

Chapter XIV

Towards an E-Government Solution: A South African Perspective

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Cecil Rhodes wanted to build a railroad from Cape Town to Cairo in order to subjugate the continent. Now we want to build an information super-highway from Cape to Cairo which will liberate the continent (Jay Naidoo, X-South African Minister of Communications).

Abstract

With the rapid technological development, electronic governance is a justifiable reality. In this chapter we look at the unique environment under which the South African electronic government is developing. The purpose of this chapter is to report on the first results towards the establishment of an e-government strategy for South African, considering its multicultural and multilingual society.

Introduction

While flying into Johannesburg International Airport one looks out of the aircraft's window and sees the South African urban landscape. On the one side is a lush, beautiful first world urban suburb with wide roads, tiled roofs, sparkling swimming pools and double storied houses. To the other side one sees a "human" settlement with dirt roads, shanty living structures and barren looking tree-less wasteland. Yet South Africa can be described as a melting pot of different cultures. These cultures add to the rich South African heritage. South Africa is one of very few countries to boast 11 official languages. However, this cultural diversity poses quite a unique challenge for designers of software, especially when one has to design Web-based software.

Almost 10 years have passed since South Africa earned its place among the "miracles" of the twentieth century. In an epoch highlighted by the horrors that erupted in the Balkans, the Rwandan genocide and the prolonged violence of the Israeli-Palestinian struggle, a seemingly intractable conflict at the tip of Africa ended in a political settlement that appeared to refute the rhythms of history.

The Global Entrepreneurship Monitor (GEM) (Reynolds, Camp, Bygrave, Autio & Hay, 2001) report describes South Africa as follows. *Entrepreneurial Activity* – in terms of the proportion of adults engaged in entrepreneurship, South Africa ranks in the middle (9.4%) among GEM 2001 countries. A relatively high proportion of entrepreneurship (31%) is motivated by necessity. More than 1 person in 25 has invested in a start-up business in South Africa. This is a relatively high proportion and ranks third among the GEM 2001 countries. *Unique National Features* – South Africa's economy has been dramatically liberalized following several decades of isolation and protection. Although the economy is stable, economic growth remains weak. Historically, the economy has been highly concentrated, dominated by a handful of large state-owned enterprises and corporations, and relying heavily on commodities in mining and agriculture. Until the 1990s, policy makers largely neglected smaller entrepreneurial enterprises. South Africa is a country of stark contrasts, socially, economically and geographically. In urban areas, sophisticated industrial centers contrast with informal settlements. In rural areas, commercial agriculture contrasts with communities lacking the most basic services and relying on remittances from migrant workers. A highly educated, globally mobile minority contrasts with the majority who face poverty and high unemployment. *Key Issues* – The previous apartheid policies prevented black people from owing and running business, and many Black South Africans have little business experience. Despite a recent explosion of entrepreneurial activity, successful entrepreneurs do not receive wide recognition. Professional or corporate careers are held in greater esteem than business ownership. In the past, the education system and an authoritarian society actively discouraged creativity and independence, leading many South Africans to have a negative view of their ability to succeed on their own. The new school curriculum has a strong focus on entrepreneurship and management skills. However, the lack of basic literacy and numeracy, as well as more technical skills, continues to exert a serious constraint. Access to micro-enterprise finance is limited. Poverty, a lack of resources and a lack of business skills and experience make it difficult for many potential entrepreneurs to access financial resources. The administrative burden placed on small firms by the

requirements of legislation is substantial and discourages many entrepreneurs from formalizing their business.

Designing the electronic frontier in this environment is therefore a major challenge. This is further complicated by the language and cultural diversity of the people of South Africa. The purpose of this chapter is to report on the first results towards the establishment of an e-government (EG) strategy for South African multicultural and multilingual society.

The State of the Internet in South Africa

Internet access in South Africa continues to grow year-on-year, but the rate of growth is slower than ever before. South Africa has little more than 3 million Internet users; however South Africa lags behind the rest of the world, and will continue to do so until the local telecommunication climate is more favourable.

The Goldstuck Report: Internet Access in South Africa (2002) reveals that only 1 in 15 South Africans had access to the Internet at the end of last year. By the end of 2002, Internet access will have improved only marginally, to 1 in 14 South Africans. According to the report, the slow growth is largely a factor of delays in licensing a second network operator, Telkom's own uncompromising attitude towards Internet service providers, and market ignorance about the continued value of the Internet in the wake of the technology market crash of 2000 and 2001 (Goldstuck, 2002).

The key findings of the report are:

- One out of every 15 South Africans had access to the Internet at the end of 2001. This compares with at least one out of every two people in countries like the USA, Canada, South Korea, Singapore and Hong Kong. China, at one out of 18, is catching up fast despite its huge population and underdeveloped infrastructure. At current growth rates, there will still be only 1 in 10 South Africans with Internet access by 2006.
- The total number of South Africans with access to the Internet at the end of 2001 was 2.89 million.
- This grew by less than 10% to 3.1 million by the end of 2002. This is the lowest growth rate since the public was first given access to the Internet in 1994.
- Sluggish dial-up growth stands in dramatic contrast to the growth in the total number of leased lines - permanent high-speed connections to the Internet - installed in South African businesses. The number reached just under 7,000 at the end of 2001, reflecting an insatiable demand for bandwidth among corporate users of the Internet. This year the number of leased lines will see a growth rate of around 20% in total market size.

- Only a small handful of ISPs are profitable, but there is no specific business model that guarantees profitability. Neither size small or large, nor target market (corporate or consumer) is an indicator of success. In the corporate market, Internet Solution is the most profitable ISP, while in the dial-up space World Online is the only major ISP operating profitably. An increasing number of ISPs are profitable on an EBITDA basis (earnings before interest, tax, depreciation and amortisation). In short, it is no longer uncommon for ISPs to be operating profitably, but they still have a legacy of debt.
- The number of ISPs has grown dramatically in the past year, largely due to the rollout of a Virtual ISP service by Internet Solution and the continued heavy use of the equivalent service from SAIX.
- Business strategies in the ISP industry are maturing to the extent that it has become possible to create a model that explains not only how ISPs evolve, but also how they meet their clients' needs as those needs evolve.
- While the industry faces seemingly insurmountable challenges, it remains a stable industry. Only a tiny proportion of ISPs in South Africa have gone out of business through bankruptcy.
- Mobile access to the Internet has been a non-starter, with only a tiny proportion of those people who have appropriate devices actually using the devices to connect to the Internet.
- The arrival of GPRS, the so-called 2.5 generation of mobile network technology, may alter the mobile access picture during 2003, but only if appropriate handsets become available.
- Community centres, resource centres and digital villages in townships will continue to underachieve in their goals of bringing Internet access to a sizeable proportion of residents in disadvantaged areas.

"There are positive signs amid the access gloom," Goldstuck points out. "The educational environment in particular is poised for a boom in access, with numerous projects under way to connect schools up to the Internet. That will not only be a positive intervention in the short term, but will provide a healthy underpinning for long-term growth of Internet access in South Africa."

