a significant role. After liberalization, TCRA has implemented progressive regulation around licensing, interconnectivity and switching costs for telecom. However, prices are still high for the region. In general, TCRA needs to implement and enforce fair competition among telecom and data services providers so that new players can enter the market and effectively lower prices (seeking to duplicate the effect Zantel has had in lowering prices and improving service quality in Zanzibar). Regulations should ensure that all networks can talk to each other, hand off communications and provide fair priced interconnectivity.

In preparation for more efficient international connectivity, TCRA’s regulation needs to ensure that cost savings are passed on to the private sector when EASSY and EADTS are operational. In some countries, access to these types of cables has been limited by regulators, stifling the benefits of competition. In these monopolistic models, providers have set access rates to cables so close to that of satellite rates that the private sector has not benefited from the reduction in costs necessary to compete. Access is particularly weak in rural areas, which have significantly less ICT infrastructure, much lower quality of training in terms of education and ability, and fewer opportunities for work. The rural/urban divide in Tanzania will be exacerbated under current competitive dynamics and conditions. However, if resources are mobilized to improve connectivity, the gap between these populations can be decreased. Government and donors have a role to play in bringing access to rural areas, although this investment must be rationalized. Social service providers and SMEs in rural areas that have a demonstrated need for ICT solutions should be supported with access to capital. The same is true of ICT sector players that can fulfill a need to coordinate closely with TCRA and may need to be appointed by GOT. The government should also work with key stakeholders of incumbent networks, TANESCO, TTCL, TAZARA, TRC and SONGAS so that a framework can be adopted in which these owners provide access to their networks to other potential providers, so that commercial connectivity can increase around the existing networks.

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market demand in these areas. When direct subsidies or grants are used, it should be clear that doing so will not suppress private sector development in providing the same services.

For example, although the Sengerema Telecentre is a current success story, and its rising revenues are a testament to the market demand for such services, caution should be taken in replicating this model. The private sector has demonstrated its ability to serve similar market demands, as shown by the proliferation of Internet cafes throughout the country that also provide other basic business solutions. Donors must work to assist the private sector in providing these services, while not distorting a competitive market environment.

When bridging the rural/urban digital divide, investment in rural areas must also be appropriate to the environment. According to the analysis of rural ICT usage done by DFID in June, 2005, rural areas are more dependent on radio broadcasts and mobile phones than personal computers or Internet. Social service providers will find these technologies most useful in promoting healthcare education such as infant immunization in rural areas. Given the low levels of basic education, accessing more sophisticated forms of ICT should not be dependent on speaking English, and websites should be developed with Swahili content.

8.3 IMPROVE ABILITY

While Tanzania advances in making ICT more accessible to its population, it must also address the limited ability of many people to use ICT effectively. This is another important factor responsible for the lack of ICT adoption in Tanzania and is a direct function of education levels and technology training. Long-term success of access initiatives rests on firms’ capacity to effectively take advantage of an enhanced ICT platform throughout the country. To this end, Tanzania needs to focus on two critical areas: improving basic education and enhancing training in applied ICT business skills. While recent reforms in primary education have lifted enrollment rates in Tanzania, secondary school enrollments and tertiary education remain among the lowest in Sub-Saharan Africa at just 5% and 1% respectively. As the government addresses the low levels of education generally, it also needs to incorporate ICT into its education strategy. It is beyond the scope of this report to advise on general education policy, but there are tangible actions that can be taken to support the inclusion of ICT in basic education curricula. Since basic education is a broad social good, this is an area in which donor institutions can implement programs without worrying about distorting markets.

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Action items

- Ensure that domestic firms wishing to invest in EASSY rollouts have access to financing, and research donor support of telecom financing in other countries. Possibilities include direct loans or loan guarantee programs with domestic commercial banks.
- Invest in a detailed feasibility study of the backhaul/logistics to landlocked partners of EASSY project such as Rwanda and Uganda that will traverse Tanzania.
- Create incentives through TCRA that will encourage commercial last mile buildout using the existing and new fiber optic networks.
- Invite ICT-focused NGOs and experts such as ICANN to US fibre best practices in procurement policy and regulatory frameworks to help guide TCRA.
- Support demand-driven ICT investments by SMEs in rural areas, subsidizing rural firms’ investment in ICT hardware and connectivity. Accelerate the realization of the Rural Telecommunications Fund and the institutional framework by guiding implementation.
- Facilitate joint ventures between international ICT-focused companies and local ones.
- Subsidize training for ICT sector firms in areas such as English writing skills, training of trainers, customer care service, and technical assistance.
- Rationalize and revise taxes and tariffs on technology-adopters. Analyze impact on ICT firms of 15% withholding tax or services such as bandwidth.

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While Tanzania advances in making ICT more accessible to its population, it must also address the limited ability of many people to use ICT effectively. This is another important factor responsible for the lack of ICT adoption in Tanzania and is a direct function of education levels and technology training. Long-term success of access initiatives rests on firms’ capacity to effectively take advantage of an enhanced ICT platform throughout the country. To this end, Tanzania needs to focus on two critical areas: improving basic education and enhancing training in applied ICT business skills. While recent reforms in primary education have lifted enrollment rates in Tanzania, secondary school enrollments and tertiary education remain among the lowest in Sub-Saharan Africa at just 5% and 1% respectively. As the government addresses the low levels of education generally, it also needs to incorporate ICT into its education strategy. It is beyond the scope of this report to advise on general education policy, but there are tangible actions that can be taken to support the inclusion of ICT in basic education curricula. Since basic education is a broad social good, this is an area in which donor institutions can implement programs without worrying about distorting markets.

Action items

- Ensure that domestic firms wishing to invest in EASSY rollouts have access to financing, and research donor support of telecom financing in other countries. Possibilities include direct loans or loan guarantee programs with domestic commercial banks.
- Invest in a detailed feasibility study of the backhaul/logistics to landlocked partners of EASSY project such as Rwanda and Uganda that will traverse Tanzania.
- Create incentives through TCRA that will encourage commercial last mile buildout using the existing and new fiber optic networks.
- Invite ICT-focused NGOs and experts such as ICANN to US fibre best practices in procurement policy and regulatory frameworks to help guide TCRA.
- Support demand-driven ICT investments by SMEs in rural areas, subsidizing rural firms’ investment in ICT hardware and connectivity. Accelerate the realization of the Rural Telecommunications Fund and the institutional framework by guiding implementation.
- Facilitate joint ventures between international ICT-focused companies and local ones.
- Subsidize training for ICT sector firms in areas such as English writing skills, training of trainers, customer care service, and technical assistance.
- Rationalize and revise taxes and tariffs on technology-adopters. Analyze impact on ICT firms of 15% withholding tax or services such as bandwidth.

