The Prospects for eGovernment and eGovernance in Sub-Saharan Africa: A Case Study of Zambia

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eGovernance and eGovernment are critical tools for Good governance and economic development, and are therefore critical for Highly Indebted Poor Countries a majority of which are in Sub-Saharan Africa. This paper reviews literature in order to discuss the prospects of eGovernance and eGovernment in Sub-Saharan Countries, and chooses the nation of Zambia as an in-depth case study. Issues of investment climate, market structure, infrastructural capacity, social contexts and political and cultural resistance factors are identified as impediments but also key components (if well understood and tackled) for effective initiation and implementation of eGovernance and eGovernment projects.
Introduction

Good government and governance practices contribute to economic development and the spread of the benefits of growth to people in countries everywhere. Increasingly, societies are grasping the linkages between information, information technology, and economic growth. Flor (2001), for example, asserts, “We are now in the information age, where knowledge is a critical resource and information is a primary commodity. Information poor societies, therefore, also become the resource poor societies (p.4).”

The digital age, moreover, has opened avenues for the enhancement of government’s traditional activities and the improvement of governmental efficiency through eGovernment. However, even as the world faces regional economic inequality, information communication technology (ICT) creates its own form of glaring inequality: the digital divide. Consequently, economically disenfranchised nations face simultaneous challenges in the governance and the digital domains.

Numerous people in developing countries do not have access to ICT and there is a large gap between the elite, who can afford the technology, and the poor who cannot (Basu, 2004). Table 1 below illustrates the digital divide at the global level. The overall availability of, and the general public’s access to, ICT are factors that help determine a country’s readiness for both eGovernment and eGovernance.

Table 1: Internet Usage by Region of the World

<table>
<thead>
<tr>
<th>World Regions</th>
<th>Population (2006 Est.)</th>
<th>Population % of World</th>
<th>Internet Usage (Latest Data)</th>
<th>% Population (Penetration)</th>
<th>Usage % of World</th>
<th>Usage Growth 2000-2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>915,210,928</td>
<td>14.10%</td>
<td>23,649,000</td>
<td>2.60%</td>
<td>2.30%</td>
<td>423.90%</td>
</tr>
<tr>
<td>Asia</td>
<td>3,667,774,066</td>
<td>56.40%</td>
<td>364,270,713</td>
<td>9.90%</td>
<td>35.60%</td>
<td>218.70%</td>
</tr>
<tr>
<td>Europe</td>
<td>807,289,020</td>
<td>12.40%</td>
<td>291,600,898</td>
<td>36.10%</td>
<td>28.50%</td>
<td>177.50%</td>
</tr>
<tr>
<td>Middle East</td>
<td>190,084,161</td>
<td>2.90%</td>
<td>18,203,500</td>
<td>9.60%</td>
<td>1.80%</td>
<td>454.20%</td>
</tr>
<tr>
<td>North America</td>
<td>331,473,276</td>
<td>5.10%</td>
<td>227,303,680</td>
<td>68.60%</td>
<td>22.20%</td>
<td>110.30%</td>
</tr>
<tr>
<td>Latin America/Caribbean</td>
<td>553,908,632</td>
<td>8.50%</td>
<td>79,962,809</td>
<td>14.40%</td>
<td>7.80%</td>
<td>342.50%</td>
</tr>
<tr>
<td>Oceania/Australia</td>
<td>33,956,977</td>
<td>0.50%</td>
<td>17,872,707</td>
<td>52.60%</td>
<td>1.70%</td>
<td>134.60%</td>
</tr>
<tr>
<td>WORLD TOTAL</td>
<td>6,499,697,060</td>
<td>100.00%</td>
<td>1,022,863,307</td>
<td>15.70%</td>
<td>100.00%</td>
<td>183.40%</td>
</tr>
</tbody>
</table>


Government and eGovernance in Less Developed Countries

Misuraca (2006) makes an important distinction between government and governance. While the two concepts are usually intertwined, Misuraca contends that governance is about more than just government and encompasses the entire process, not just the ends, while government’s primary preoccupation is the foundation and regulation of institutional systems of achieving public administration.

eGovernment describes government’s use of ICT to exchange, provide, and receive information and services to and from citizens and businesses, and within government to and from the various units and levels of government (i.e., local, regional, and central). Essentially, it is an electronic means to de-bureaucratize governmental structures. The more direct relationships offered by eGovernment signal divergence from dependence on bureaucratic structures, which, in turn, can lead to improved access to information, reduced
corruption, and increased convenience, as well as increased revenue growth and reduced costs.

eGovernance encompasses the participatory aspects of democracies. The World Bank, for example, recognizes its potential to transform governmental relationships; changing the way government interacts with citizens and the business community; and the way citizens interact with each other by sharing information and participating in governance and demanding more accountability. By contrast, the use of telephone, television and telefax to achieve participation and obtain citizen feedback provide a more limited participatory process. The widely recognized capability of the internet in this regard is its ability to foster many-to-many communication, whereas previous technologies provide few-to-few and few-to-many communication at best. The internet, however, provides a multi-way-- even simultaneous many-to-many -- live communication mode of communication. It also provides the convenience of allowing collaboration without requiring physical convergence.

More fundamentally, Misuraca contends that eGovernance is chiefly conceptual in nature; suggesting that while the required technology for eGovernance may be available, the level of public engagement may still be too low in certain societies. Thus, in developing the ‘conceptual’ notion, he argues that eGovernance uses ICT to develop a “new conception and attitude of governing and managing where participation and efficiency are required of all the partners linked in a network”. Misuraca asserts that at the core of eGovernance is the reinvention of government in a manner that encourages civic engagement and full democratic participation at the different levels of government in the agenda-setting process.