What is Electronic Government?

An e-delivery strategy in public management is not only about the automation of the current way of doing business. It is about re-engineering the current way of doing business, by using collaborative transactions and processes required by the government departments to function effectively and economically, thus improving the quality of life for citizens and promoting competition and innovation. To put it simply, EG is about empowering a country's citizens. The vision is ultimately about inclusion, that is, the

ability of all people to take part in the economy. The Internet makes it possible for the government to streamline its interaction with business people, private citizens and government agencies, while ensuring:

- improved public access to government information and services;
- improved quality and cost-effectiveness of government services;
- effective information sharing and communication with its citizens;
- improved opportunities for participation in democratic institutions; and
- better relationships with business people and private citizens.

At the heart of the e-delivery strategy is the recognition that e-business or EG is not about technology; rather it is about changing the way in which organisations operate. Business processes need to be changed and re-aligned to be able to take advantage of electronic technology. Furthermore, if customer satisfaction is not ensured, the systems will fall into disrepute. Thus, metrics must be clearly defined and continuous and accurate measurement implemented. The three critical metrics to measure the effectiveness of EG are application and service relevance; citizen and business satisfaction; and preservation of trust.

The business drivers of EG are somewhat different from the standard e-business drivers and cognisance of this must be taken. There are a number of key business drivers which are both internally and externally focused in relation to the government departments, namely:

- e-enabling citizens;
- information management;
- channel expansion;
- social inclusion;
- universal access;
- accessibility; and
- economic service delivery.

The key is to find technology platforms and applications that can drive the transition towards a new model for doing business in government. These must satisfy such basic requirements as the empowerment of citizens, ease of access to services, the enhancement of government image, the inclusion of citizens and leverage of emerging technologies. EG initiatives will help transform many industries, but organisations must understand the factors that will inhibit and those that will stimulate this change.

In South Africa, the small medium and micro enterprise (SMME) sector is vital to the economic success of the country. This is because the contribution of the SMMEs to stimulating economic growth and job creation is unparalleled in terms of speed-to-market, financial flow, informal channels, sources of innovation and countrywide reach.

It is not enough to assume that the SMME entrepreneurs will take advantage of available technologies. There needs to be a clear definition of this environment in terms of EG initiatives, which require that the respective government departments are knowledgeable about EG, and that the required functionality is available with minimum requirements for financial or technological input from the SMMEs. It is therefore important that suitable EG structures are in place to assist the SMME marketplace.

Closely linked to EG is the overall concept of e-governance, which deals with the transformation of the business of government and the transformation of governance itself. Citizens are becoming accustomed to going online, ordering exactly what they want and then receiving the item within a few days. They will inevitably expect the same kind of fulfillment from their government officials. It is not enough to simply put in new systems; the government has to find ways to respond to people timeously as well. As users begin to interact with the government online and experience the increased benefits, a greater degree of trust will be created. This is the arena in which it will ultimately be decided whether EG succeeds or fails.

Electronic technology can be used in all facets of the public service. It should be seen as the necessary infrastructure for government into the 21st century. The medium-term goal should be to implement an EG which allows citizens instant access to information and services through an efficient process and which will fundamentally change the relationship between the government and the people in South Africa.

The information revolution is affecting how governments respond to the needs of their clients in the public sector. It has opened up new possibilities for the delivery of programs and services in government ministries. A defining characteristic of the South African public sector has been the existence of infrastructure to deliver programs through a network of points of service to certain communities. The South African government is now experimenting with new organisational models, such as the electronic model, to deliver services to all communities; namely, those that were denied basic services, as in the case of disadvantaged rural communities. The information revolution lessens the need for a large physical infrastructure to deliver programs and services to the public. Efficiencies can be achieved through the sharing of data among departments, and the provision of a "single-window" of service delivery. With the use of networks and information sharing, organisational boundaries do not serve as impediments to service delivery, as is the case with traditional organisational models. New information technologies allow for integrated databases and common program delivery. Clients will be able to face a "seamless" government in their daily interactions for programs and services. Hence, the legitimacy and relevance of government can actually be enhanced by improved service delivery. New information technologies thus offer the possibility of close and ongoing interaction between government and citizens. More importantly, online information would result in the affirmation of previously disadvantaged groups. Online forms of governance are non-discriminatory, faceless and consistent. Furthermore, online forms of governance are replicable and empowering.

Impact of Electronic Technology on South Africa

According to Shilubane (2001) electronic technology "is the continuous optimization of government service delivery, constituency participation and governance by transforming internal and external relationships through technology, the Internet and new media". This implies the transformation of how citizens, be they legal or natural persons, perceive and experience government.

It is evident that globalisation and information technology are impacting on how South Africa (SA) conducts business and how government implements its day-to-day activities. Globalisation suggests that South Africa should be linked to the international community and to the degree to which companies can interact productively with the global community. Hence, the electronic model of service delivery will open up new opportunities for South Africa; for example, global markets and small business will be able to compete on an equal footing with big business. The electronic model is also an opportunity to promote economic growth through the creation of SMMEs and the expansion of South African businesses into new markets. The electronic model will also level the playing field for small and large entities in South Africa, as these entities can extend into local and international markets and increase revenue potential. Hence, South African companies need to become globally profitable and to measure up to international benchmarks. The electronic model thus presents new opportunities to achieve a more level playing field vis-à-vis larger, more developed economies. The Internet can thus be a great force for economic development, the spread of democracy and for the promotion of communication and understanding. Furthermore, it diminishes existing advantages of cost, communication, and information and can create huge markets for indigenous products and services. The electronic model is, therefore, the indispensable prerequisite for sustainable economic development, for job creation, promoting social equality, improving service delivery and overcoming poverty in South Africa (Singh, 2002).

Another important feature of the electronic model is that it expands the size of any organizational entity from its immediate geographic area to a potentially worldwide area. This expansion into other markets and opportunities for existing and new businesses has created a potential for accelerating economic growth in South Africa, including relatively poor and rural areas. There will be a huge need for business development support programs and for training in the electronic model applications such as the Web design, interactive media, different languages and other training. There is also a need for sharing of information and experience among Web-based businesses, as market opportunities, strategic advantages, and unique approaches could be of value to all counterparts in South Africa (Department of Communications, 1999).

One of the most important benefits of the electronic model for South Africa is the opportunity to "leapfrog" into the knowledge paradigm. In this respect, the electronic model will have an impact on all aspects of society, not just the commercial or public sector. Nevertheless, progress with respect to the electronic model has been mainly evident in the private sector. The government can play an important role in examining the economic and social impact of the electronic model and promote an understanding of the

model as well as create an enabling environment so that the model can succeed also in government (Liebenberg, 2000).