80 World Development Indicators, World Bank 2004
Secondary schools represent a good opportunity for introducing students to computers and their value. This can be a more complicated process than it initially appears. Integrating ICT into the educational system goes beyond setting up a few computers and exposing students to the Internet or basic programs. It even goes further than conducting computer training sessions by experienced professionals. To introduce students to the benefits of ICT in a rigorous way, teachers must incorporate ICT into their own teaching methods. This means that teachers themselves may need ICT training.

The types of projects that support ICT training in secondary schools should be carefully evaluated. As evidenced by the experience of the DILES project, which made secondary school examinations and syllabi available on the Internet, not all methods are appropriate. This project depended on passive methods of attraction and assumed greater access than was realistic. The Thin Client Terminal Project currently being implemented in a pilot phase may better facilitate access and improve ability at a reduced cost. As mentioned previously, however, providing hardware is only a first step in truly capturing the benefits if computers in schools.

Improving ability in the private sector requires a different approach, and should focus on enhancing training in applied ICT business skills. The annual private rates of return to these types of technical and on the job training are very high compared to basic education, as shown in a 1997 World Bank study. The study concludes that while return rates on University training average 9%, the rates for vocational training are 19.6%, and 35.2% for on-the-job training.81 Unfortunately there are not enough strong links between academic trainings and the private sector’s needs. Though some initiatives have addressed the disconnect between academic training and the needs of private businesses, wider ICT literacy will only become a reality when both individuals and organizations use them in their day to day lives, and when the appropriate advanced training becomes available to those in or entering the workforce.

There are several ways in which Tanzania can improve coordination between academia and the private sector, but the first step must be to conduct a needs assessment of the private sector, especially SMEs, to evaluate their specific issues. This study will inform the context of specialized ICT training programs, which can be implemented by both academia and the private sector.

### Action items

- Designate a task force that can develop methods by which secondary school teachers can incorporate ICT into their curricula and give teachers incentives to enroll in ICT training.
- Invite experts such as SchoolNetAfrica to provide counsel.
- Invite and sponsor private sector leaders to hold honorary professorships to teach courses that highlight the business applications of ICT at the University of Dar es Salaam’s Department of Engineering, as well as at the University Computing Centre, Ltd.
- Invite experts such as SchoolNet Africa to provide counsel.

### 8.4 STRENGTHEN SMES THROUGH INCUBATION AND BDS

Given the importance of SMEs in private sector development, both in exports and domestic contribution, these firms must be supported generally and in regards to ICT adoption. Providing well thought out business incubators and business development services (BDS) to SMEs is one step that can strengthen these enterprises.

Business incubators can help start-ups survive in this crucial phase by providing a range of services, from hands-on management/technical assistance and access to finance, to support services and infrastructure, such as office space and communication facilities. Research on business incubation has led to a set of general principles to secure the financial stability and success rate of this business development model. First, the less an incubator relies on subsidies, the more successful and viable it is.82 This calls for a clear strategy of how the incubator will reach financial sustainability, by both providing services to in-house start-ups, and offering training and consulting services to other private and public sector firms. As incubators move towards financial viability, it is typical for their budget to move away

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### Action items

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from depending heavily on grants from govern-
ment or multilateral organizations, to relying exclusively on own revenue-generating activities (consulting services, training, etc).

Second, incubators must be run by entrepreneurs who have the management experience, private sector connections, energy and charisma to lead other entre-
preneurs through the difficult terrain of launching new ventures. Although connections with the govern-
ment are an advantage, this cannot be these man-
agers’ defining asset.83 Incubators should also draw a
line between financial intermediation and pro-
viding direct financial assistance to firms. The former is their actual role, and they should focus on setting up networks of potential investors that can help to raise start-up capital. Finally, the incubator should have clear and fulfilling performance metrics, as well as clear success and “graduation” criteria.84

Another initiative that can strengthen SMEs and shore up new business ventures are BDS. As this report highlighted, some of the major obstacles faced by Tanzanian SMEs are the lack of relevant service offerings and in-house technical capabilities, and the difficulty of rural and provincial SMEs in accessing them. For best results, BDS organizations should have (i) a clear mandate and strategic vision, (ii) the in-house technical capabilities to execute on that mandate, (iii) private sector involvement, including personnel with entrepreneurial expertise that can engender institutional legitimacy, strategic guidance, and demand-driven services; and (iv) clear performance metrics to assess an agency’s suc-
cessful interventions with SMEs. Furthermore, the development of a BDS National Network with spe-
cific service offerings, can start to close the urban/
rural divide in terms of SME technical assistance.

8.5 CREATE AN ICT ALLIANCE

An ICT Alliance for Tanzania would improve ICT adoption by providing a structure through which ICT actors can effectively engage target user seg-
ments. This ‘risk force’ would include ICT actors or “suppliers,” which would consist of hardware and software suppliers, ICT trainers and govern-
ment in its role as regulator, as well as discrete tar-
get segments, including SMEs, large enterprises, local government and national government (a more
detailed structure of the ICT Alliance can be found in Section 5.5.3, “An ICT Alliance”). The suppliers
would work together to provide complete ICT solutions to firms and government, ensuring that
trainees are available and that government in its role of regulator is supporting private sector efforts. This structure promotes the relevance of ICT
solutions for target segments. This is particularly
important for the SME sector, which has shown resistance to adopting ICT solutions that do not offer a clear return on investment cost.

The ICT Alliance structure that this report endors-
es is ambitious, requiring the coordinated effort of
many institutions. Fortunately, Tanzania has a rel-
atively strong informal ICT network from which
to draw upon for the ICT Alliance. For example,
a two-day workshop sponsored by AITEC and
SWOPNET in Mbuya gathered individuals and
firms from the private sector, government, NGOs
and local ICT professionals. During the seminar,
several simple but significant linkages and solutions were developed. A first step toward
the development of a BDS National Network with spe-
cific service offerings, can start to close the urban/
rural divide in terms of SME technical assistance.

Action items

- Identify a coordinating body to own the ICT Alliance effort and
- begin organizing specific actions. This role could be filled by
the improved ICT Coordination Office in the national govern-
ment, or it can be a separate body.
- Assess the strategic potential of Business Incubation as a tool
to strengthen technology-based companies. Gather knowl-
edge and best practices from other African Business
Incubation centers (Mauritius National Computer Board’s ICT
Incubation Center and South Africa’s Vulex Innovation Support
Center).
- Provide specialized training programs, forums and workshops
that ICT solutions to the competitive strategy needs of target
groups. Facilities could include AITEC, Tanzania
Development Gateway and SWOPNET.