Dada (2006), citing Ciborra, sets some limitations to aspirations of using ICT for citizen participation and increased governmental responsiveness in developing countries. He argues that holding up eGovernment as a model creates the misperception that advanced technology by itself is a mark of good governance, which then becomes the benchmark for increased aid from rich countries. In other words, in order to obtain foreign aid, developing countries must adopt eGovernment. However, they do not necessarily embrace the concept of increased public participation that is the hallmark of eGovernance. Dada therefore concludes that eGovernment alone is inadequate for developing countries to obtain the benefits of increased public engagement. Instead, both political and social changes are required alongside the implementation of ICT to affect government. Furthermore, he stresses that in order for eGovernance to thrive in developing countries, there has got to be the political will to reduce corruption and other distortions in markets.

This idea is supported by Heeks (2002), who argues that the failure of eGovernance in developing countries is due in part to a mismatch between the goals of eGovernance models and other factors such as the technology supporting it, the cultural and political context, means of financing, skill sets, access to technology, as well as relevant infrastructure and other contexts that may vary between the designer and the locality of implementation. He calls this mismatch the ‘design-reality gap’.

Another issue that challenges the success of eGovernance in less developed countries (LDCs) is the issue of technological capacity, which has two critical aspects for developing countries: technical capacity and infrastructural capacity. Linked to the inadequate technological and infrastructural capacity are low computer literacy rates and generally low literacy rates, which further hinder the receptive base of people in those countries to participate in eGovernance. Even for computer literate people, the knowledge they possess is mostly in the form of know-how as opposed to know-why. This implies that the end users only know-how to use the technology and not how to repair or even modify it. This results in the dependence of end users on the technology’s supplier and leads to additional expenses for the users. These gaps then raise concerns for the suitability, i.e., appropriate technology, and sustainability, of the models that are adopted. Models that are
inappropriate to their social contexts are bound to fail.

In sum, the literature demonstrates that successful eGovernance depends on several factors including the political climate, societal values regarding government, technological skill-levels, social attitudes towards eGovernance, and the inspirational basis of the pioneers of eGovernance. Essentially, these elements combine with another major concern: the appropriateness of the eGovernance model to the administrative systems values and culture of the country in question. On a broader scale, creation of an eGovernance system interacts with other broader national policies including information policy and information/communication regulation. It is in view of the issues above that Sub-Saharan countries’ preparedness for eGovernance will be examined, using Zambia as a case study.

**Benefits/Opportunities of eGovernance and eGovernment**

One of the most recognized challenges that impede economic growth and respect of human rights in LDCs, and in particular Sub-Saharan Africa, is the lack of good governance and democracy in general. Therefore, in these countries, the prospect of eGovernance provides hope for the participation of the poor and politically marginalized by increasing their voice and participation in policymaking, helping them express their interests and be considered at the agenda-setting stage of the policy process, as noted in the following quote:

> “Poor people will benefit from improved information flows throughout society, which improve the effectiveness of government, markets and other institutions that affect them. In societies where information flows widely and access to communication services is widespread, markets and government institutions are likely to become more efficient, transparent and accountable”.

A benefit of eGovernment for LDCs includes ‘de-bureaucratization’, and the better integration of government processes and procedures. Most governments in LDCs are locked in rigid, colonial style governmental structures and processes that tend to hamper, rather than expedite, the delivery of goods and services. eGovernment initiatives can help reverse or ease this situation.

Although the absence of corruption is a major component of good governance, we can but note its importance here because of its magnitude and nature in Sub-Saharan Africa. Corruption is rampant and has ravaged the region. In many ways, it can be characterized as both a cause and an effect of the overall governance crisis in the region. eGovernment is seen as a means to help reduce illegal rent-seeking behavior and to increase transparency and public confidence in governmental agencies.

The enormous cost of running modern governments is a harsh reality everywhere but even more so in LDCs where resources are limited. eGovernment presents limitless prospects for cutting the transaction costs through online provision of services. Additionally, online business and interaction facilitates reduction in travel, paperwork, queues etc., which translate into savings in time and money, and reduction of the related opportunity costs. These benefits are accompanied by gains in overall efficiency in processes and the job cycle times.

**Challenges/Problems of eGovernance and eGovernment for LDCs**

While eGovernment and eGovernance presents great promise for LDCs, they also bring several potential challenges. First, ICT is highly skill-dependent, which tends to work to the disadvantage of poorer nations, due to their low computer literacy, limited IS training, and loss of their already limited skilled manpower as a result of brain drain to more advanced countries.
Second, the equipment and the infrastructural requirements to initiate eGovernment are large investments, and hence difficult to attain for many poor nations. Consequently most LDCs have poor IT infrastructure. Given that IT infrastructure is a central piece of the establishment and implementation of eGovernment and eGovernance, this presents a tremendous obstacle.

The third challenge includes the high ancillary prerequisites of IT. IT infrastructure includes not only direct telecommunications such as phone and internet, but also other important ancillaries such as electricity. Both immediate and auxiliary infrastructure is unreliable, unavailable or unaffordable in most LDCs. Internet services from most Internet Service Providers (ISPs) are quite expensive, especially considering average earnings of citizens in LDCs. Furthermore, budgets constraints of LDCs make the high cost of technology equipment acquisition inhibitive. Although the ultimate benefit of technology for developing countries is the reduction in government transaction costs and the increase in efficiency, the immediate costs are often enormous, which often leads poor nations to rely on outside aid for such investment.