However, while many companies and communities in South Africa are beginning to take advantage of the potential of electronic technology, critical challenges remain to be overcome before its potential can be fully realised for the benefit all South Africans. The government, therefore, has an important role to play, in that it must establish policy for improving the quality of life of all citizens through equitable development, and thereby set new precedents for the role of the electronic model in the country. It must, however, adhere closely to international principles, while nevertheless maintaining the broad focus on fostering widespread economic growth, opportunity, and global integration (Department of Communications, 1999).

In this regard, South Africa is committed to promoting economic growth and development in the region, since Southern African Development Community (SADC) constitutes an important market for South African goods and services. The government, together with business, can therefore play a vital role in promoting the growth of the electronic model by instituting appropriate policies with respect to education, industry, technology, the economy, technical assistance and human resource development programs, to enable the country to move from a traditional to an information society. Thus, government must become familiar with rules, frameworks, vague pointers, to assist in understanding and dealing with the electronic model (Liebenberg, 2000). The government's influence must take on new dimensions.

The electronic model can also be an important strategy in building the country's comparative or competitive advantage (Evans, 2001). The electronic model presents unique opportunities for South Africa to greatly expand its markets, both internally and externally. Externally, the Internet and other technologies may allow for low-cost international trade, even for small local businesses. Internally, marginalised communities may gain affordable access to, amongst others, government services and financial services, and may participate in all aspects of the economy. Companies and the public can conduct their business from any location. Hence, rural areas may become the focus for investment and market expansion and also for relocating corporate offices (Department of Communications, 1999).

With respect to job opportunities, if the electronic model generates significant economic growth, this should lead to increased employment opportunities both in the private and public sector. However, initially workers could be displaced as a direct result of transformation as the skills and experience required for the electronic model could be significantly different from traditional employment skills. There could be a short-term risk to workers whose current jobs and skills may become obsolete. The counterpoint to this argument is that there should be considerable long-term opportunities. Nevertheless, the Internet can provide direct employment opportunities in software, data processing and many other information-intensive jobs for those skilled in ICTs (Department of Communications, 1999).

However, an efficient and versatile infrastructure, finances and a skilled labour force are required for the electronic model of service delivery in South Africa. Such an environment can facilitate electronic service delivery, domestic trade and also enable rapid growth in international markets, which is an area of critical growth, since export markets will be the

largest single source of gross domestic product expansion for South Africa (Evans, 2001).

Implications of the Electronic Model for Public Sector Delivery in South Africa

Governments globally are demonstrating the advantages of electronic government, namely by conducting transactions electronically as well as electronic service delivery. Business imperatives entail improving customer service, focusing resources on core areas, and increasing competitiveness both nationally and internationally. By changing to the electronic model of service delivery, government will be based on business-like practices and principles, cost savings and an enhanced environment (Department of Communications, 2000). The electronic model is vital for the public sector as it can open up new opportunities, namely a reduction in the number of paper transactions involved in government operations, public participation in decision making, government purchasing of goods and services, electronic payments and improvements in service delivery. In this regard, Keen and McDonald (2000) argue that the electronic model of service delivery is an opportunity not to be missed. The electronic model is important as it can rapidly improve service delivery and productivity.

In order to obtain real benefits of the electronic model for better service delivery, better procurement, efficient working and better communication with citizens and businesses, government is preparing a comprehensive system for implementation in the public sector. The electronic model entails a shift to the customer, where citizens must be able to access more public services online at their convenience at any time and at any place. Thus, services must be integrated and "customer centric," aligned to the "Batho-Pele" service delivery framework of the South African government. Hence, the electronic model presents both opportunities and challenges for government. As a catalyst for economic growth, the government simultaneously faces demands to make services more accessible, responsive and affordable to the public. The South African government sees the value of the electronic model as efficient means to deliver public services, such as education and health care, to the broader population (Evans, 2001). In this regard, the fact that many services can now be delivered electronically has implications for the government's service commitments, since many of these commitments were made without considering electronic service delivery (Department of Communications, 2000).

The advances in technology hold great potential for helping government respond to its challenges, namely, better service delivery, better procurement, efficient working and better communication with citizens and businesses. The public sector should be responsive to the needs of citizens and service delivery should be of high quality (Evans, 2001). By linking government at all levels within and across department lines, and by improving citizen access, convenient and efficient methods of conducting government business are enabled. Hence, the organisational and operational changes will take place on many fronts and in many ways. However, at their core, all are driven by an architecture and an infrastructure that allow for information to be seamlessly moved across govern-

ment, between its various programs and ultimately, to citizens and businesses. By providing online access to information and services through phones, faxes, self-service kiosks and World Wide Web, government can provide higher quality, faster service to the public. Such initiatives hold great benefits, but the lack of strategy and synergy among various ministries may continue to be a significant barrier (Department of Communications, 2000).

Through the application of advanced network technology and the deployment of multiple service delivery points, government can overcome barriers of time and distance and become better positioned (Liebenberg, 2000). Continued progress in areas such as competitiveness, quality and effectiveness of traditional government services will enable government to address a number of criticisms, namely, that government is not customer-focused, it is not delivering, and it fails to stimulate economic growth. As a result, the South African government is striving not only to improve the efficiency and quality of services, but also to ensure that services are delivered at the most convenient times and locations via electronic media. The adoption of the electronic model will, however, involve a fundamental shift in government because the changes implied by the electronic model will affect the core operational and managerial aspects of government. The scope of the electronic model in government will extend to what it can do, to a network of stakeholders (such as the public/customer, a network of suppliers, intermediaries and others). However, government must integrate vertical operations with virtual integration (Liebenberg, 2000).

The benefits of EG for South Africa must be tangible and should include at least the following (Babcock, 2000; Czerniawska & Potter, 1998):

- It should make it easier for businesses and individuals to deal with government;
- It should enable government to offer services and information through new media such as the Internet or interactive TV;
- Improve government efficiency and effectiveness through automating processes and streamlining processes;
- Communication between different government departments and functions should be improved so that people do not have to be asked repeatedly for the same information by different service providers;
- EG should improve access to information – either via call centres or the Internet – so that government departments can deal with members of the public more efficiently and more helpfully;
- Different parts of government should be more easily able to work in partnership: central government with local authorities or the voluntary sector, or government with third party delivery channels such as SAPO or the private sector; and
- EG will help government to become a learning entity by improving access to, and organisation of, information.

Some of the ultimate benefits of the electronic model are better-informed citizens, increased productivity, improvement in service delivery and more efficient government.

By using the model applications, for example, in procurement, the impact on operation and service delivery will be tremendous. The South African government is the largest purchaser of products and services, amounting to approximately R65 billion a year. Internet based e-procurement will therefore present tremendous opportunities for the government, namely (Department of Communications, 2000) "reduced prices of materials, shortened acquisition and fulfilment cycles, decreased administration burdens and cost and improved inventory practices; and increased control over purchases".