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rural divide in terms of SME technical assistance.
8.6 UPGRADE PUBLIC SECTOR AND ENABLING ENVIRONMENT

Upgrading the public sector and the enabling environment for ICT in Tanzania will take the coordinated efforts of several institutions within and outside of government. ICT coordination within the government needs to be reinforced to exploit synergies and make ICT policy more focused and relevant. This can be accomplished by adopting a new coordination structure. The government also needs to continue to invest in appropriate e-government solutions.

To empower ICT coordination throughout government, the National ICT Coordination Office should be given additional resources and relocated within the President’s or Vice President’s Office, where the ICT Coordinator would have greater ability to impact cross-ministerial effort. To truly coordinate ICT policy effectively, a network of ICT professionals should be created throughout Ministries and public institutions. These individuals would report to the National ICT Coordination Office. The institution-level offices would recommend ICT policy inputs and determine appropriate ICT interventions and investment in priority sector strategies through a bottom-up approach. To ensure execution, these offices would be expected to strengthen linkages with private sector firms and act as members of the ICT Alliance. In tourism, for example, workshops could be sponsored by the ICT office within the Ministry of Natural Resources and Tourism, in which private sector operators could discuss their challenges in using ICT effectively.

The National ICT Policy itself is extensive, but what is required now is a more detailed agenda on how the ICT platform will enhance the productive sectors of the economy, the sectors charged with using ICT to increase productivity and reduce poverty. Creating ICT offices in relevant Ministries and institutions is a starting point for tailoring policy for these key sectors. A next step is facilitating conferences for public and private sector players, ICT industry members and key players identified within the priority economic sectors. These forums will foster public-private dialogue regarding ICT policy and inform government leaders on private sector challenges and needs. A strong competitive environment for the private sector rests on an informed and responsive public sector, and this exercise would be one part of building cross-sector coordination.

In terms of e-government, the GOT has already begun to realize the tangible benefits of ICT with the upgrade of its Human Resources systems and the launch of the Parliamentary Online Information System to better serve constituents. However, firms still complain of bureaucratic delays, and ICT can be a powerful tool in addressing this issue. By learning from regional and global best practices, Tanzania’s government could continue to transition from paper to electronic systems, centralize back office networks, and simplify procedures related to trade, customs, and new business registration, among others. The ability to provide these services effectively to citizens will increasingly depend on the government’s ability to digitize its own processes. To drive the transition to a working e-government, investment will be needed in hardware, software and training for government workers.

### Action Items

- Restructure and relocate National ICT Coordination Office to a crosscutting office and create ICT offices with Ministries and public sector institutions that report to the National Office.
- Facilitate conferences for public and private sector players to inform government policy.
- Continuously train government and regulator’s staff so that they can anticipate ICT environmental changes and be proactive rather than reactive.
- Invest in hardware, software and tools used by government back office from paper based to electronic systems.

### Recommendations

- To truly coordinate ICT policy effectively, a network of ICT professionals should be created throughout Ministries and public institutions. These individuals would report to the National ICT Coordination Office. The institution-level offices would recommend ICT policy inputs and determine appropriate ICT interventions and investment in priority sector strategies through a bottom-up approach. To ensure execution, these offices would be expected to strengthen linkages with private sector firms and act as members of the ICT Alliance. In tourism, for example, workshops could be sponsored by the ICT office within the Ministry of Natural Resources and Tourism, in which private sector operators could discuss their challenges in using ICT effectively.

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A final undertaking that will enhance the ICT environment—and the business environment as a whole—will be enabling e-commerce throughout Tanzania. Specifically, this means providing a financial framework for electronic transactions. This is a growing demand among firms that target international buyers and use websites to support their enterprises, but do not have access to credit card payment capability. These websites increase access to buyers globally, but payment is cumbersome and expensive, since wire fees must be included in the transaction. The adoption of credit cards will require the completion of the National Identification System so that credit can be adequately assessed and credit-granting institutions can have recourse in situations of default. Another important component is a national switch system that enables connectivity and networking among banks.
### 9 APPENDICES

#### 9.1 ECONOMIC AND TRADE STATISTICS

**TABLE 9. Tanzania exports**

<table>
<thead>
<tr>
<th></th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minerals</td>
<td>73.3</td>
<td>177.4</td>
<td>302.2</td>
<td>383.7</td>
<td>540.2</td>
</tr>
<tr>
<td>Cashew Nuts</td>
<td>100.9</td>
<td>86.6</td>
<td>56.6</td>
<td>46.6</td>
<td>39.4</td>
</tr>
<tr>
<td>Coffee</td>
<td>78.6</td>
<td>83.7</td>
<td>57.1</td>
<td>35.3</td>
<td>49.9</td>
</tr>
<tr>
<td>Manufactured Goods</td>
<td>30.1</td>
<td>43.1</td>
<td>56.2</td>
<td>65.9</td>
<td>99.9</td>
</tr>
<tr>
<td>Tobacco</td>
<td>43.3</td>
<td>38.6</td>
<td>35.7</td>
<td>35.5</td>
<td>40.8</td>
</tr>
<tr>
<td>Cotton</td>
<td>28.5</td>
<td>38</td>
<td>33.7</td>
<td>28.6</td>
<td>46.5</td>
</tr>
<tr>
<td>Tea</td>
<td>24.6</td>
<td>32.8</td>
<td>29</td>
<td>29.6</td>
<td>26.7</td>
</tr>
</tbody>
</table>

Source: Bank of Tanzania, Economic Bulletin

**TABLE 10. Marked production of major export commodities (Zanzibar)**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cloves</td>
<td>10,339.00</td>
<td>2,556.00</td>
<td>254</td>
<td>8,027.30</td>
<td>466</td>
<td>2,001.90</td>
<td>5,929.80</td>
</tr>
<tr>
<td>Copra</td>
<td>2,223.00</td>
<td>1,207.00</td>
<td>93.6</td>
<td>296.4</td>
<td>972.4</td>
<td>256.6</td>
<td>9,980</td>
</tr>
<tr>
<td>Chiles</td>
<td>3.5</td>
<td>0.1</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Cassava Stems Oil*</td>
<td>1,624.00</td>
<td>771</td>
<td>19.9</td>
<td>10</td>
<td>242.1</td>
<td>323.5</td>
<td>187.3</td>
</tr>
<tr>
<td>Seaweeds</td>
<td>4,861.00</td>
<td>3,667.00</td>
<td>3,394.00</td>
<td>4,834.00</td>
<td>4,990.70</td>
<td>8,117.00</td>
<td>9,090.70</td>
</tr>
</tbody>
</table>