Finally, eGovernance models, to be effective, should be designed with specific national contexts in mind, which means that the country’s political/cultural conditions must be taken fully into account. Most LDCs are still in their infancy with regard to democratic practices, so that the ideals of participation and free information are still foreign to their current societal and political norms. It is important, therefore, that these governments adopt an orientation that is conducive to eGovernment, such as viewing the citizen as a customer and respecting the right to information of citizens. A broad-based, integrated policy approach to information and IT is therefore needed.

Sub-Saharan Africa: An Overview

Sub-Saharan Africa (SSA) is where 32 of the 41 Highly Indebted Poor Countries (HIPC) in the world are located. Africa’s population remains mostly rural with a majority subsisting on less than one dollar a day. Rural economies, mostly agriculture-driven, bear the brunt of inadequate market structures; resulting in low productivity and low capacity to attract investment and generate employment opportunities.

Many Sub-Saharan African countries depend on foreign aid for development programs and investment; yet the region also has had for a long time the most unfavorable investment climate in the world. The 2008 Investment Climate Assessment (an annual report by the World Bank, which provides a global ranking of 155 nations on key business regulations and reforms) indicates that, although major strides have been made by countries in the region to improve the investment climate, the general situation is still that many African countries that desperately need new enterprises and jobs impose the most regulatory obstacles on entrepreneurs. Research also suggests that capital productivity is low, there is a shortage of skilled workers, poor regulatory environments, poor enforcement of contract and property rights, deficiencies in the allocation of credit, and inefficient tax systems in African countries.

Some development experts attribute Africa’s economic woes to poor governance. eGovernance, therefore, provides an opportunity to correct this purported deficiency, although the economic challenges that the continent faces, and the related high need priorities such as nutrition and health, increase the opportunity costs of investing in technology and infrastructure to support the continent’s eGovernment and eGovernance initiatives. It is beyond doubt, however, that whatever the challenges, Sub-Saharan Africa has come to recognize the positive prospects that accompany eGovernment and eGovernance, such as increased efficiency and more public participation.

In addition to the urban-rural economic productivity discrepancy, a digital divide also exists in Africa
between urban and rural areas, with rural areas lagging far behind in telecommunication infrastructure and services, which results in limited technological capacity to implement eGovernance. The cost of telephone and internet services and associated equipment are typically unaffordable for the cash-strapped budgets of African governments. While lack of effective demand has been cited as a reason for poor growth and as a reason why investors concentrate in urban areas, evidence also shows that supply is a factor as well, as service packaging/condition strategies are proving effective in Africa. Thus the veritable explosion of the mobile phone industry in Africa, where income is generally low, reinforces this argument (see Figure 1 below).

**Figure 1:**

![Backbone Network Development in Sub-Saharan Africa](image)


There is, however, very limited scholarly work that attempts to link different variables to the overall receptivity for e-government/e-governance in Sub-Saharan Africa. Our exploratory study attempts to investigate several key variables in relation to eGovernment/Governance readiness, in order to contribute to the discussion of what constitutes the prerequisite conditions for eGovernance in LDCs.

**Methodology of the Study**

This study was conducted using relevant data gathered from several institutional datasets already collected for the Sub-Saharan region. In some cases the Sub-Saharan data had to be obtained from international datasets. The data sources included Transparency International, the Ibrahim Governance Foundation, the World Bank Investment Climate Assessment, and the International Telecommunication Union. Variables of interest that were compiled from these sources include the following:

- eGovernment Readiness Index,
- eGovernment Ranking,
- Governance Index,
- Governance Ranking,
• Human Rights Ranking,
• Corruption Perception Index and Ranking,
• Total Telephone Subscribers per 100 inhabitants,
• Total Telephone Subscribers, Total Internet Users,
• Ease of Doing Business Index/Ranking and
• Total Broadband Subscribers.

It was determined that these variables would provide a good perspective regarding the infrastructural capacity and other pre-requisite conditions of eGovernment and eGovernance in Sub-Saharan Africa. Most ranking variables and index data were adapted and recoded in order to rank the countries within the region. The eGovernance readiness index which had raw/actual values between 0 and 1, were recoded by multiplying the values by 100, in order to allow for scatter plot analyses.

Since the collected data constitutes the entire “population” or statistical universe (N), of the region under study, (i.e., all 48 countries in Sub-Saharan Africa), the main objective of the analysis was to investigate the existence of correlation and observe the strength of relationships - not to seek inference to a broader population. One country however, Somalia, had data missing for most variables. This would have skewed analyses and so it was excluded from the study.

Scatter plot analysis was selected as the method of analysis in order to enable us to obtain a visual idea of the nature of the bi-variate relationship between the eGovernance readiness variable and the independent variables. This method was selected because it provided a visual insight into the nature of the various relationships and the plotting of ordered pairs also shows the correlation between the variables. As a result, we are able to observe a positive trend if, as one independent variable (IV) increased, the eGovernance variable also increased; or a negative trend if, as an IV increased, the eGovernance variable decreased. No trend exists if the ordered pairs show no correlation.

The second part of this study consists of the Zambia case study, which involves examination of the literature, research studies and policy documents of the Republic of Zambia, vis-à-vis policy and market related determinants of eGovernance and eGovernment. This was undertaken to validate some of the observations made in the scatter plot analysis on the eGovernance readiness of Sub-Saharan region.

**Scatter Plot Analysis**

Figure 2 shows that the lower the regional rank of doing business, the lower is a country’s good governance attributes. Thus, the Congo (Democratic Republic) has the lowest governance attributes in Sub-Saharan Africa. The stronger is the investor protection, the higher the eGovernance readiness. South Africa and Mauritius, for example, rank highly on the strength of investor protection index and their eGovernance index is high as well. The outlier is Swaziland, which has the lowest investor protection index but ranks quite high on the eGovernance readiness index nonetheless.
Figure 2:

![Graph: Rank of "Doing Business" as a Predictor of Governance]

Figure 3 indicates that the lower a country’s regional rank of doing business, the lower its eGovernance readiness score. Chad, for instance, has the lowest eGovernance readiness index and is also amongst the worst on the ranking of doing business in the region. South Africa, Mauritius, and Seychelles have the lowest corruption levels and also have the highest eGovernance readiness indices.