Challenges Facing the South African Government

The challenges facing the South African government in transforming conventional government into electronic government are tremendous. In the USA, the huge Internet user base is 100 million, which has given rise to a thriving Business-to-Consumer (B2C) marketplace. It is different in South Africa, where the Internet users number only three million. Although it is agreed that the Internet is a great way to do research and establish customer contact, government departments as well as businesses are generally afraid of the technology (Evans, 2001). Moreover, many organisations are not willing to spend a lot of money on the Internet approach. They are also reluctant as the human element is lacking with this approach. Many government departments, businesses and consumers are still wary of conducting extensive business over the Internet because of the lack of a predictable legal environment governing transactions. Furthermore, most sites on government are no more than electronic brochures. There is a dire lack of understanding of the powerful role the Web can fulfil. For example, government Web sites look electronically enabled but generally are not. Hence, from an on-line strategy point of view, there is no consideration of the customer. Furthermore, there is no effort to market these sites online. Thus, very few government departments are employing the electronic model, despite claims that it is the online element of the Web that is the key to entrepreneurial government based on business like principles and cost savings.

Other challenges that the South African government will face with respect to the electronic model are (Liebenberg, 2000):

- ensuring effective methods of protecting privacy over the Internet;
- identifying possible legal barriers to the development of the electronic model;
- providing education and training on the usage of the electronic model;
- addressing the lack of preparedness by government institutions, consumers, companies and SMMEs; and
- managing the negative socio-economic impacts, for example, job losses and other associated risks.

Concerns centering on issues such as enforcement of contracts, liability, intellectual property protection, privacy, security and other matters have caused government departments, businesses and consumers to be cautious. There are major drawbacks that the South African government must address (Johnson, 2000). The South African government will need to consider the development of a national policy to support and expand the electronic model in South Africa both in government and industry. This should also serve as the underlying philosophy for the establishment of the electronic model for South Africa. Another area on which the electronic model will have an impact is the area of international and national global trading legislation, which will have to be aligned in the context of global trading on the Internet.

Consequently, initiatives over a horizon of 10 years will force the South African government to contend with the ensuing issues (Shilubane, 2001):

- ICT infrastructure is weak in geographical areas in which the majority of citizens live because of the apartheid separate development legacy;
- ICT related goods and services are made available on suppliers' terms, most of which are foreign companies, and the low per capita purchasing power does not allow markets to mature;
- the general education level is lower and ICT degrees are difficult to obtain; hence there is over-dependence on imported ICT goods and services, rather than the development of local solutions;
- organisations have less and shorter experience in using ICT; consequently it takes some time to offer a comprehensive range of services leveraging ICT capabilities;
- information sharing is not common among organisations, and sometimes within an organisation itself, given the old silo/command structures; hence the provision of seamless services is usually hampered by fragmented information systems, and fragmented systems will take a while to inter-operate;
- EG readiness varies significantly between government departments, provinces and local authorities;
- there are pressing demands in the public service, which make ICT development a lower priority in budget terms. The gap between the ICT development scenario and the reality is big, and needs financial priority;
- governments the world over find it difficult to recruit and retain competent ICT professionals. EG endeavours require some in-house champions to undertake planning and oversee developments.

From the above, it is evident that the South African government is confronted with innumerable challenges, similar to other developing economies that need to be addressed.

Role of the South African Government in Creating an Enabling Environment for the Electronic Model of Service Delivery

The information society will undoubtedly have an impact on ways of communicating, receiving and sending information and new ways of working in South Africa. It offers South Africa an opportunity for development and progress, and also presents new and demanding challenges. Electronic technology has created a new marketplace in which government is required to operate. Hence, we have an arena without conventional rules, which challenges existing practices and notions. This new phenomenon may also defy regulation. This requires careful consideration by the South African government in terms of its implications for the public sector, society and business. Those that are affected by the electronic model will have to play a vital role to help government to move ahead on some of the crucial issues that the model presents (Department of Communications, 1999).

In government use, e-business is about Internet applications that enable the public to access information and interact with government departments on the Web. It is not about reinventing the organisation. It is about providing citizens with better information and new knowledge to make faster, more informed decisions possible. As with any other successful project, it is necessary to formalise the processes in order to realise the benefits. The processes may then be driven by means of standard project management methodologies and, typically, using a program office scenario (Babcock, 2000).

Successful EG takes a strategic approach, leveraging their knowledge and information over time. They capitalise on the information. Government departments need to re-design themselves and the way they provide services to take advantage of the technologies enabling the new digital economy. This means that there must be a definite focus on the way a department connects to its external environment. However, being effective in the external environment requires introspection. Issues that should be considered should include (Roodt, 2001):

- how a government department wants to be relevant in the new economy; and
- how the government organises itself internally and how it allies itself to partners to achieve this.

For EG to provide benefits and value to government and citizens, it will be essential for the functional steps be followed and implemented. The success of EG depends on insight, planning and total commitment. Nevertheless, the main point of contention for government is on how to formulate a coherent policy strategy on the electronic model.

The main concerns for the government on the electronic model in South Africa are identified as (Department of Communications, 1999):

- Deciding on the governing philosophy that guides nation-wide decisions on priorities and options concerning the electronic model of service delivery;
- How and under what organisational structure will the electronic model be co-ordinated;
- Formulation of policies to overcome real and perceived risks to businesses and consumers that can arise in electronic transactions;
- Formulating policies that establish the ground rules applicable to electronically based businesses, on a national and international level;
- Formulating policies for enhancing the information, telecommunication and financial services technologies and facilities that are essential for participation in global e-commerce; and
- Formulation of policies that focus on promoting new business opportunities and on easing the transformation of the economy.

The effective development of the electronic model will require a well co-ordinated and participatory process that involves a wide range of stakeholders in both the public and private sectors. The adoption of the electronic model will involve the integration of many elements of technology, infrastructure, business operation and public policy. The technologies must be fully operational to the operational needs to implement innovative approaches that will promote market development. These requirements will be applicable to all sectors of society, including the public and private sectors. An effective national policy on the electronic model can be established only if disparate operational, legal, regulatory, and enforcement actions within the government, along with technical, marketing, financial, and management strategies in the business sector, are closely aligned. The key concern is whether the government has the capacity to co-ordinate and understand the various issues and initiatives, especially in the area of infrastructure, which must underlie all electronic service delivery. The other areas of concern are briefly outlined below (Department of Communications, 2000):

Consumer Protection, Privacy and Security: The South African government will need to secure networks, access points and business-critical applications against theft, fraud, electronic abuse and misuse. Therefore, a number of countermeasures are to be undertaken to ensure that the electronic model is as secure as traditional forms of transaction (Department of Communications, 2000). The South African government must develop policies that build trust in electronic transactions, as there has been an increase in fraud and abuse with transactions online. There must be confidence that electronically based purchases, fund transfers and business deals are valid as traditional practices. Hence, personal information and finances must be secure so that consumers can be well protected against fraud and mistreatment. There must be accountability for the quality, reliability and legality of products and services. This also raises issues, mainly for the South African government, such as national security and facilitating law enforcement, protection of citizens' privacy, encouraging economic well being, and maintaining public safety. Furthermore, as the use of encryption spreads, the result can be access to cryptographic codes or decryption keys by government agencies such as law enforcement and national security (Department of Communications, 1999). The use of the

Internet has also raised new issues concerning confidentiality of records in terms of access to personal details, jurisdiction over storage and use of data, and protection of financial information disclosed in electronic transactions. With respect to enhancing users' sense of privacy protection in the online environment, government regulation could play an important role through specific legislation, to require Web site operators and database owners to conform to certain standards regarding the use of data (Department of Communications, 2000).

