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A Critical Analysis of Factors Influencing Internet Diffusion in South Africa and its Implications on the Rollout of e-Government Services

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A dissertation submitted to the Faculty of Humanities, University of Witwatersrand, Johannesburg, in fulfilment of the requirements for the degree of Masters of Arts

Johannesburg, 2010

Declaration

I, Luca Senatore, declare that this is my own unaided work. It is being submitted for the degree of Master of Arts at the University of Witwatersrand, Johannesburg. It has not been submitted before for any other degree or examination at this or any other University.

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Abstract

Staying up-to-date with Internet and other Information and Communication Technology developments is vital for a country's economic growth and for a country to stay internationally competitive. Despite the rapid growth and uptake of the Internet around the world, South Africa has continued to struggle to keep up with this trend as the number of people who have access to the Internet is relatively low. Numerous factors continue to have a large effect on the diffusion of the Internet which in turn leads to implications for the uptake and rollout of e-Government services. Regulatory issues, ineffective policies, increasing State involvement, obsolete Universal Service Obligations, and a weak, underfunded regulator continue to hinder the widespread uptake of Internet and high speed Internet offerings. The low diffusion of Internet has lead to the South African government investing a large amount of capital into e-Government projects and strategies which are only benefiting a small portion of the population and thus exacerbating the ever growing digital divide.

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Acronyms and Abbreviations

3G	Third Generation
ACE	Africa Coast to Europe
ADSL	Asymmetric Digital Subscriber Line
CDMA	Code Division Multiple Access
EASSy	Eastern Africa Submarine Cable System
ECA	Electronic Communications Act of 2005
e-Governance	Electronic Governance
FTTH	Fibre-to-the-home
G8	The Group of Eight
GEAR	Growth, Employment and Redistribution
Gbps	Gigabytes per second
GDP	Gross Domestic Product
HSDPA	High-Speed Downlink Packet Access
ICASA	Independent Communications Authority of South Africa
ICTs	Information and Communication Technologies
I-ECNS	Individual Electronic Communications Network Service
ISPs	Internet Service Providers
ISPA	Internet Service Providers' Association
IT	Information Technologies
Kbps	Kilobytes per second
LLU	Local-Loop Unbundling
Mbps	Megabytes per second
OECD	Organisation for Economic Co-operation and Development
RDP	Reconstruction and Development Program
SAFE	South Africa Far East cable
SARS	South African Revenue Service
SAT3	South African Telecommunications Cable 3
SMMEs	Small, Medium and Micro-Enterprises
SNO	Second National Operator
USAASA	Universal Services and Access Agency of South Africa
USAF	Universal Service and Access Fund
USAL	Under-Serviced Area Licence
VANS	Value-Added Network Services
WACS	West African Cable System
W-CDMA	Wideband Code Division Multiple Access
Wi-Fi	Wireless Fidelity
WiMAX	Worldwide Interoperability for Microwave Access
WISPs	Wireless Internet Service Providers
WTO	World Trade Organisation
UN	United Nation

Chapter 1: Introduction

1.1. Introduction

The Internet is the fastest growing media medium worldwide. It took only three years for the Internet to reach over fifty million users. By contrast, it took thirty eight years for radio and thirteen years for television to have fifty million users (Dholakia et al 2003:5). Staying abreast with Internet developments and other Information and Communication Technologies (ICTs) is crucial for a country or region to stay internationally competitive. Furthermore, keeping up with Internet developments not only has a large effect on economies but also can provide social empowerment and social development. South Africa and Africa, as a whole, has seen large growth in Internet users year or year, however, both country and continent have continued to rapidly fall behind the rest of the world in terms of Internet usage and Internet diffusion (The International Telecommunication Union 2007: 13). Although figures vary, it is currently estimated that the number of Internet users in South Africa range between 4.5 million and 5.1 million users (Internet World Stats 2008 and Buckland 2009). With a population of just over 49 million, this equates to an estimated ten percent of the population accessing the Internet, well below international standards[1].

As with societies, governments worldwide have become reliant on Internet access and have begun embarking on utilising the Internet and other ICTs to render public services. From social, political and economic levels the way forward for South Africa requires the integration of ICTs and the use of ICTs such as the Internet to deliver government services in an easily obtainable way. This type of utilisation of the Internet and other ICTs has become known as e-Government and has become a 'buzz word' for leading economies and developing economies alike. The rollout of e-Government policies and strategies will aid the South African government in service delivery and in doing so strengthen the countries democracy.