Figure 3:
The higher the corruption score a country has, the lower its eGovernance readiness rank as shown in Figure 4. For example, the Central African Republic and Chad are both ranked high in corruption and their eGovernance Readiness index is correspondingly low. Mauritius, South Africa and Seychelles, in contrast, have relatively lower corruption levels and also higher eGovernance readiness indices. The lower the regional rank of doing business a country has, the lower are its good governance attributes.
The stronger the investor protection score, the higher is the eGovernance readiness rank as shown in Figure 5. Mauritius and Seychelles, for example, score highly on the Ibrahim Governance index. They also rank high on the rank of doing business in the SSA region. The Democratic Republic of Congo ranks low on the rank of doing business and their overall governance index is also low.
The scatter plot analysis points out a significant relationship between eGovernance readiness and the investment climate vis-à-vis ease of doing business. It can be concluded, therefore, that a country’s investment climate is a good predictor of eGovernance readiness. Investor protection also yielded a strong correlation with eGovernance readiness (although it could be considered to have some multi-co-linearity with the ease of doing business variable). Other variables produced less significant correlations.

Zambia Case-study

Zambia ranks twenty seventh out of forty seven countries in the Sub-Saharan region in eGovernance readiness. It is nineteenth in the total number of internet subscribers within Sub-Saharan countries. Generally, Zambia is located around the middle in most performance measures in SSA.

While Zambia is thus not perfectly representative of the spectrum of technological capabilities of countries in Sub-Saharan Africa, its challenges present a microcosm of the challenges that the region as a whole faces. In fact it can be argued that the challenges faced here exist across the spectrum of SSA countries but in varying degrees.

The Need for eGovernance in Zambia
Most of the Zambian government’s administrative structures and systems were designed in the post-colonial era and little change has been done since to implement change in order to respond to changing demographic needs and population growth. In other words, the same governmental structures that were instituted many years ago continue to provide services to a growing population. The Zambian government structure is highly centralized; most decision-making and paper processing occurs at the central government level, and administration resources are concentrated there. Consequently, business costs and communication costs are more expensive at the periphery (i.e., rural local governments). The need for the periphery to regularly communicate with the center for direction and clearance is also complicated by the fact that communication costs are more expensive at the periphery. Telephone calls to the center, for example, are long distance calls, and are therefore more expensive.

The concentration at the center leads to a huge, inefficient bureaucratic structure creating a situation that is ripe for corruption. There is a backlog of administrative cases, such that in order to accelerate the disposal of cases, affected parties prefer to travel rather than mail paper work in to the center. Central, provincial and local government intercommunication is thus very inefficient.

Given eGoverment’s success in reducing government transaction costs, such costly expensive and highly centralized systems present a good test case for reducing inefficiencies. However, for eGovernment to be effective there must first be some significant degree of decentralization. Decentralization and local-control are increasingly recognized as basic components of democratic governance in which decision-making and service delivery can be brought closer to the people, especially the poor and the marginalized.

The current Zambian situation adversely affects the efficiency and cost of service delivery and contributes to an increase in corruption because citizens bribe government officials to dispose of their cases expediently. It can therefore be argued that the colonial influence and excessive centralization shape the perceptions of the government-citizen relationship. Consequently, even eGovernment projects are constrained to improving internal efficiencies of government agencies rather than providing more information and services to the people and enhancing participation in the political process. In addition, the public is entirely dependent on government agencies for their services. In such an environment, citizens are not treated as customers of the government, which is a crucial precondition for the eGovernance model.

Institutional Applications of ICT in Zambia

At the central level in Zambia, government ministries are increasingly using IT to create networks, exchange information, and coordinate activities. An example is the Ministry of Education, which has a Metropolitan Area Network through radio link and an Education Management System. Another example is the Ministry of Communication and Transport, which has a computerized Motor Vehicle Licensing system. The Passport office, under the Ministry of Home Affairs, has been expanding its network to the provinces. The Ministry of Health, through a project by The Research Triangle Institute International (RTII), has connected Township clinics in Lusaka to The University Teaching Hospital (UTH) through a Wireless Metropolitan Area Network using open source Software and Network devices. The Lusaka City council has implemented a couple IT Projects, one of which is a Geographic Information System (GIS), to carry out its planning and engineering tasks.

Beyond the central level, however, the use of IT resources declines dramatically. At the local level, for example, a 2002 survey reported that only about 77% of the sampled districts had computer equipment and about 81% had telephone facilities. Only about 5% of staff in the local councils had access to computers, most of these were secretarial and accounting staff. Due to limited resources, there was an element of prioritization as to who had computer access. In most cases, secretaries and accountants were given access,
while other officials typically did not have access.

All the local governments did not use software packages for their functions except for three: Lusaka, Mufulira, and Ndola. The most common application was Microsoft office products such as MS Word for word processing and Excel for basic planning tasks. Lusaka, Mufulira, and Ndola were also the only municipalities that had Local Area Networks (LANs). These are urban districts where computers are increasingly being used for revenue collection and billing into an accounting databank.