Taxation: One of the major difficulties that the South African government must face as the electronic model grows is the question of taxation with respect to electronic transactions, and of import duties when they cross international boundaries. Specific new taxes called "bit taxes" may have to be applied to digital transmissions, separate from ordinary taxes, for products and services purchased electronically. With respect to tax collection under the electronic model, there are complications around issues of jurisdiction and institutional roles. Operating on the Internet implies that the physical location of a business is almost irrelevant, and possibly undetectable, as data files and related hardware can be easily moved from one location to another. Hence, tax laws based upon the seller's place of business can become increasingly difficult to enforce (Department of Communications, 1999). In South Africa, there are no specific provisions that cover electronically transmitted goods and services. The tax and tariff policies in South Africa have not yet been updated to encompass the realities of electronic technology.

Intellectual Property Rights and Domain Names: Other issues of concern are intellectual property rights and domain names. The future development of the electronic model is dependent on the protection of copyrights and related rights and the protection and equitable allocation of trademarks and domain names. South African laws must conform to treaties with respect to intellectual property rights, including software, recordings and technical designs against illegal pirating and from unfair use of South Africa trademarks. Furthermore, there is no other established legal precedent to ensure protection of companies' trademarks in the virtual environment in South Africa (Department of Communications, 2000).

Enhancing Infrastructure: The lack of infrastructure in South Africa has impeded the progress of the electronic model both in the public and private sectors. For the vast section of the population in rural areas, infrastructure is often limited or non-existent, and is unaffordable. Hence, one of the major concerns for the South African government is the need to enhance the national infrastructure to support the electronic model. However, the possibility of participating in the global electronic marketplace and/or electronic model of service delivery is remote for the majority of the population, as there is a low level of basic telephone services in rural areas, and access to computers and data services are even lower (Liebenberg, 2000). Furthermore, the Internet is restricted to particular geographic locations and segments of the population, due to historical inequities in society, and the lack of access to basic telephone service and computers particularly to rural areas (Department of Communications, 1999, 2000).

Telecommunications Market and Pricing Policy: Regulation of the telecommunication industry is an important public responsibility to support fair competition and to oversee appropriate pricing and service responsibilities. The prices charged by telecommunications operators for access to crucial services can be an important factor in determining

the effectiveness and affordability of the electronic model opportunities on the whole. It is extremely difficult for smaller entrepreneurs, ISPs, and public operators such as telecentres to afford to connect themselves. This will inevitably form a barrier to the electronic model of development. This could create economic barriers, especially for the most disadvantaged users (Evans, 2001).

Although 2.8 million telephone lines will be made available in the next five years throughout South Africa, it is not sufficient to achieve the entire infrastructure needs of the electronic model (Department of Communications, 1999). Many questions will need to be addressed in the context of the market opening policy. These will, amongst others, include the interconnection regulation, treatment of Universal Service Fund contributions, tariff regulation, cross ownership with other industries and the role of ICT in government (Department of Communications, 1999; Evans, 2001).

The South African government must deal with these critical challenges to ensure the successful entrance of the electronic model of governance. In line with its Constitutional mandate, the Department of Public Service and Administration is developing an EG strategy as part of its overall service delivery improvement program. In preparation for a more convenient, efficient, effective and integrated government service delivery system, the Department of Public Services and Administration (DPSA) has commissioned a scoping study. The objective of the scoping is to describe the optimal process by which government can deliver services to citizens, according to critical life cycle events, rather than as defined by government structures and systems. The study will capture the entire interface that takes place in the Government-to-Citizen (G2C) and Government-to-Business (G2B) relationship, from the point of view of providing a single gateway through which citizens can interact with government. The study will focus on mapping both technology enabled information flows, as well as the institutional mechanisms through which they are delivered. The desired outcome of the study is to develop a vision of optimal service delivery, which will reflect those government departments which are better positioned to collect, process, store and disseminate various types of information, as well as suggest the most appropriate mechanisms through which services should be made available to the public (Shilubane, 2001; Singh, 2002).

Current Initiatives Undertaken by South African Government

The South African government's commitment towards improving service delivery across the population was illustrated in 1995, when Mr. Thabo Mbeki (the then Deputy President of South Africa) stated at the G8 meeting of the information society in Brussels, "we must strive to ensure that each individual whatever his or her station in life, play a meaningful role in decision making and in governance. One of the ways this can be done is to ensure that citizens have access to information." This was reiterated by the South African Minister of Communication in 2001, whereby it was stated that "the South African government believes that every region, province, community and citizen whether urban or rural has to benefit from access to the information economy" (Van Jaarsveld, 2003).

In the budget vote speech for 2002, the South African Minister of the Department of Public Service and Administration announced that "South Africa on-line" is a single electronic gateway that will facilitate access to all information about and services provided by the South African government (Van Jaarsveld, 2003). This initiative implies an end to the tedious process of visiting a multitude of South African government departments to conduct business. Citizens will be able to access all the government services from a single point, for example multipurpose walk-in community centres or kiosks that will be established across South Africa.

The key areas in which the South African government departments and other bodies are currently involved in to effect a national e-governance strategy are (Central Government, 2002):

- Department of Education: Education policies on information technologies and distance learning;
- Department of Labour: Programmes on skills training, technology job placement, policies on industry evolution;
- Department of Health: Tele-medicine programmes, health information database and education initiatives;
- Department of Trade and Industry: World Trade Organisation (WTO) negotiations, imports and customs issues, harmonisation of South African policy with global treaties, and local industrial strategies;
- South African Bureau of Standards (SABS): The establishment and management of standards;
- Department of Finance and the South African Revenue Service: Policies on tax treatment, revenue collection for electronic transactions and imports and customs issues;
- South African Communications Security Agency (SACSA): Looking into policies on cryptography including digital signatures, certification authorities, public key infrastructures;
- Department of Arts, Culture, Science and Technology (DACST): Policies relating to development of technology, particularly the information and communications technology (ICT) sector of the national research and technology foresight project, also cultural expression via new technologies;
- Department of Justice, National Intelligence Agency: Investigation into cyber fraud, illegal transmissions and other security threats, establishment of information technology security policies for government;
- Department of Public Service and Administration (DPSA): Establishment of information technology and information management policies for government;
- Department of Public Works: Electronic archiving of policies and strategies;
- Department of Home Affairs: Development of a national identity card with a smart chip catering for various users; and

- South African Reserve Bank: Initiatives on electronic payments, funds exchange, inter-bank technologies and electronic money.