*Includes other essential oils, cardamom, eucalyptus, etc.*

Source: Ministry of Planning Zanzibar

**TABLE 11. Inbound tourism arrivals**

<table>
<thead>
<tr>
<th></th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tanzania</td>
<td>427</td>
<td>501</td>
<td>525</td>
<td>575</td>
<td>576</td>
</tr>
<tr>
<td>Uganda</td>
<td>189</td>
<td>193</td>
<td>205</td>
<td>254</td>
<td>305</td>
</tr>
<tr>
<td>Kenya</td>
<td>969</td>
<td>1,037</td>
<td>995</td>
<td>1,301</td>
<td>1,146</td>
</tr>
<tr>
<td>Mauritius</td>
<td>600</td>
<td>678</td>
<td>675</td>
<td>709</td>
<td>722</td>
</tr>
<tr>
<td>South Africa</td>
<td>6,026</td>
<td>6,001</td>
<td>5,908</td>
<td>6,550</td>
<td>6,640</td>
</tr>
<tr>
<td>Zambia</td>
<td>418</td>
<td>417</td>
<td>492</td>
<td>565</td>
<td>578</td>
</tr>
</tbody>
</table>

Source: World Tourism Organization
### TABLE 12. Average length of stay

<table>
<thead>
<tr>
<th>Country</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tanzania</td>
<td>7.7</td>
<td>8</td>
<td>8</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Uganda</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
</tr>
<tr>
<td>Kenya</td>
<td>9.4</td>
<td>8.7</td>
<td>8.4</td>
<td>8.5</td>
<td>8.4</td>
</tr>
<tr>
<td>Mauritius</td>
<td>10.4</td>
<td>10.4</td>
<td>10.4</td>
<td>10.5</td>
<td>10.4</td>
</tr>
<tr>
<td>South Africa</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
</tr>
<tr>
<td>Zambia</td>
<td>8</td>
<td>6</td>
<td>9</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

Source: World Tourism Organization

### TABLE 13. In-country tourism expenditure

<table>
<thead>
<tr>
<th>Country</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tanzania</td>
<td>467</td>
<td>381</td>
<td>424</td>
<td>441</td>
<td>na</td>
</tr>
<tr>
<td>Uganda</td>
<td>151</td>
<td>165</td>
<td>165</td>
<td>171</td>
<td>189</td>
</tr>
<tr>
<td>Kenya</td>
<td>485</td>
<td>500</td>
<td>536</td>
<td>513</td>
<td>631</td>
</tr>
<tr>
<td>Mauritius</td>
<td>718</td>
<td>732</td>
<td>821</td>
<td>829</td>
<td>946</td>
</tr>
<tr>
<td>Zambia</td>
<td>85</td>
<td>111</td>
<td>117</td>
<td>134</td>
<td>146</td>
</tr>
</tbody>
</table>

Source: World Tourism Organization

### TABLE 14. Spend per day

<table>
<thead>
<tr>
<th>Country</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tanzania</td>
<td>96.73</td>
<td>95.06</td>
<td>100.95</td>
<td>76.7</td>
<td>71.65</td>
</tr>
<tr>
<td>Uganda</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
</tr>
<tr>
<td>Kenya</td>
<td>53.25</td>
<td>55.42</td>
<td>64.13</td>
<td>60.29</td>
<td>65.55</td>
</tr>
<tr>
<td>Mauritius</td>
<td>115.06</td>
<td>103.81</td>
<td>116.95</td>
<td>111.36</td>
<td>125.99</td>
</tr>
<tr>
<td>South Africa</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
<td>na</td>
</tr>
<tr>
<td>Zambia</td>
<td>26.3</td>
<td>40.48</td>
<td>26.42</td>
<td>29.65</td>
<td>32.22</td>
</tr>
</tbody>
</table>

* Assumption: Passenger transport 8.0% of travel expenditure in 2003

Source: World Tourism Organization
FIGURE 39. TANZANIA TOP 5 EXPORTS BY COUNTRY EXPORT VALUE

Concentration of Exports by Country Export Value

Top 5 Exports by Country Export Value, 2003
- Nonmon Gld Unwrt, Semimfd
- Fish Fillets, Fresh, Child
- Precious Metal Ores, Conc
- Coffee Green, Husks, Skins
- Fish Fillets, Frozen

1998 2001 2003
- 46.5%
- 53.3%
- 54.9%
- 0%
- 25%
- 50%

FIGURE 40. TANZANIA TOP 5 EXPORTS BY COUNTRY AND WORLD SHARE, 2003

Concentration of Exports by World Market Share, 2003

Top 5 Exports by Country Export Value, 2003
- Nonmon Gld Unwrt, Semimfd
- Fish Fillets, Fresh, Child
- Precious Metal Ores, Conc
- Coffee Green, Husks, Skins
- Fish Fillets, Frozen

1998 2001 2003
- 46.5%
- 53.3%
- 54.9%
- 0%
- 25%
- 50%
- 75%

Top 5 Top 10 Top 20 Top 50
- 10.3%
- 16.8%
- 70.2%
- 81.1%
- 0%
- 25%
- 50%
- 75%
FIGURE 41. DISTRIBUTION OF TANZANIAN IMPORTS

<table>
<thead>
<tr>
<th>Category</th>
<th>1998</th>
<th>2001</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials/Metals</td>
<td>70%</td>
<td>8%</td>
<td>9%</td>
</tr>
<tr>
<td>Bovine Products</td>
<td>8%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Pharmaceuticals/Chemicals</td>
<td>10%</td>
<td>9%</td>
<td>8%</td>
</tr>
<tr>
<td>Electronics/Computers</td>
<td>8%</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>Multiple Business</td>
<td>5%</td>
<td>4%</td>
<td>6%</td>
</tr>
<tr>
<td>Transportation</td>
<td>4%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Power Generation and Distribution</td>
<td>70%</td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td>Phones</td>
<td>5%</td>
<td>6%</td>
<td>3%</td>
</tr>
<tr>
<td>Food/Beverages</td>
<td>26%</td>
<td>10%</td>
<td>22%</td>
</tr>
<tr>
<td>Housing/Household</td>
<td>8%</td>
<td>8%</td>
<td>8%</td>
</tr>
<tr>
<td>Textile/Apparel</td>
<td>4%</td>
<td>6%</td>
<td>7%</td>
</tr>
<tr>
<td>Healthcare</td>
<td>90%</td>
<td>4%</td>
<td>4%</td>
</tr>
<tr>
<td>Personal Care</td>
<td>10%</td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td>Personal Entertainment/Leisure</td>
<td>2%</td>
<td>1%</td>
<td>3%</td>
</tr>
<tr>
<td>Final Consumption/Goods and Services</td>
<td>41%</td>
<td>39%</td>
<td>37%</td>
</tr>
<tr>
<td>Upstream Industry</td>
<td>7%</td>
<td>1%</td>
<td>13%</td>
</tr>
<tr>
<td>Industrial and Supporting Functions</td>
<td>1%</td>
<td>2%</td>
<td>23%</td>
</tr>
<tr>
<td>Defense</td>
<td>29%</td>
<td>9%</td>
<td>1%</td>
</tr>
<tr>
<td>Telecommunications</td>
<td>1%</td>
<td>1%</td>
<td>8%</td>
</tr>
<tr>
<td>Office</td>
<td>1%</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>Telecommunications</td>
<td>1%</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>Defense</td>
<td>29%</td>
<td>9%</td>
<td>1%</td>
</tr>
<tr>
<td>Industrial and Supporting Functions</td>
<td>1%</td>
<td>2%</td>
<td>23%</td>
</tr>
<tr>
<td>Defense</td>
<td>29%</td>
<td>9%</td>
<td>1%</td>
</tr>
<tr>
<td>Telecommunications</td>
<td>1%</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>Office</td>
<td>1%</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>Telecommunications</td>
<td>1%</td>
<td>1%</td>
<td>2%</td>
</tr>
</tbody>
</table>
### FIGURE 42. TANZANIA'S TRADE BALANCE