Quasi-governmental companies, including Zambia Telecommunications Company (ZAMTEL), Zambia Revenue Authority (ZRA), and Zambia Electricity Supply Corporation (ZESCO) have all been increasing their computerized revenue collection capabilities. Private international and local banks have established a number of ATM machines and online services through Wide Area Networks, mainly using Very Small Aperture Terminal technology (VSAT). VSAT is commonly used to transmit narrowband data (e.g., point of sale transactions such as credit card), or broadband data (e.g., for the provision of Satellite Internet access to remote locations, VoIP, or video). Its advantageous for developing countries because of its availability, ‘deployability’ (can be set up within minutes) and low infrastructural requirement (wireless technology). This has also seen the increase of eCommerce, which has been spurred by the competition that Zambian companies have recently faced from foreign-owned companies.

**IT Infrastructure and Market Challenges in Zambia**

While Zambia has come a long way in infrastructural capabilities for telecommunication, the use of the internet to provide government services remains limited. Similarly, the use of networking to link the administrative functions of the center and the periphery also remain limited.

Besides limited capacity, other challenges to both eGovernment and eGovernance in Zambia can generally be categorized as due to either structural rigidities or absence of official support necessary for the success of eGovernance. Structural rigidities include the underdeveloped telecommunication infrastructure, as well as the over-centralized government and inefficient bureaucracy discussed earlier. This is compounded by a lack of efficient communication between central, provincial and local levels of government.

**IT Infrastructure**

ZAMTEL, a wholly state-run entity, owns and operates the telecommunication infrastructure in the country. The company has exclusive rights to the Mwembeshi Earth Station satellite and collects revenue from the private service providers using the satellite's facilities, including the international gateway. To date, the Zambian government has not deregulated the country's international communications gateway. ZAMTEL is the only provider allowed to operate a public switched telephone network (PSTN) in Zambia. Only ZAMTEL is allowed to operate an international gateway. The company provides a wide range of services including local, national, long distance, and international fixed telephone services, domestic satellite telephone (Domsat), mobile telephone, and leased line services.

The transmission network is predominantly analogue and is based mainly on microwave technology. Over time, this infrastructure has deteriorated, become outdated and its capacity has become outstripped. Recently, ZAMTEL has begun to update its telecommunications infrastructure to a digital system. Provinces, however, are still mainly linked by microwave trunk routes, and a network upgrade system installing a digital
microwave network linking the Lusaka province in some selected pioneer provinces is currently in progress. It is also forecasted that, due to the flexibility and convenience of mobile communication, the growth of fixed line telephone services will slow down. Private providers have lobbied the Zambian government on numerous occasions to deregulate the system to allow private operators to own and operate their own international gateways. But this has not yet materialized. ZAMTEL’s monopoly has been blamed for the high cost of telecommunication and the lack of investment in the mobile market, especially in rural areas (Malakata, 2008).

Additionally, Zambia lags behind its neighbors in telecommunications infrastructure investments. For instance, the country is behind in fiber optic backbone layout, which hampers its regional and national connectivity. Optic fiber layouts terminate at three of Zambia’s neighbors: Zimbabwe, Botswana and Namibia. The only existing optic fiber layouts in the country are the result of private enterprise, such as the Copperbelt Energy Company (CEC) and the Zambia Electricity Supply Corporation ZESCO, which have installed the cables for company connectivity across towns. CEC has installed a 24-core 520km optical fiber backbone covering all mining towns; and the ZESCO has a 45KM optical fiber cable between Lusaka and Kafue. These extra efforts are consistent with the infrastructural density, which is concentrated in the urban areas.

Given the high cost of deploying telecommunications infrastructure, such as fiber optic cable, there needs to be a holistic approach to social and economic infrastructure development strategy in the country. Despite Zambia being a pioneer of Internet usage in Sub-Sahara Africa, along with South Africa in the early 1990s, it now lags behind many African countries that started using the Internet later. Zambia’s Internet market is still in its infancy with approximately 12,000 internet subscribers and an additional 30,000 Internet users mainly patronizing Internet cafes.

**IT Regulation and Market Structure/Conditions**

The regulation of ICT, a central piece of eGovernance, is in the hands of the Communications Authority which is under the jurisdiction of the Ministry of Transport and Communications. Until recently, ZAMTEL was the only licensed operator allowed to provide fixed telephone services to the public. Land phone lines are the predominant medium for internet connectivity. Cable and satellite alternatives still lag far behind. Protectionist regulation and heavy reliance on phone lines for both voice and data transmission create a monopoly for ZAMTEL, which results in uncompetitive prices and stifles innovation. Coupled with limited supply of telephone services, the billing system of phone services (mostly charged per minute) discourages prolonged usage of dial-up internet—the predominant mode of access in the country. ZAMTEL has failed to meet demand for land phone lines. Current World Bank data estimates Zambia’s population at 11,669.534 million, with an installed capacity of 140,589 telephone lines on the Public Switched Telephone Network (with over 30,000 more applicants on the waitlist for phone lines), which roughly translates to a density of only 0.8. Additionally, Zambia has international Internet bandwidth of only 11 bites per person. Thus, Zambia has less than two phones available for every 100 people - one of the lowest telephone densities in Southern Africa. This situation condemns the majority of Zambians to lack of access to telecommunications of any kind.

Overtime, the demand for telephone services has exceeded the available capacity. However, the unmet demand for fixed lines has been met somewhat by mobile telephony. In the few years that the mobile industry has penetrated the country, it has managed to outpace the subscription in land phones. By 2006 the “combined subscriber base on the mobile networks stands at about 450,000 in just 5-8 years surpassing
Similarly, subscription for domestic and commercial internet services is low relative to the total population in Zambia. By mid 2002, estimates were that Zambia had about 7,500 paying customers spread across a total of five ISPs—Zamnet, Coppernet, ZAMTEL, Microlink and UUNet. Zamnet, Coppernet, and Zamnet received the lion share at 3,500, 1,800 and 1,500 respectively. Consequently, most individuals find it cheaper and more convenient to use Internet cafés for their Internet needs. Given Zambia’s per capita income, however, the hourly and per minute charge rates of the Internet cafés are prohibitively expensive for prolonged use of internet services at these sites (see Table 2).