[1] For example: 12 percent of the population in Algeria access the Internet, 12.5 percent in Zimbabwe, 15.9 percent in Egypt, 34 percent in Brazil, 48.9 percent in Argentina, 59 percent in Czech Republic, 52 percent in Poland, 51.7 percent in Italy and 69.3 percent in France. 25.6 percent of the World's population accesses the Internet (Internet World Stats 2009a; Internet World Stats 2009b; Internet World Stats 2009c).

For the purpose of this study, Internet connectivity refers to gaining access to the Internet either through a fixed-line or wireless solution via a broadband or dialup service. A fixed-line solution provides the last mile through a physical copper or fibre optic connection. A wireless solution provides the last mile through wireless technologies. Fixed-wireless (for example: WiMAX and CDMA) and mobile (for example: 3G HSDPA) solutions have been collectively grouped under 'wireless solutions'. The definition of broadband, from a government and regulators point of view does not provide a minimum speed. The latest definition is provided by the Draft Broadband Policy of 2009, Provision 1.3.2 which states that "...Broadband will be interpreted as an always available, multimedia capable connection." This research will not make use of this definition as it is highly interpretive and goes against world norms[2]. Instead the research defines broadband as being a telecommunication network connectivity with a speed greater than 128kbs. Although it could be argued that this speed is considerably low compared to international standards, 128kps is considered to be 'broadband' in the South African market as defined by industry players. Dialup refers to a connection speed of 56kps or below.

Internet diffusion is used broadly in this paper to refer to increases in both supply (such as bandwidth, domain registrations and number of ISPs), and demand measures (such as users, traffic volumes and numbers of Internet hosts) with respect to the Internet.

[2] As broadband technologies are always changing and broadband speeds continue to increase, the definition of broadband also continues to evolve. The definition of broadband differs per country however the Organisation for Economic and Co-Operation and Development (OECD), of which 30 industrialised countries are members, defines broadband as a connection capable of download speeds of at least 256kbps. The International Telecommunications Union defines broadband as a high speed Internet connection capable of minimum speeds of 1.5 or 2mbps (OECD 2009: 10; International Telecommunication Union 2003).

1.2. Problem Statement

The Internet is a global communication system available in virtually every country and is the largest and fastest growing form of mass media in the world (Truetzschler 2000: 75). Although the Internet is growing rapidly around the world; especially in North America, Europe and Asia; South Africa has not been able to keep up with this trend as the number of people who have access to the Internet is relatively low (Goldstuck 2008b). When comparing South Africa with the rest of Sub-Saharan Africa, South Africa leads with regards to Internet traffic and telecommunication infrastructure. However, in terms of connectivity, the country has fallen behind Nigeria, Morocco and Egypt and if current trends continue, Kenya will also surpass South Africa (Buckland 2009). With regards to users per one hundred inhabitants, South Africa only ranks six on the continent; with 10.8 users per one hundred inhabitants; falling behind the Seychelles, Morocco, Mauritius and Tunisia (International Telecommunication Union 2007: 12-13). These figures are in light of South Africa having the continent's most advanced and well developed telecommunication and ICT infrastructure as well as the highest Gross Domestic Product (GDP) and budget in Africa (The International Telecommunication Union 2007: 12-13)

South Africa continues to struggle with low levels of Internet diffusion despite many attempts by the government to increase connectivity through policies, policy outcomes, infrastructural rollout and through universal service and universal access such as Universal Service Obligations imposed on telecommunication companies. This study attempts to understand why such a small proportion of South Africans, mainly situated in the three major urban areas of Gauteng, Durban and Cape Town, have access to the Internet. To gain a better understanding of factors influencing Internet diffusion in South Africa key private and public sector institutions have been analysed to determine whether they are advancing or hindering the rollout of Internet access across the country. Public sector institutions that have be analysed are the Department of Communications, the telecommunications regulator and 'watch dog', the Independent Communications Authority of South Africa, and the agency entrusted in fostering the adoption of universal service and universal access, the Universal

Services and Access Agency of South Africa. Private sector institutions analysed include the former incumbent monopoly, Telkom, the newly established second national operator Neotel and the three cellular operators. State-owned enterprises such has Sentech have also been included as they provide a significant effect on the rollout of telecommunications infrastructure. Furthermore, smaller Wireless Internet Server Providers (WISPs) and Internet Service Providers (ISPs) have been looked at as they also play a significant role in Internet diffusion.