<table>
<thead>
<tr>
<th></th>
<th>1998</th>
<th>2001</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upstream Industries</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materials/Metals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forest Products</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Petroleum/Chemicals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semiconductors/Computers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple Business</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transportation and Distr.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Generation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office</td>
<td></td>
<td></td>
<td></td>
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<td>Telecommunications</td>
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<tr>
<td>Defense</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Industrial and Supporting Functions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food/Beverages</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing/Household</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Textiles/Apparel</td>
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<td></td>
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<tr>
<td>Health Care</td>
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<td></td>
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<tr>
<td>Personal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entertainment/Luxury</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Final Consumption Goods and Services</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Goods and Services

<table>
<thead>
<tr>
<th></th>
<th>1998</th>
<th>2001</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upstream Industries</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materials/Metals</td>
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<td></td>
<td></td>
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<tr>
<td>Forest Products</td>
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<tr>
<td>Petroleum/Chemicals</td>
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<td>Textiles/Apparel</td>
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<tr>
<td>Entertainment/Luxury</td>
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<tr>
<td>Final Consumption</td>
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#### Goods and Services

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<th>2003</th>
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<tr>
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<tr>
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<td></td>
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<tr>
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<tr>
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<tr>
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<td></td>
<td></td>
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<tr>
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<td></td>
<td></td>
<td></td>
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<tr>
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<tr>
<td>Personal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entertainment/Luxury</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Final Consumption</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
FIGURE 43 TANZANIA’S CURRENT STAGE AND BROAD CLUSTER STATE

Primary Goods
Machinery
Specialty Inputs
Vertical Stage
Upstream Industries Industrial and Supporting Functions Final Consumption Broad Cluster

- Machinery: 0.05%
- Specialty Inputs: 0.46%
- Final Consumption: 19.32%
- Broad Cluster: 38.39%
- Upstream Industries: 5.64%
- Industrial and Supporting Functions: 1.18%
- Primary Goods: 34.82%
- Vertical Stage: 0.05%
## TABLE 15