The South African government's application of ICT in a variety of settings would undoubtedly improve the quality and cost-effectiveness of service delivery, and establish the foundation for the development of ICT applications in the South African private sector. However, there are various perceptions of information and communication technology that would undoubtedly have a major impact on policy and implementation in South Africa. A case study was therefore undertaken to examine these perceptions.

Case Study on Perceptions of Technology in South Africa

The South Africa population can be described as a fragmented portion of a whole. Each race group (Indigenous Africans [IA], South Africans of mixed decent [SAM], Afro-Asians [AA] and Afro-Europeans [AE]) is uniquely different. For example, the South African democratic government inherited a divided and unequal system of education. Under apartheid, South Africa had 19 different education departments separated by race, geography and ideology; that is, before 1994, IAs, SAMs, AAs and AEAs grew up in very different social-political, educational and cultural environments. This education system prepared children in different ways for the positions they were expected to occupy in

Table 1: Contrast between monochronic and polychronic people (Hall, 1989, 1990)

Monochronic People	Polychronic People
Do one thing at a time	Do many things at once
Concentrate on the job at hand	Are highly distractible and subject to interruptions
View time commitments as critical	View time commitments as objectives
Are low context and need information on specific task	Are high context and already have general information
Are committed to the job at hand	Are committed to people and human relationships
Adhere religiously to plans	Change plans often and easily
Emphasize promptness in all situations	Base promptness on the importance of and significance of the relationship
Are accustomed to short-term relationships	Have a strong tendency to build lifetime relationships

social, economic and political life under apartheid. In each, the curriculum played a powerful role in reinforcing inequality (Singh & Kotze, 2003).

When designing Web applications such as EG software the design team has to be aware of cultural diversity (Preece, Rogers & Sharp, 2002). There are many views to the issue of cultural diversity and many angles from which it can be approached (see for example Evers & Day, 1997; Hofstede, 1997). One aspect of this diversity is related to whether the intended users are monochronic or polychronic. Table 1 summarises the main characteristics of monochronic and polychronic people.

American society, as well as those of northern Europe, is predominantly monochronic (Hall, 1989, 1990). Some cultures such as Arab, Latino, or Black (African) cultures are polychronic (Hall, 1989, 1990). Not all nations are predominantly of only one culture. South Africa's sizable AE population is recognised as monochronic and the majority IA as polychronic (Morrison, Conway & Douress, 1999; Prime, 1999). Members of polychronic cultures find delay significantly more tolerable than do members of monochronic cultures. Members of monochronic cultures find delay to be a source of great anxiety. In fact, members of polychronic cultures have been noted as having little anxiety at delay levels 50 times greater or more than those found very troubling to monochronic individuals (Hall, 1989, 1990). Research conducted by Walton, Vukovic & Marsden (2002) confirm that IA are polychronic in general.

Therefore, it would seem sensible to assume that AE and IA would respond differently to excessive delay in system response time and other issues relating to monochronicity and polychronicity. One of the aspects researched and presented in this chapter links up with this.

Experiment

The South African environment as well as the cultural differences influences users' perception of technology. As part of a wider research project we have conducted an experiment to test if the chosen samples was monochronic, polychronic, both monochronic and polychronic, or predominantly one of the two. The following features, amongst others, were identified for investigation by the researchers: instructions, speed of Web site, communication (e-mail, fax, phone), appearance and navigation. Communication as a feature of investigation was chosen because in the social-political context, not all South Africans have access to basic communication.

The investigation was done through an experiment involving the design of two Web sites (site A: experiment 1 (E1) and Site B: experiment 2 (E2)) and a questionnaire to assess these sites. The sample of subjects for the experiment was selected using judgment sampling (Groebner & Shannon, 1990). This study was aimed at the net-generation [N-Gen] (Tapscott, 2000). N-Gen refers to the generation of people who are between the ages 2 and 22, not just those who are active on the Internet. The total number of respondents was 219.

The experiment was designed in the following way: the two sites addressed the same content but E2 adhered to general usability and design principles, while E1 broke some of these principles. The main principles on which these two sites can be distinguished and which have relevance on the work being reported here are: (1) *Consistency*: this refers to designing interfaces to have similar operations and use similar elements for achieving similar tasks (Preece et al., 2002). E1 was illogically designed with the use of poor spelling and grammar. (2) *Navigation*: this refers to avoiding orphan pages, long pages with excessive white space that force scrolling, narrow, deep, hierarchical menus that force users to burrow deep into the menu structure, and non-standard link colours; providing navigation support, such as a strong site map that is always present; as well as providing a consistent look and feel for navigation and information design (Preece et al., 2002). Navigation for site E1 was unstructured and totally linear, while E2 was designed with all the above in mind. (3) *Structured information*: E1 did not follow a structured approach for the specific content, leading the user to access the information in a particular way, and provided random bits of trivial information mixed up with the remainder of the content. The information for E2 was designed to lead the user through the content of the Web site. E1 appealed to the unstructured nature of the polychronic culture and E2 appealed to the organised nature of the monochronic culture.

The questionnaire consisted of the following main sections: demographic information about the respondents; a section to assess past computer experience; a set of instructions for assessing the first Web site (either Site A or B), and 32 statements, each on a 5-point Likert-scale, relating to the first Web site; respondents' open comments on the first Web site; a further set of instructions for assessing the second Web site (either site B or A), and 32 statements, each on a 5-point Likert-scale, and respondents' comments relating to the second Web site; and respondents' open comments on the second Web site.

The respondents from each institution would look at E1 and then E2, or vice versa. To avoid sample set bias subjects from culturally diverse institutions from different regions were selected for the experiment.

An intrinsic part of the questionnaire is its ability to collect quantitative and qualitative data, giving the respondents the opportunity to comment on or justify answers.

For this chapter we limit our discussion to the subsections of the questionnaire relating to: speed of Web site, communication (e-mail, fax, phone), and navigation. The outcomes of the following questions are specifically addressed. *Speed of Web site*: "It is important that the website process my request quickly" (specific to our Web sites) and "A fast response time is important to my activities on the web" (the Web in general). *Communication*: "Help features via phone, fax or e-mail are important aspects of a website" (Web in general). *Navigation*: "On-line help features such as navigation tutorials are unimportant to my activities on the web" (Web in general).

Findings

The results give the E1 and E2 results of respondents looking at each site respectively for the above questions. Figures 1 to 4 contain the attitudes of the respondents

Figure 1: It is important that the Website process my request quickly.

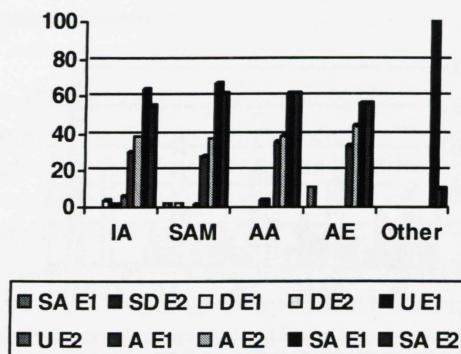


Figure 2: A fast response time is important to my activities on the Web.