The research paper will further look at the internal policies and mandates (issued by the regulator) of private sector institutions and state-owned enterprises which are responsible for the rollout of telecommunication and Internet infrastructure. As South Africa does not have a single ICTs policy, the study has had to analyse the many different policies and acts. Such acts include the Electronic Communications Act of 2005, which forms the basis of the government's ICT policy as well as the past repealed Telecommunication Act of 1996 and the Telecommunications Amendment Act of 2001 which have helped shape the telecommunication landscape today.

As the South African government continues to embark on the rollout of e-Government services on a national, provincial and local level, the issue of connectivity arises once again. With the country's low Internet diffusion, e-Government services are only available to a small percentage of the population. In order for e-Government projects and strategies to be successful, the diffusion of Internet in South Africa needs to rapidly increase. Norris (2001: 106) reiterates this notion by arguing that "technological developments directly influences how far political organisations can go to provide online services and information, and indirectly produces greater incentives for political organisations to do so, as the general public gradually becomes wired". Norris (2001: 106) further argues that the success of e-Government initiatives can be measured by technical indicators such as Internet access and distribution of Internet users.

The South African Revenue Service (SARS) and the Department of Labour are two e-Government portals/websites that have been analysed in this research in order to gain a better understanding of the types of e-Government services currently being offered

in South Africa. The large amount of capital and vast resources being injected into various e-Government projects have in turn benefited very few. If the issues surrounding low Internet diffusion are not addressed in a timely manner, the advantages e-Government can provide will merely be overshadowed by its contribution to the digital divide.

1.3. Aim of the Research

This research aims to critically analyse the factors influencing Internet diffusion in South Africa and determine what affect the current Internet diffusion landscape will have on the government's e-Government strategies.

1.4. Research Questions

- What factors are influencing the slow roll out of Internet access (and high speed Internet access such as broadband) in South Africa?

- How effective are the policies that ensure the role out of adequate Internet access to all parts of South Africa?

- To what extent will the current status of Internet diffusion have an influence over e-Government policies and strategies?

1.5. Rational

This study attempts to fill a gap in academic research undertaken on Internet diffusion and factors influencing the diffusion of Internet in South Africa. Focus will be placed on three highly contested issues that centre on a policy matter or legal question with a high degree of relevance to the diffusion of the Internet, rather than high costs alone which has been widely research (e.g.: Goldstuck (2007), Goldstuck (2008b), South Africa Foundation (2005) and Christian (2005)). High costs of Internet access is discussed, however emphasis is placed on three Critical Negotiation Issues (explained in-depth in the Conceptual Framework chapter). This approach has been used in the

past to analyse Internet diffusion in South Africa by Lewis (2005). Although the study conducted by Lewis (2005) has extreme relevance, it focuses on the period 1990 to 2003.

Most research conducted in this field tends to be outdated (e.g.: Lewis (2005), Goldstuck (2004) and Naidoo et al (2005)). As technology is advancing at a rapid level, more people are becoming connected to the Internet every year and new policies are being drafted; research on factors influencing Internet diffusion must be constantly undertaken. This study will look at Critical Negotiation Issues influencing the diffusion of Internet from 2004 to 2009[3] with reference to major issues and advancements which have occurred prior to the above time frame.

Furthermore, majority of studies undertaken on Internet diffusion tend to focus purely on the factors that have contributed to the current Internet diffusion trends and give no link to other policies and programs in place or policies and programs being rolled out in the future. This study will differ in that it will attempt to highlight how the current state of Internet diffusion in South Africa will have large consequences for successful e-Government policies currently in place and e-Government policies and projects being rolled out in the near future.

Since 1994, the South African government has placed a large emphasis on service delivery, economic growth and addressing the socio-economic inequalities brought by the Apartheid regime. These inequalities, in the past have been addressed through policies and initiatives such as the Reconstruction and Development Program (RDP) and the Growth, Employment and Redistribution (GEAR) program (Schroder 2002: 10; Ayogu and Hodge 2001: 2-3). In order to build on previous policies and initiatives, and to accelerate service delivery, the South African government has embarked on making use of 'e-Government' or 'e-Governance'. e-Government and making use of ICTs have become an increasingly integral aspect of the government's

[3]This timeframe was chosen as it builds on the work of Lewis (2005) *Negotiating the Net: the Internet in South Africa (1990–2003).* The period 2004 to 2009 also encompasses major telecommunication reforms and events such as the introduction of a new telecommunications act, new policies and the establishment of a new second national fixed-line operator. Additionally in this timeframe telecommunication prices have dropped dramatically partly due to the arrival of a new undersea cable and in anticipation of addition cable systems landing in the future.

public service delivery program, evident by the more than fifteen billion Rand which has been invested in the program (Davenport 2007 and Nthoiwa 2009).