### Top 50 Tanzanian Industries (1–50) by Export Value, 2003

<table>
<thead>
<tr>
<th>Name</th>
<th>Broad Cluster</th>
<th>Detailed Cluster</th>
<th>2003 Country Export Value</th>
<th>2003 Country Export Share</th>
<th>2003 World Export Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonmon-Gold Unset, Secend</td>
<td>Metals / Metals</td>
<td>Gold</td>
<td>496,076,129</td>
<td>36.4%</td>
<td>1.63%</td>
</tr>
<tr>
<td>Fruit-Fish, Fresh, Child</td>
<td>Food / Beverages</td>
<td>Fish</td>
<td>671,711,722</td>
<td>50.0%</td>
<td>3.18%</td>
</tr>
<tr>
<td>Reserve-Mined Ores, Conc</td>
<td>Metals / Metals</td>
<td>Base Metal Concentrates, Ore</td>
<td>60,945,509</td>
<td>4.57%</td>
<td>1.57%</td>
</tr>
<tr>
<td>Coffee-Green, Hulla, Skins</td>
<td>Food / Beverages</td>
<td>Coffee, Tea, Cocoa</td>
<td>64,133,884</td>
<td>4.09%</td>
<td>0.97%</td>
</tr>
<tr>
<td>Fruit-Fish, Fission</td>
<td>Fish</td>
<td>Fish</td>
<td>43,356,600</td>
<td>3.00%</td>
<td>0.87%</td>
</tr>
<tr>
<td>Cashew Nuts, Fresh, Dead</td>
<td>Food / Beverages</td>
<td>Nuts</td>
<td>40,730,480</td>
<td>2.90%</td>
<td>0.46%</td>
</tr>
<tr>
<td>Rice Cotton, End Linings</td>
<td>Food / Beverages</td>
<td>Rice</td>
<td>31,348,180</td>
<td>2.13%</td>
<td>0.29%</td>
</tr>
<tr>
<td>Tobacco Stripped or Parted</td>
<td>Personal</td>
<td>Tobacco</td>
<td>32,547,950</td>
<td>2.17%</td>
<td>0.24%</td>
</tr>
<tr>
<td>Other Woven or Unwoven</td>
<td>Personal</td>
<td>Unwoven Cereals</td>
<td>18,559,238</td>
<td>1.45%</td>
<td>0.19%</td>
</tr>
<tr>
<td>Ten</td>
<td>Food / Beverages</td>
<td>Coffee, Tea, Cocoa</td>
<td>24,751,722</td>
<td>1.79%</td>
<td>0.49%</td>
</tr>
<tr>
<td>Diamond, Nonindust, Unset</td>
<td>Personal</td>
<td>Precious, Semi-P Stones</td>
<td>24,923,708</td>
<td>1.76%</td>
<td>0.47%</td>
</tr>
<tr>
<td>Leguminous Vegetables Dry</td>
<td>Food / Beverages</td>
<td>Vegetables</td>
<td>21,688,803</td>
<td>1.57%</td>
<td>0.37%</td>
</tr>
<tr>
<td>Prec., Semi-P Stones NES</td>
<td>Personal</td>
<td>Precious, Semi-P Stones</td>
<td>18,579,978</td>
<td>1.33%</td>
<td>0.41%</td>
</tr>
<tr>
<td>Major Unwtd Industry</td>
<td>Food / Beverages</td>
<td>Unwoven Cereals</td>
<td>18,559,238</td>
<td>1.45%</td>
<td>0.19%</td>
</tr>
<tr>
<td>Shell Fish / Hot, Frozen</td>
<td>Fish</td>
<td>Fish</td>
<td>15,352,848</td>
<td>1.12%</td>
<td>0.14%</td>
</tr>
<tr>
<td>Clover</td>
<td>Food / Beverages</td>
<td>Spices</td>
<td>10,140,650</td>
<td>0.74%</td>
<td>9.46%</td>
</tr>
<tr>
<td>Smoove Seeds</td>
<td>Food / Beverages</td>
<td>Seeds, Beans</td>
<td>9,415,344</td>
<td>0.69%</td>
<td>2.23%</td>
</tr>
<tr>
<td>Tobacco, Not Stripped</td>
<td>Personal</td>
<td>Tobacco</td>
<td>8,649,938</td>
<td>0.61%</td>
<td>0.56%</td>
</tr>
<tr>
<td>Palm Oil, Sugar Etc</td>
<td>Food / Beverages</td>
<td>Sugar, Processed</td>
<td>8,420,140</td>
<td>0.59%</td>
<td>0.15%</td>
</tr>
<tr>
<td>Cocoa Beans, Raw, Roasted</td>
<td>Food / Beverages</td>
<td>Coffee, Tea, Cocoa</td>
<td>7,972,354</td>
<td>0.55%</td>
<td>0.27%</td>
</tr>
<tr>
<td>Glass Bottle, Bottles, Nivnor</td>
<td>Food / Beverages</td>
<td>Food Packaging</td>
<td>7,953,141</td>
<td>0.56%</td>
<td>0.20%</td>
</tr>
<tr>
<td>Cut Flowers</td>
<td>Housing, Household</td>
<td>Plants Flowers</td>
<td>7,832,387</td>
<td>0.56%</td>
<td>0.19%</td>
</tr>
<tr>
<td>Rice Of Wheat Or Milled</td>
<td>Food / Beverages</td>
<td>Rice, Cereals</td>
<td>7,050,981</td>
<td>0.51%</td>
<td>0.40%</td>
</tr>
<tr>
<td>Sla, Against fibre, Waste</td>
<td>Textiles / Apparel</td>
<td>Other Fibres, Tow/Waste</td>
<td>6,677,782</td>
<td>0.48%</td>
<td>12.79%</td>
</tr>
<tr>
<td>Soaps</td>
<td>Housing, Household</td>
<td>Cleaning Agents, Waxes</td>
<td>6,151,285</td>
<td>0.45%</td>
<td>0.17%</td>
</tr>
<tr>
<td>Use Plant NES</td>
<td>Housing, Household</td>
<td>Plants, Flowers</td>
<td>6,038,779</td>
<td>0.44%</td>
<td>0.42%</td>
</tr>
<tr>
<td>Groundnuts, Green</td>
<td>Food / Beverages</td>
<td>Nuts</td>
<td>5,943,968</td>
<td>0.43%</td>
<td>0.71%</td>
</tr>
<tr>
<td>Cigarettes</td>
<td>Personal</td>
<td>Tobacco</td>
<td>5,277,168</td>
<td>0.39%</td>
<td>0.45%</td>
</tr>
<tr>
<td>Fresh Vegetables Dry</td>
<td>Food / Beverages</td>
<td>Vegetables</td>
<td>5,267,867</td>
<td>0.39%</td>
<td>0.45%</td>
</tr>
<tr>
<td>Fresh Vegetables Dry NES</td>
<td>Textiles / Apparel</td>
<td>Tobacco, Rice, Wheat</td>
<td>5,267,867</td>
<td>0.39%</td>
<td>0.45%</td>
</tr>
<tr>
<td>Canned, Carded or Combine</td>
<td>Textiles / Apparel</td>
<td>Canned</td>
<td>5,146,550</td>
<td>0.37%</td>
<td>0.43%</td>
</tr>
<tr>
<td>Freshwater Robin, Plants</td>
<td>Textiles / Apparel</td>
<td>Freshwater, Rice, Wheat</td>
<td>5,134,133</td>
<td>0.36%</td>
<td>0.43%</td>
</tr>
<tr>
<td>Under Grown Washed - Of Cotton Non Elastic - O</td>
<td>Textiles / Apparel</td>
<td>Ofhly Undr Garmnt, Hides, Skins, Raw</td>
<td>3,857,098</td>
<td>0.28%</td>
<td>0.03%</td>
</tr>
<tr>
<td>Bovine, Equine Hides, Raw</td>
<td>Textiles / Apparel</td>
<td>Ofhly Undr Garmnt, Hides, Skins, Raw</td>
<td>3,857,098</td>
<td>0.28%</td>
<td>0.03%</td>
</tr>
</tbody>
</table>

Continued
<table>
<thead>
<tr>
<th>Rank</th>
<th>Industry</th>
<th>Value</th>
<th>Share</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tobacco, Combustibles</td>
<td>3,751,767</td>
<td>0.31%</td>
<td>2.41%</td>
</tr>
<tr>
<td>2</td>
<td>Sheep Tyre Natural Alloys</td>
<td>3,673,489</td>
<td>0.31%</td>
<td>0.30%</td>
</tr>
<tr>
<td>3</td>
<td>Transportation Run</td>
<td>3,074,223</td>
<td>0.26%</td>
<td>0.04%</td>
</tr>
<tr>
<td>4</td>
<td>Fish</td>
<td>2,054,270</td>
<td>0.21%</td>
<td>0.03%</td>
</tr>
<tr>
<td>5</td>
<td>Tobacco, Refuse</td>
<td>2,854,753</td>
<td>0.23%</td>
<td>0.28%</td>
</tr>
<tr>
<td>6</td>
<td>Tobacco, Personal Tobacco</td>
<td>2,484,089</td>
<td>0.21%</td>
<td>0.70%</td>
</tr>
<tr>
<td>7</td>
<td>Tobacco, Spice</td>
<td>2,365,406</td>
<td>0.20%</td>
<td>0.21%</td>
</tr>
<tr>
<td>8</td>
<td>Transportation Parts</td>
<td>2,231,577</td>
<td>0.19%</td>
<td>0.02%</td>
</tr>
<tr>
<td>9</td>
<td>Fish, Frozen Excl Fillets</td>
<td>2,000,751</td>
<td>0.17%</td>
<td>0.03%</td>
</tr>
<tr>
<td>10</td>
<td>Other Knit Etc Fabrics</td>
<td>1,943,132</td>
<td>0.16%</td>
<td>0.35%</td>
</tr>
<tr>
<td>11</td>
<td>Oilcake &amp; Other Food Losses</td>
<td>1,103,672</td>
<td>0.16%</td>
<td>0.34%</td>
</tr>
</tbody>
</table>

Source: OTF Group; COMTRADE / UN Trade Statistics SITC (Rev. 3) @ 3-digit accuracy
### TABLE 16. Main telephone lines