Table 2: Telephone Costs for Internet Access.

<table>
<thead>
<tr>
<th>Area (Province)</th>
<th>Cost Tel/ Hour To ISP POP</th>
<th>Average Monthly Cost of 60 Hours online</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lusaka, Copperbelt, Livingstone</td>
<td>Local Access $0.7/hr</td>
<td>$21.00</td>
</tr>
<tr>
<td>Eastern - Chipata</td>
<td>$16.2</td>
<td>$486.00</td>
</tr>
<tr>
<td>Western - Mongu</td>
<td>$16.2</td>
<td>$486.00</td>
</tr>
<tr>
<td>North Western - Solwezi,</td>
<td>$12.15</td>
<td>$364.50</td>
</tr>
<tr>
<td>Kabompo, Zambezi</td>
<td>$16.20</td>
<td>$486.00</td>
</tr>
<tr>
<td>Luapula - Mansa,</td>
<td>$6.08</td>
<td>$182.40</td>
</tr>
<tr>
<td>Kawambwa</td>
<td>$12.15</td>
<td>$364.50</td>
</tr>
<tr>
<td>Northern - Kasama,</td>
<td>$12.15</td>
<td>$486.00</td>
</tr>
<tr>
<td>Mbala/Mpulungu</td>
<td>$16.20</td>
<td>$486.00</td>
</tr>
<tr>
<td>Southern - Choma</td>
<td>$6.08</td>
<td>$182.40</td>
</tr>
</tbody>
</table>

*Note: this does not reflect current charges and is not intended to do so. It is rather intended to illustrate the geographical price discrepancies in IT’s affordability. Factoring in inflation and the fact that the competition landscape remains virtually unchanged, the current prices may be actually higher.

(The e-Brain Forum of Zambia, 2004)

Another source of concern is the country’s limited stock of human technological capital. A report in 2002 highlighted that low computer literacy in the public sector has been a major concern. There is a generational gap in computer literacy and the hope is that as more young people are recruited into the public sector this challenge will subside.

For the poor, especially in rural areas, a more significant factor is that, although the costs of
telecommunication are generally high throughout the country, they are much higher in rural areas. This
coupled with the per-unit rather than periodic billing marginalizes the rural poor, who mostly survive on less
than a dollar a day. Given a centralized government and a concentration of businesses in the urban areas, the
need for telecommunication is greater in rural areas, but that is also where the market works to make
telecommunication more expensive.

As Schware and Deane (2003) observe, such cost discrepancies effectively nullify the transaction cost
reduction benefit that eGovernment is supposed to achieve. Some of these are overhead costs that
telecommunication companies pass on to the customers. A significant cost that is incurred by
telecommunication companies are service charges and similar charges paid to satellite vendors/owners. Table
2 shows the telecommunication costs in a selection of cities and town across the country.

Finally, Zambia’s pool of information technology experts is limited and thus local content development and
software development are almost non-existent. This problem is further compounded by the brain drain of
trained IT personnel to more lucrative employers in neighboring countries.

Despite the structural obstacles just noted, Weerakkody, et al (2007) observe that, in line with global trends,
Zambia has embarked on plans for eGovernment implementation. The first step in this direction was the
adoption and approval of the National ICT Policy by the Zambian government in 2005. Weerakkody, et al
argue that the process of eGovernment institution in most countries is shallow (i.e., focusing on front-end
tasks rather than curbing ineffective bureaucratic processes) due to approaching such projects from a strictly
economic and technical (i.e., efficiency-oriented) perspective rather than a socio-technical one. Indeed,
Zambia is no exception, as its initiatives appear to lack local application, relevance and initiative.

Weerakkody, et al., also point out the trend in the implementation of eGovernment is to move from efforts
that focus on technical aspects of IT to strategic elements such as organizational change (orienting people to
the new technology), adaptation of models to local contexts, enhancing political will, and increasing
accessibility, i.e., towards eGovernance models. “Successful e-government is more than choosing the right
technology, it is also taking into account the organizational capability, institutional, regulatory constraints,
political, social and environmental cultural challenges, as well as the required human
resources”(Weerakkody, et. al. 2007, p. 490). This is particularly important in Zambia given that it is a poor
country with limited resources and should by all means avoid investing in eGovernment projects that end up
being underutilized because of lack of access or cost. Strategy is very crucial to ensure that access is not
exclusively given to the well-off.

Another very important consideration is the cultural aspect of the digitization of government and governance.
Both traditional culture, which people bring with them to organizations, and organizational culture, which
people contribute to and reinforce, requires a reorientation in face of the new technology. Furthermore, in a
country with high unemployment rates and high job insecurity, computer technology could be perceived as a
threat to job security due to it high capital intensiveness. Coupled with computer illiteracy, the above factors
may lead to widespread popular resistance to change. Therefore, to ensure a change in the traditional and
organizational cultures requires specifically targeting “employees’ attitudes and behavior towards citizens;
hierarchical bureaucratic structures; [the view of] e-government systems…as threats to jobs” (Weerakkody,
et. al. 2007, p. 490).
Political Climate for eGovernance in Zambia

Cultural/ideological Gap

In many ways, the colonial legacy still shapes government organization and political culture in Zambia. This is likely to be true in many other African countries as well. Similar to the colonial era, government officials and politicians are viewed as keeping most of the political power for themselves. In most cases, the citizen is perceived as being at the mercy of authority figures, while administrative lethargy and inefficiency are thought to be widespread. Consequently, corruption is viewed as being rampant as citizens seek official favor for speedy disposal of their cases or favorable consideration of their bids for government contracts. In Zambia’s case, this situation creates a cultural gap that impedes the effective deployment of eGovernment and eGovernance programs. As mentioned earlier, this bureaucratic climate hampers treating citizens as customers, a critical prerequisite for eGovernment. Thus, politicians and bureaucrats may fear that eGovernment and eGovernance efforts may inhibit their power and work against their interests. If this is the case then official opposition and interference to eGovernment initiatives is very likely.