In addition to the South African government's commitment to e-Government, it has also pledged to bridge the ever increasing digital divide. The differentiation between the Internet-haves and the have-nots adds a fundamental cleavage to existing sources of inequality and social exclusion. This complex interaction appears to increase the gap between the promise of the information age and the bleak reality for many people in South Africa and around the world (Castells 2001: 247).

In order for the South African government to achieve its goals of continuous economic growth, the rolling out of effective e-Government services, and bridging the digital divide, there is a need for a high diffusion of Internet, which allows access to all South Africans. Critically analysing the influences over the diffusion of Internet will provide further insight into the commitment of government to achieving its goals, especially its goal of rolling out a successful e-Government program that is available to all its citizens.

1.6. Research Design

This research has taken a predominantly qualitative approach to data analysis with regards to Internet diffusion and e-Government. A qualitative, technological determinist approach would justify the need for increasing Internet diffusion for the successful rollout of e-Government from a social, political and economic perspective. Through a technological determinist standpoint technology is seen as a key governing force in society and that social progress is driven through progressive technological innovation (Smith and Marx 1994: 2). However, for this study, the research understands the limitations of technological determinism in that it ignores human agencies that makes use of such technologies and that human agencies play a vital role in the diffusion of Internet (Croteau and Hoynes 2003: 306).

The study makes use of Critical Negotiation Issues theory as a conceptual and analytical framework. By utilising Critical Negotiation Issues theory, the paper will

analyse three highly contested issues that have been hindering (or advancing) the rollout of affordable Internet access and telecommunication infrastructure. Critical Negotiation Issues is a recent theoretical and analytical approach developed by Wilson (2005). The three Critical Negotiation issues that have been identified as having a large influence on Internet diffusion are Telecommunication Liberalisation, Regulation and Policy Making, and Universal Service and Universal Access. In addition the use of Critical Political Economy theory aids the research in gaining a better understanding of ownership patterns and prices that have continued to have a detrimental effect on the uptake of Internet services.

1.7. Research Structure

This dissertation contains seven individual chapters. Chapter One fulfils the roll of introducing the study whilst Chapter Two illustrates the background and context in which the study fits into. Chapter Three offers a review of the literature and Chapter Four the conceptual and analytical framework used. Chapter Five explores the methods that have been applied and states the limitations of the study. Chapter Six discusses the factors influencing Internet diffusion in South Africa whilst Chapter Seven discussion the implications current Internet diffusion trends are having on e-Government programs underway. Chapter Eight concludes the study and provides a summary of the observations made throughout.

Chapter 2: Background and Context

2.1. Internet Access in South Africa

As in the rest of Africa, a primary aim of the telecom reform process in the early 1990s in South Africa was to open the telecom market to new entrants, especially mobile service providers, network operators and ISPs. South Africa and other developing countries also faced pressure from Bretton Woods institutions[4] and other international organisations to liberalise their markets. Liberalisation, privatisation and deregulation thus became market norms (Makaya 2001: 1). The South African telecommunication landscape at the time of the first democratic elections in 1994 reflected the socio-economic inequalities created by the Apartheid regime. Although government programs such as the RDP and GEAR have, to a certain extent, been successful in improving basic services such as housing and access to electricity and water, telephony services are still largely insufficient, particularly in rural areas. (Schroder 2002: 10). Increasing affordable access to telecommunications in the interest of social and economic development has been a key goal of the South African government (Barnard and Moolman 2008: 175). This goal of affordable access has, to a large extent, never materialised. Those with access to the Internet are the select few with the adequate resources to gain connectivity.

Despite South Africa being the 26th largest economy in the world and the largest in Africa, it only ranks 49th in number of Internet users (CIA World Factbook 2009a; CIA World Factbook 2009b). In 2000, there was an estimated 2.4 million users connected to the Internet. Presently it is estimated that the number of Internet users in South Africa are between 4.5 million and 5.1 million users (Internet World Stats 2008 and Buckland 2009). This equates to an estimated ten percent of the population (Goldstuck 2007). South Africa has continued to slip down the international rankings when it comes to Internet connectivity. In the late 1990's the country was ranked 11th in the world for Internet usage, far higher than countries at comparable levels of development such as Brazil and Mexico. However, the country failed to capitalise on

[4] Bretton Woods institutions are the International Monitory Fund (IMF) and the World Bank.

early growth and enthusiasm (Buckland 2009). In 1995, South Africa ranked 14th but slipped to 40th in 2002 and slipped further to 43rd in 2005. Brazil now ranks 7th and Mexico 16th (Lewis 2005: 2; CIA World Factbook 2009b).