<table>
<thead>
<tr>
<th>Country</th>
<th>Total (000s) 2002</th>
<th>CAGR (%) 1997–2002</th>
<th>Per 100 Inhabitants 2002</th>
<th>CAGR (%) 1997–2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uganda</td>
<td>55</td>
<td>0.3</td>
<td>0.22</td>
<td>3.2</td>
</tr>
<tr>
<td>Kenya</td>
<td>328.1</td>
<td>3.8</td>
<td>1.03</td>
<td>0.5</td>
</tr>
<tr>
<td>Mauritius</td>
<td>337.2</td>
<td>8</td>
<td>27.03</td>
<td>6.7</td>
</tr>
<tr>
<td>South Africa</td>
<td>484.4</td>
<td>0.8</td>
<td>16.66</td>
<td>1.1</td>
</tr>
<tr>
<td>Tanzania</td>
<td>161.6</td>
<td>9.0</td>
<td>0.87</td>
<td>6.0</td>
</tr>
<tr>
<td>Zambia</td>
<td>87.7</td>
<td>2.3</td>
<td>0.82</td>
<td>0.0</td>
</tr>
<tr>
<td>Lower income</td>
<td>6839.5</td>
<td>14.7</td>
<td>2.83</td>
<td>12.5</td>
</tr>
<tr>
<td>Lower Middle Income</td>
<td>9427.5</td>
<td>13.3</td>
<td>16.68</td>
<td>14.4</td>
</tr>
<tr>
<td>Upper Middle Income</td>
<td>6305.9</td>
<td>5.6</td>
<td>20.05</td>
<td>4.4</td>
</tr>
<tr>
<td>High Income</td>
<td>9624.9</td>
<td>1.9</td>
<td>58.54</td>
<td>1.2</td>
</tr>
<tr>
<td>Americas</td>
<td>29934.8</td>
<td>3.8</td>
<td>34.73</td>
<td>2.3</td>
</tr>
<tr>
<td>WORLD</td>
<td>1091575.7</td>
<td>6.7</td>
<td>17.9</td>
<td>5.3</td>
</tr>
</tbody>
</table>

Source: ITU 2003

### TABLE 17. Local telephone network 2002

<table>
<thead>
<tr>
<th>Country</th>
<th>Capacity</th>
<th>Residential</th>
<th>Faults Per 100 Main Lines Per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uganda</td>
<td>—</td>
<td>—</td>
<td>80</td>
</tr>
<tr>
<td>Kenya</td>
<td>66.7</td>
<td>99</td>
<td>43.6</td>
</tr>
<tr>
<td>Mauritius</td>
<td>85.9</td>
<td>100</td>
<td>80</td>
</tr>
<tr>
<td>South Africa</td>
<td>—</td>
<td>—</td>
<td>51</td>
</tr>
<tr>
<td>Tanzania</td>
<td>68.9</td>
<td>97</td>
<td>63</td>
</tr>
<tr>
<td>Zambia</td>
<td>60.9</td>
<td>100</td>
<td>67</td>
</tr>
<tr>
<td>Lower income</td>
<td>78.7</td>
<td>99.7</td>
<td>77.9</td>
</tr>
<tr>
<td>Lower Middle Income</td>
<td>78.8</td>
<td>99.8</td>
<td>79.7</td>
</tr>
<tr>
<td>Upper Middle Income</td>
<td>80</td>
<td>85.2</td>
<td>76</td>
</tr>
<tr>
<td>High Income</td>
<td>83.6</td>
<td>100</td>
<td>70.7</td>
</tr>
<tr>
<td>Americas</td>
<td>81.4</td>
<td>100</td>
<td>89.2</td>
</tr>
<tr>
<td>WORLD</td>
<td>79.4</td>
<td>99</td>
<td>74.7</td>
</tr>
</tbody>
</table>

Source: ITU 2003
### TABLE 18. Teleaccessibility 2002

<table>
<thead>
<tr>
<th>Country</th>
<th>Residential Mainlines</th>
<th>Commercial Mainlines</th>
<th>Public Telephones</th>
<th>as % of Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total (000)</td>
<td>Per 100 Households</td>
<td>% Households with a Telephone</td>
<td>Per 1000 Inhabitants</td>
</tr>
<tr>
<td>Uganda</td>
<td>21.5</td>
<td>0.6</td>
<td>2.7</td>
<td>1.22</td>
</tr>
<tr>
<td>Kenya</td>
<td>142.3</td>
<td>2.1</td>
<td>—</td>
<td>9.6</td>
</tr>
<tr>
<td>Mauritius</td>
<td>261.8</td>
<td>84.6</td>
<td>80</td>
<td>2.92</td>
</tr>
<tr>
<td>South Africa</td>
<td>2511.5</td>
<td>25.1</td>
<td>31</td>
<td>179</td>
</tr>
<tr>
<td>Tanzania</td>
<td>101.8</td>
<td>1.5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Zambia</td>
<td>44.8</td>
<td>2.2</td>
<td>3.8</td>
<td>0.88</td>
</tr>
<tr>
<td>Lower Income</td>
<td>15956.4</td>
<td>8.2</td>
<td>8.2</td>
<td>2622.63</td>
</tr>
<tr>
<td>Lower Middle Income</td>
<td>310811.5</td>
<td>49.8</td>
<td>49.4</td>
<td>1269.83</td>
</tr>
<tr>
<td>Upper Middle Income</td>
<td>50273.7</td>
<td>58.4</td>
<td>59</td>
<td>1386.89</td>
</tr>
<tr>
<td>High Income</td>
<td>356235.5</td>
<td>120.5</td>
<td>96.1</td>
<td>4119.85</td>
</tr>
<tr>
<td>Americas</td>
<td>204666.6</td>
<td>84.5</td>
<td>70.8</td>
<td>4353.64</td>
</tr>
<tr>
<td>WORLD</td>
<td>733275.1</td>
<td>61</td>
<td>49.8</td>
<td>21009.19</td>
</tr>
</tbody>
</table>