Another aspect of this problem is people’s attitudes regarding technology. The UNDP (2002) indicates that people in developing countries are generally apathetic towards the role of ICT in improving government delivery of services. In part, this is because of a general lack of understanding of the technology, which creates a situation where some people prefer doing things the “old way,” rather than the steep learning curve involved in understanding the new technology.

ICT also contributes to the strengthening of social capital. Social capital heavily relies heavily on communication. Channels and means of communication are thus crucial for social capital to flourish. Social capital benefits from and contributes to, among other things information flows (e.g., learning about jobs, learning about candidates running for office, exchanging ideas at college, etc.), norms of reciprocity (i.e., mutual aid), as well as bonding networks and bridging networks. In the Sub-Saharan context, social capital has been a significant resource for governmental welfare systems and traditional social safety nets.

Zambia’s Current ICT Policy

Zambia’s ICT policy recognizes technology as key to its attainment of the Millennium Development Goals, which include, among other things:

- eradication of hunger,
- achievement of universal primary education,
- reduction of infant mortality,
- empowerment of marginalized groups (women, children, the poor),
- and combating HIV.

These are the eight development goals that have been set to tackle the world’s major development challenges, which was signed by 147 governments during the millennium UN summit in 2000.

The policy recognizes the need for increased liberalization in the information sector to enhance
competitiveness amongst various market players both within the country and in the region. This is a key component of the major complaints regarding the information sector in Zambia: the existence of monopolies, a restrictive regulatory and legal framework, and a hostile capital market for investors. Several stakeholders in the ICT sector contend that the current investment regime is not conducive for recapitalization and does not encourage investments in the sector. For instance, Zambia’s high import tariffs and taxes on ICT goods and services adversely affect the growth of its ICT sector.

Despite unrestricted market entry for new ISPs, Zambia has a limit on foreign shareholding for ISPs. In the case of locals, for whom the majority of the shares in the industry are preserved, the licensing fee has proven prohibitive, and Zambian entrepreneurs are continually faced with lack of access to affordable start up capital. Making things worse is the poor coordination of the ICT sector, resulting in the inability to lure adequate domestic and foreign investment.

The Zambian government acknowledges the existence of inadequate auxiliary infrastructure for ICT such as electricity and telecommunication infrastructure, which is also identified as a significant factor in stifling demand of ICT services. The government also recognizes that there is a lack of supportive institutional framework for the harmonization and development of eGovernment. As a result of these and other challenges, the growth of eCommerce has also been stalled.

A number of challenges for the ICT sector are outlined in Zambia’s policy document including:

- Low ICT literacy in the country;
  
- high cost of technology acquisition making it inaccessible to most Zambians;
  
- the brain drain problem;
  
- and an underdeveloped local ICT industry.

Another major obstacle is the limited telecommunication infrastructure layout across the country, and the high opportunity cost of investing in ICT programs, technology and education programs given other pressing needs such as dilapidated road infrastructure and the country’s health care crisis due to the AIDS epidemic.

The policy document on ICT recognizes the gains that can be achieved through installation of fiber optic cable, such as reliable and efficient communication, and the prospect of reduced telephone and Internet usage costs. The country, hence, has plans to install a national fiber optic network and connect to it under the sea, using cables that run on the coastal countries.

As mentioned earlier, there still remains a high level of unmet demand for ICT services in Zambia, which is reflected by the number of people on waitlists. In addition to this, there is also demand that is largely inhibited due to the high acquisition and subscription costs. To cater to this demand, some entrepreneurs have established some telecentres in places where there is good demand and good telecommunication infrastructure. In effect this has resulted in a concentration of these services along the rail lines, which is predominantly in the urban areas.

The current regulatory framework in telecommunications and broadcasting sectors has been observed to hamper progress (Ministry of Communication and Transport, 2006). Some of the failures of the system have been identified as inadequate incentives and vision to:
1. expand services to underserved rural areas;

2. reduce the high cost of access to ICT services and equipment;

3. increase the volume of local content to cover relevant audiences;

4. to unbundle state owned telecommunication company monopolies such as ZAMTEL in order to enhance competition

**Future Prospects for eGovernance in Zambia**

It is clear that a foundation is being laid for eGovernment, where services such as online payment of taxes, land rates, bills and online application for services are possible in the near future. This is especially welcome as transportation costs, poor road infrastructure, limited office supplies (e.g., paper, ink, printers, faxes etc.) make investment in eGovernment a cost saving measure and encourages broad outreach. While eGovernment appears to be possible in Zambia in the near future, eGovernance may be accurately described as more likely to occur in the distant future.

Additionally, although the objective conditions seem to favor eGovernment more than eGovernance, the identified obstacles to affordable provision of eGovernment should also be addressed. In this regard, there is no better way to achieve this than to forge partnerships between the government and the private sector. For its part, government ought to create a supportive environment to facilitate growth of technology and related industries by undertaking measures to reduce the cost of ICT and related services to the end users and passing incentives to achieve this. Government should increase competition in the telecommunications industry by breaking apart parastatal monopolies and encouraging private sector investment in the telecommunications industry through deregulation.