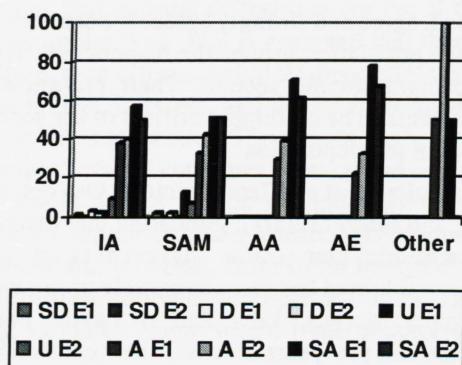


Figure 3: Help features via phone, fax or e-mail are important aspects of a Website.

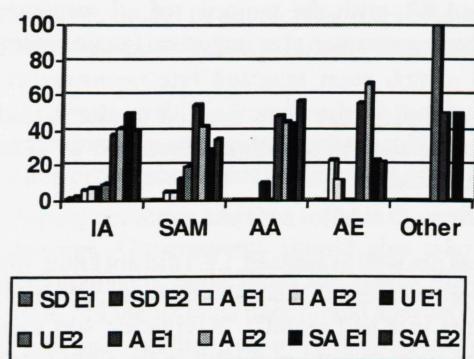
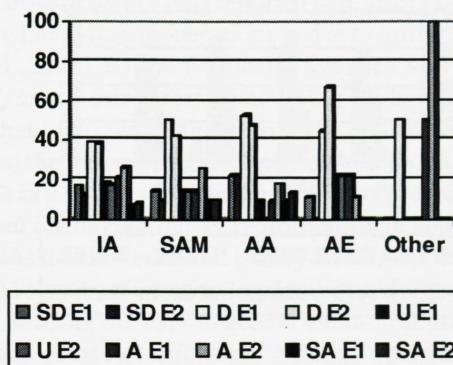


Figure 4: On-line help features such as navigation tutorials are unimportant to my activities on the Web.



represented as a percentage where SD, D, U, A, SA respectfully stand for strongly disagree, disagree, undecided, agree and strongly agree. We can summarise the findings as follows: (1) Among all the population groups the respondents became more critical of the site they were seeing/assessing second. Their pre-knowledge of the site/questions caused the respondents to be extremely critical of the second Web site. (2) A significant difference between the population

groups is expected. These results paint a different picture. Our results are supported by the work de Wet, Blignaut, and Burger (2001), indicating that there is a shift in literate IA to become more monochronic. Our results suggest that the entire population is monochronic. This could be explained because the sample group was from the N-Gen, all possessing basic computer literacy skills, and all having been through similar education systems during the last few years at least. Their cultural background did not seem to influence their requirements and performance on the Web. If the target population was the wider South African community, we expect that the results might have been more mixed. (3) A closer look at Figure 1 indicates that there are significant differences in the E2 for IA users. In Figures 2, 3 and 4 the same pattern again emerges for IA users. This indicates that IA users are monochronic. The results in Figure 4 reflect a type of status quo in the E1 and E2, with the majority of all respondents, independent of population group, seeing support material as important (again leaning to the monochronic side).

The chosen usability principles that were applied to site A and site B affected the respondents' attitude to the sites in question, illustrated by some of the open-ended comments by the respondents:

Site A: "...navigation was not well organized, i.e. I did not know where I was going next"; "the pictures and text were congested, there should be a space in between"; "the website frustrated me and put me in a bad mood"; "navigation was totally linear and highly frustrating". *Site B:* "the right amount of picture = the right speed"; "the screens were

very well organised in a logical order, i.e. menu on left of screen => worked its way down the menu". Here again, comments from the IA group led the researchers to believe that the entire group is monochronic.

The respondents could see the difference that design according to human-computer interaction and usability principles made, and therefore "demanded" more. The aphorism that "ignorance is bliss" is therefore true; given the differently designed Web sites the respondents aggressively commented on what they considered as poor design, even when given a better design the second time around.

The results above strongly suggest that designers should look very carefully at the audience for which they are designing. Every market has a wide spectrum of people from skilled computer literate people to unskilled farm labourers, the ones who came through very different educational systems as opposed to those who had equal opportunities. It would be unrealistic for designers to think that they could design for the whole market. A realistic approach could be for design teams to know who the target audience is; this could possibly be achieved by conducting a marketing survey (by a group of experts) and giving these data to the design team.

The research indicates that cultural differences for the N-Gen target audience do not affect their activities on the Web. If it is accepted that there is a N-Gen or computer/technology subculture, then efforts should be directed towards developing this culture with a sensitivity to beliefs, customs, and the intrinsic meaning of words and symbols in the context in which it is to be used. The results further suggest that as long as users have achieved a certain level of computer literacy and exposure to EG and other Web applications, they would accept similar designs without customisation of the user interface. The results are supported by the research of Norton (2002) on corporate culture in South Africa. There are, however, little to no longitudinal studies that have been conducted in usability and cultural differences. Further research is therefore needed to make long-term and validated claims on the issue of culture in designing for the Web.

Lessons for Developing Countries

The success of the electronic model in developing countries requires strong and high-ranking political and bureaucratic leadership. Equally important is vast amounts of time, as well as capital. Government and business must debate and address issues and initiatives required to create an enabling framework for the electronic model both in the private and public sectors in these countries. Moreover, efforts must be speedily made to ensure that policies and processes are put in place that addresses the needs of society.

Governments in developing countries can thus refocus their attention to customers and value network relationships. Governments should also take the necessary steps to ensure that their public managers understand the electronic model, for ensuring its effective implementation. Managers must understand approaches for implementing the electronic model that will span multiple network players and channels. Governments should look at what it means to establish the electronic model, which involves embedded

rules and regulations, application program interfaces and the accelerating move to component-based technologies and approaches. It means designing and operating the business from the public perspective (the customer) and recognising that all aspects of governmental operation will affect the public. The new fit will entail understanding the fit between government rules, capabilities and technology. The implications of integrating technology into public sector departments in developing countries will be far reaching. The initiatives or steps that can be undertaken by developing countries to ensure the successful entrance of e-government are summarised in Table 2.