Source: ITU 2003

### TABLE 19. Telephone tariffs 2002

<table>
<thead>
<tr>
<th>Country</th>
<th>Residential Connection</th>
<th>Business Connection</th>
<th>Subscriptions as % of GDP Per Capita*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uganda</td>
<td>61 (USS)</td>
<td>61 (USS)</td>
<td>5.6 (USS)</td>
</tr>
<tr>
<td>Kenya</td>
<td>29 (USS)</td>
<td>29 (USS)</td>
<td>5.6 (USS)</td>
</tr>
<tr>
<td>Mauritius</td>
<td>33 (USS)</td>
<td>67 (USS)</td>
<td>2.5 (USS)</td>
</tr>
<tr>
<td>South Africa</td>
<td>23 (USS)</td>
<td>23 (USS)</td>
<td>6.4 (USS)</td>
</tr>
<tr>
<td>Tanzania</td>
<td>41 (USS)</td>
<td>41 (USS)</td>
<td>3.6 (USS)</td>
</tr>
<tr>
<td>Zambia</td>
<td>11 (USS)</td>
<td>34 (USS)</td>
<td>1.1 (USS)</td>
</tr>
<tr>
<td>Lower Income</td>
<td>54 (USS)</td>
<td>66 (USS)</td>
<td>3.1 (USS)</td>
</tr>
<tr>
<td>Lower Middle Income</td>
<td>84 (USS)</td>
<td>121 (USS)</td>
<td>4.4 (USS)</td>
</tr>
<tr>
<td>Upper Middle Income</td>
<td>62 (USS)</td>
<td>82 (USS)</td>
<td>7.5 (USS)</td>
</tr>
<tr>
<td>High Income</td>
<td>83 (USS)</td>
<td>94 (USS)</td>
<td>11.8 (USS)</td>
</tr>
<tr>
<td>Americas</td>
<td>88 (USS)</td>
<td>115 (USS)</td>
<td>7.6 (USS)</td>
</tr>
<tr>
<td>WORLD</td>
<td>71 (USS)</td>
<td>91 (USS)</td>
<td>6.2 (USS)</td>
</tr>
</tbody>
</table>

Source: ITU 2003
### TABLE 20: Mobile cellular subscribers 2002

<table>
<thead>
<tr>
<th>Country</th>
<th>Total (000s)</th>
<th>Per 100 Inhabitants</th>
<th>CAGR (%) 1997–2002</th>
<th>Subscribers (%)</th>
<th>Prepaid Population Cover (%)</th>
<th>Subscribers</th>
<th>Coverage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uganda</td>
<td>393</td>
<td>1.5</td>
<td>19.4</td>
<td>93.2</td>
<td>87.7</td>
<td>87.7</td>
<td>93.2</td>
</tr>
<tr>
<td>Mauritius</td>
<td>550</td>
<td>28.9</td>
<td>52.4</td>
<td>99.8</td>
<td>51.7</td>
<td>80.2</td>
<td>93.2</td>
</tr>
<tr>
<td>South Africa</td>
<td>1381.4</td>
<td>30.39</td>
<td>69.7</td>
<td>75.6</td>
<td>95.1</td>
<td>95.1</td>
<td>76</td>
</tr>
<tr>
<td>Tanzania</td>
<td>670</td>
<td>1.95</td>
<td>101.4</td>
<td>—</td>
<td>80.2</td>
<td>80.2</td>
<td>80.2</td>
</tr>
<tr>
<td>Zambia</td>
<td>139</td>
<td>1.3</td>
<td>98.2</td>
<td>80.6</td>
<td>80.6</td>
<td>80.6</td>
<td>80.6</td>
</tr>
<tr>
<td>Lower Income</td>
<td>42998</td>
<td>1.75</td>
<td>76.3</td>
<td>63.6</td>
<td>38.3</td>
<td>80.2</td>
<td>93.2</td>
</tr>
<tr>
<td>Lower Middle Income</td>
<td>380000</td>
<td>15.88</td>
<td>67.6</td>
<td>82.3</td>
<td>82.3</td>
<td>82.3</td>
<td>82.3</td>
</tr>
<tr>
<td>Upper Middle Income</td>
<td>102297</td>
<td>30.94</td>
<td>78.4</td>
<td>93</td>
<td>93</td>
<td>93</td>
<td>93</td>
</tr>
<tr>
<td>High Income</td>
<td>638079</td>
<td>66.39</td>
<td>29.9</td>
<td>49.1</td>
<td>49.1</td>
<td>49.1</td>
<td>49.1</td>
</tr>
<tr>
<td>Americas</td>
<td>252642</td>
<td>29.9</td>
<td>28.7</td>
<td>91.8</td>
<td>91.8</td>
<td>91.8</td>
<td>91.8</td>
</tr>
<tr>
<td>WORLD</td>
<td>1162675</td>
<td>19.07</td>
<td>40.2</td>
<td>51.5</td>
<td>51.5</td>
<td>51.5</td>
<td>51.5</td>
</tr>
</tbody>
</table>

Source: ITU 2003

### TABLE 21: Information Technology 2002

<table>
<thead>
<tr>
<th>Country</th>
<th>Total Hosts</th>
<th>Hosts Per 100 Inhabitants</th>
<th>Users Per 100 Inhabitants</th>
<th>Users Per 100 Inhabitants</th>
<th>PCs Per 100 Inhabitants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uganda</td>
<td>2562</td>
<td>0.01</td>
<td>100</td>
<td>0.40</td>
<td>10.3</td>
</tr>
<tr>
<td>Kenya</td>
<td>2983</td>
<td>0.01</td>
<td>400</td>
<td>1.35</td>
<td>204</td>
</tr>
<tr>
<td>Mauritius</td>
<td>3462</td>
<td>0.29</td>
<td>120</td>
<td>9.91</td>
<td>141</td>
</tr>
<tr>
<td>South Africa</td>
<td>198853</td>
<td>0.64</td>
<td>3100</td>
<td>6.82</td>
<td>3300</td>
</tr>
<tr>
<td>Tanzania</td>
<td>1731</td>
<td>0.01</td>
<td>80</td>
<td>0.23</td>
<td>148</td>
</tr>
<tr>
<td>Zambia</td>
<td>1821</td>
<td>0.02</td>
<td>52</td>
<td>0.69</td>
<td>80</td>
</tr>
<tr>
<td>Lower Income</td>
<td>205128</td>
<td>0.01</td>
<td>32112</td>
<td>1.33</td>
<td>16594</td>
</tr>
<tr>
<td>Lower Middle Income</td>
<td>3683093</td>
<td>0.15</td>
<td>116234</td>
<td>4.86</td>
<td>89202</td>
</tr>
<tr>
<td>Upper Middle Income</td>
<td>3327987</td>
<td>1.01</td>
<td>48678</td>
<td>14.13</td>
<td>33305</td>
</tr>
<tr>
<td>High Income</td>
<td>150369490</td>
<td>15.64</td>
<td>427999</td>
<td>68.53</td>
<td>688616</td>
</tr>
<tr>
<td>Americas</td>
<td>122555380</td>
<td>14.5</td>
<td>217649</td>
<td>25.76</td>
<td>239717</td>
</tr>
<tr>
<td>WORLD</td>
<td>157581802</td>
<td>2.59</td>
<td>623023</td>
<td>10.22</td>
<td>387518</td>
</tr>
</tbody>
</table>

Source: ITU 2003
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34. Tanzania Internet Hosting, www.tih.co.tz/hosting.shtml

35. UNESCO, “Tanzania Country Profile”, 2005


37. United Republic of Tanzania Vice-President’s Office, “National Strategy for Growth and Reduction of Poverty”, April 2005

38. USAID Tanzania Data Sheet 2004

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