Despite the importance of government’s role, the private sector should provide leadership in innovative efforts that target citizens in rural areas and the urban poor, and taking the lead in investing in infrastructure that increases access and reduces costs for the poor and marginalized people. However, it is also clear that private sector efforts will not be forthcoming until government steps in to help defray the expenses that such activities would incur.

In line with the analysis indicating a positive relationship between eGovernance Readiness score and rank of doing business in SSA Countries, Zambia’s poor eGovernance readiness can be attributed to, among other things, the market structure which characterizes most developing countries. This includes a pricing system, which is heavily determined by distribution chains and by the location of business, and is characterized by a concentration of service providers in urban areas, at the starting point of the distribution chains, where goods are cheaper and the population is more affluent. This disadvantages rural dwellers or people who live in the periphery where services are typically more expensive.

Similarly, the regulation of the telecommunication sector in Zambia is very protectionist, which creates inefficiencies. It discourages competition and encourages monopolies, elements that prevent competitive pricing. Competitive pricing would certainly benefit the rural poor and enable them to have access to technology, especially if economic incentives such as tax breaks/holidays and other incentives are given for providers of affordable services to rural areas.

That inefficient business practices contribute to the region’s inability to increase coverage and consumption
of telecommunication products has been proven by the recent boom of the mobile phone industry, which has been predominantly managed by the private sector. The mobile phone industry has demonstrated how innovation can exploit untapped demand; subscription rates for cell phones has outpaced land line subscriptions, despite the fact that the cell phone industry has been in business for a relatively short time. Restrictive regulation of the international gateway in Zambia is a good example of the type of practice that hinders innovation.

Another key aspect of doing business that shows a positive relationship with eGovernment readiness in the analysis is the cost of business start up. In Zambia, the licensing fees in telecommunication sector are so prohibitive for new entrants that the cost of starting a new ICT business is prohibitively high. It is also very hard to understand why lobbying efforts to deregulate the international gateway have perpetually failed in Zambia. Lack of governmental investment in telecommunication infrastructure due to competing social needs in LDCs, as noted in the literature, was also confirmed in Zambia.

Along the lines of Misuraca’s assertions, eGovernance is a foreign concept to Zambia’s socio-political context in particular and SSA in general. The philosophical basis of eGovernance should be viewed in light of cultural factors in SSA, which challenges the notions that eGovernment is primarily for the convenience of the citizen, that eGovernance is designed to increase citizen participation in government and, more critically, the attitude of viewing the citizen as a customer.

Conclusion

eGovernment in Zambia offers considerable promise. However, on the UN scale of a country’s progress towards eGovernance, Zambia could be considered to be still at the first stage; it has not yet achieved the enhanced, interactive, and transactional forms of web presence. Though eGovernance does not appear to be taking off, the fact that eGovernment is starting to emerge presents brighter prospects for achieving eGovernance in future. In the process of achieving eGovernment, the infrastructure needed for eGovernance will be established. Currently ICT is used for tasks such as inter-office communication, organization of work and, to a limited but growing degree, for service delivery like revenue collection. The focus of this service delivery, however, appears to be more the convenience of agencies rather than that of their customers.

Given the economic situation, the limited communication capacity, the cost of technology and the political and organizational culture, the need for adopting affordable and appropriate technology is obvious. At the very least, adapting the technology to suit the objective material condition of the people is necessary. For instance, the lack of cables for internet connectivity in rural areas can be circumvented by the provision of satellite wireless infrastructure. Also noteworthy is the fact that Zambia is a major producer of copper - a local resource that can be used to layout the cables for internet connections. An unreliable electricity supply can be supplemented by the installation of solar panels. Another aspect of appropriate technologies is the issue of relevant technology, which means that the technology should be user-friendly for the country’s average literacy levels and that the content should be in local languages. Consideration for occupational relevance such as using ICT to price produce for farming communities, etc., should also be included in order to encourage use.

The current use of computer networks and telecommunication systems by government institutions in Zambia can be broadly described as an attempt to streamline internal functions of organizations: to improve the efficiency of internal major tasks such as billing, bill collection, and bill payment through designated satellite payment points. In most cases, the agencies view computers, almost as modern typewriters and, hence, underestimate the vast capabilities that they actually do posses. Networks and computer use has been limited to a domain that closely fits the confines of traditional understandings of government processes. For example,
there is virtually no use of ICT for purposes of engaging citizens in the democratic process/governance or in the provision of information to that end. Apart from the various economic and infrastructural challenges that serve as impediments to the realization of eGovernance, there is also the cultural gap that undermines the necessary preconditions for eGovernance: the culture of viewing the government as the “rulers” and the citizens as “ruled” must be reversed or, at least, significantly reduced before successful eGovernance attempts can be made.

The challenges identified demonstrate that a multi-sectoral strategy should be undertaken. This is because some of the implicit incentives are beyond the jurisdiction of the Ministries of Communication and Transport and the Information and Broadcasting.

The Zambian case study represents a single-country validation of the challenges facing successful eGovernance implementation in SSA. In line with observed relationships between eGovernance readiness and governance practice, rank of doing business, corruption and investor protection, Zambia illustrates how ill-conceived regulatory policies, rigid market structure, and protectionism conspire to impede growth of the IT sector. Lack of efficient markets and competitive pricing jeopardizes access for the poor. While inadequate IT infrastructure is a major issue, it is also clear that if relevant incentives for investors (both foreign and local) are put in place to ensure profitability in the sector then substantial infrastructural investment can be made by the private sector.

References


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