Broadly speaking, *a suitable four-step program for e-government for developing countries* should entail the transformation of the core business processes, organisations

Table 2: Initiatives/steps to be undertaken to ensure the successful entrance of e-government (adapted from discussion)

Initiatives/steps	Remarks
Strong and high-ranking leadership	Competent leadership is required to drive the whole e-government initiative. Bureaucratic leadership should be well trained to implement the whole e-government initiative.
Strategic and operational Issues	There should be a strategic fit between government rules, capabilities and technology. There is a need for the transformation of core business processes.
Development of Partnership	Collaboration with the business sector and civic organization is essential.
Regulation of Telecommunication Industry	It is necessary to support fair competition and to oversee appropriate pricing and service responsibilities.
Institute appropriate policy	Institutions should become familiar with rules, regulations, frameworks and vague pointers.
Sufficient Resources should be made available	Financial, human resources and time should be made available.
Education and Training	Education and training is crucial for recipients of the services. Education and training is crucial for implementers of the e-strategy. Ongoing education and training of ICT specialists is essential.
Provision of Infrastructure	The provision of basic infrastructure is essential for the success of e-government, for example electricity, telephones, computer hardware and software.

changing their work processes and having a vision of how such a transformation will improve their operations, and the building of a new generation of e-business applications, which will allow governments to build the required functionality, without reinventing the wheel. Such an approach will allow the systems and applications that they already have in place to become more functional, with the appropriate emphasis on application that are non-existent or that require integration. The adoption of such an "electronic architecture" that is scalable, open and secure is essential, and finally, it is also suggested that governments should establish a hardware infrastructure that can grow easily, as requirements and demand increases. Hardware and software alternatives should also be made available, in such a manner that they can provide for high levels of security. Such a mammoth task requires a well-strategised, thoroughly planned and carefully coordinated approach to ICT and electronic government.

The implementation of an e-government approach in developing countries will require a sustained effort, as well as collaboration with the business sector and civic organisations. The success of the electronic model in developing countries will require an effective partnership between the private and public sectors. Partnerships between governments and industries will be required, not only to develop the actual strategies, but also to become involved in the integration of the existing, future and newly created digital world entities.

Regulation of the telecommunication industry is an important public responsibility, to support fair competition and to oversee appropriate pricing and service responsibilities (Electronic model of service delivery, e-gov examples shine abroad, 2000). The prices charged by telecommunications operators for access to crucial services can be an important factor in determining the effectiveness and affordability of the electronic model opportunities on the whole in developing countries. It is extremely difficult for smaller entrepreneurs, ISPs, and public operators such as tele-centres to afford to connect themselves.

Governments in developing countries, together with businesses, can therefore play a vital role in promoting the growth of the electronic model, by instituting appropriate policies with respect to education, industry, technology, the economy, technical assistance and human resource development programs, to enable their countries to move from traditional to information societies. Thus, governments must become familiar with rules, frameworks, and vague pointers, to assist in understanding and dealing with the electronic model (Liebenburg, 2000). The critical challenge for governments will center on how they sources their capabilities, how to ensure implementation of rules, and how to manage their networks, both within and outside the public sector. Other important issues include the fact that sufficient resources must be made available to ensure successful policy implementation in developing countries. Accordingly, governments in developing countries must encourage and promote the electronic model by creating the necessary conditions in this regard, namely consumer protection and privacy and establishing and enhancing the necessary infrastructure.

Finally, with the new tools of a networked society, governments in developing countries must completely rethink and re-engineer themselves as new and innovative issues of government, and become central players in the new global economy. Developing countries should set the climate for wealth creation, which is vitally important in these

economies. It can act as a deadening hand on change or be a catalyst for creativity. They can cause economic stagnation through runaway deficits, or they can set a climate for growth. The ultimate goal for innovation is not fear but the ability to reform and transform in the electronic era. There is a major quest in developing countries to attempt to address the electronic divide in the information age.

The electronic model will have far reaching implications and impact in developing countries. In an era where the communication of information has become so vital for generation of knowledge, it is most apparent that developing countries utilise the expediency of faster and reliable means of the transportation of these databases and deliver services. Governments in developing countries should thus see their role as an enabler, facilitator, educator and law enforcer to prevent cyber crimes, as well as a model user of the electronic model of service delivery. The government influence must take on new dimensions. Governments' participation in developing countries must be coherent and cautious, avoiding the contradictions and confusion that can sometimes arise when different organisations assert their authority too vigorously and operate without co-ordination. There is undoubtedly a great opportunity on the Internet and other ICT media for developing countries. If private sector and government in developing countries act appropriately, this opportunity can be realised for the benefit of all countries. However, without a cohesive outlook and attitude to such a challenge, the anticipated benefits may not accrue.

Conclusions and Recommendations

The electronic model will have far reaching implications and impact on South Africa. There is undoubtedly a great opportunity for commercial and government activity on the Internet. If private sector and government act appropriately, this opportunity can be realised for the benefit of all South Africans. EG is thus about competing in an electronically enabled world, which creates fundamental shifts in existing markets and creates new industry opportunities. The maxim of having to be "worldly-wise" in a global village has now become a reality for South Africa. South African government departments thus need to have this global village wisdom. As the South African government progresses on its journey towards EG, it must select specific applications, promote them to the citizens and define auditable security and privacy policies. In this way, the Information Communication Technology (ICT) return on investment will be more rapid for government while the value creation for citizens will be maximised and visible. In the digital world, value creation will no longer be cordoned off within the boundaries of a single corporation. The extended enterprise will become the essential element and way of transacting business. It is necessary to take cognisance of this fact when designing the elements of EG.

The authors suggest the following approach to designing effective EG sites for South African institutions. The letters ABCD symbolise the grass roots approach: start at the beginning, do not assume anything about your audience, as illustrated (by an example that will be added to the chapter based on our research). A stands for atmosphere; the

organisation should understand the atmosphere in the particular environment that it is operating in, such as socio-political, law, local customs, and amongst the local languages spoken. *B stands for build-up*; you may be an electronic entity, but you have to build up a culture of trust between yourself and the citizens. *C stands for communication*; build up good communication lines between citizens, intermediaries and government. *D stands for discipline*; work with in the rules and regulations of the community. The ABCD approach is a simple approach that assists the government to assess the social environment that it exists in. Such a mammoth task requires a well-strategised, thoroughly planned and carefully coordinated approach to ICT and EG in South Africa.

There are a number of areas for further study that need to be explored in South Africa that are considered vital to the success of the electronic model, namely:

- how the digital medium for export and trade can be exploited;
- which government departments in South Africa should provide training and education initiatives and what funding mechanisms can be employed to support these;
- what the impact of the electronic model will be on the workforce, in terms of both job losses and job creation;
- what resources should be devoted to retraining and compensation for workers who may be at risk due to the electronic model, namely, automation, shifting of jobs offshore, or elimination of the need for certain intermediary activities; and
- how the South African government and the private sector should share the responsibility and cost for easing the transformation of the workforce through these changes?

E-government forms a very important part of future governance in South Africa. It is necessary that public servants and citizens acquire the applicable skills and knowledge. Without proper training, it will be impossible to optimise the use and usage of e-government and its associated benefits. By availing programmes online to public servants and equipping them with information technology commodities, the required skills and knowledge that will be needed for future e-government applications could be inculcated. Professionals must be in a constant learning situation to keep abreast with the developments in their areas of specialisation. Skills in using computers, the Internet, telecommunication and related technologies also need to be part of the core curriculum for schools, beginning at the primary level, through universities and graduate programmes. The provision of locally relevant content should be added to the South African government's e-strategy. Government agencies should work together with the private sector partners and other institutions to help maximise the benefits of e-government through coordinated policies and programmes. Extensive research, both normative and empirical, is needed to cement the fusion between the realities associated with South Africa's capacities and the possibilities presented by advances in information technologies.

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