In the early 1990's Internet access in South Africa, as was the case in many countries, developed originally in the universities and largely beyond the range of Telkom's corporate radar (Janisch and Kotlowitz 1998; Lewis 2005: 7). Using network infrastructure leased from Telkom, private ISPs had propelled South Africa to one of the 20 most Internet-connected countries in the world by the mid-1990s (Horwitz and Currie 2007: 451). Horwitz and Currie (2007: 451) state that that the potential of the Internet did come to Telkom's attention and it began to launch its own consumer Internet solutions in 1996 at a tariff considerably lower than the private ISPs. Because all South African Internet providers had to, by law, lease lines from Telkom, and because dial-up access was subject to high, metered call tariffs, Internet use began to weaken (Horwitz and Currie 2007: 451). Thus as a result of the high costs of leasing lines from Telkom coupled with high metered call tariffs, South Africa began to rapidly lose ground in Internet access rankings.

As mentioned earlier, there is currently an estimated 5.1 million Internet users in South Africa, however it must be understood that this only accounts for people accessing the Internet on computers. Those accessing the Internet via mobile phones[5] have far exceeded desktop users (Buckland 2008). Joubert (2008) suggests that there is an estimated 9.5 million unique mobile phone web users in South Africa. Almost seven million of these users have no access to desktop Internet. Mobile phone web users are likely to grow to an estimated ten million unique users during 2009 (Joubert 2008). Accessing Internet on mobile phones has greatly benefited Internet diffusion in South Africa. Using mobile phones as a tool for gaining access to the Internet is considerably limited when compared to gaining access on a desktop computer and few websites are compatible with mobile phone use. With the high cost of mobile service and the fact that most mobile phones are not enabled for enhanced services,

[5] Accessing the Internet via certain mobile phones is achieved. Wireless Application Protocol (WAP) is a technology that allows mobile phone users to access certain websites. Although WAP users make up a significant share of Internet users in South Africa, it falls outside the scope of this research and will not be discussed further.

mobile Internet access does not provide a short- or long-term solution to Internet expansion (Research ICT Africa 2008: 1).

When looking at broadband Internet services, it becomes apparent that South Africa is also falling behind world trends. Currently South Africa has an estimated 800, 000 unique broadband users with year or year growth being distinctively low (Goldstuck 2007). The International Peer Benchmarking Study; a 2009 report commissioned by the Department of Communications; compared telecommunications in South Africa, South Korea, India, Brazil, Malaysia and Chile. The five benchmarked countries were selected for their similarity with the South African market (Vecciatto 2009). The report stated that broadband penetration rates in South Africa fare the worst among the countries selected. South Africa has around two broadband subscribers per one hundred inhabitants, far lower than South Korea's thirty two and Malaysia's twenty four percent household broadband penetration rates. Furthermore, South Africa also came in last place with the slowest broadband speeds (Vecciatto 2009). It is believed that the broadband consumer base could grow to an estimated 5.6 million subscribers by 2014 as a result of dialup subscribers switching to broadband services (MyBroadband 2009a).

There are two major methods of connection to the Internet in South Africa: through a fixed line connection or wirelessly. South Africans are able to connect to the Internet using a variety of technologies namely ADSL, 3G HSDPA, WiMAX, Wi-Fi and more recently via CDMA.

Telkom is currently the only operator offering fixed line solutions even though its fixed line monopoly came to an end in 2006 with the introduction of a second national fixed line operator, Neotel. Currently Neotel has embarked on the rollout of wireless solutions with the intention to rollout physical fixed line offerings in the future (Neotel 2009). There tends to be more choice in the wireless Internet environment which was as a result of the Independent Communications Authority of South Africa (ICASA) approach to 'managed liberalisation' (Cohen 2008: 119). Vodacom, MTN, iBurst have the largest market share with regards to wireless Internet offerings (Cohen 2008:120). Telkom has also entered the wireless environment by providing 3G

Internet services in the metropolitan centres of Gauteng. These 3G services will be rolled out to other centres in South Africa in the near future (Telkom 2009a)

Although there are numerous regional Wireless Internet Server Providers (WISPs), their position in the market is still relatively small. The same is true for Neotel who only launched consumer offerings in 2008 (Neotel 2009). As Neotel is a relatively young entry into the telecommunication and Internet providing environment it is still unclear as to what effect it is having on Internet diffusion.

2.2. Regulating South African Telecoms through Policy

The primary piece of legislation governing the South African telecommunication industry is the Electronic Communications Act of 2005 (ECA). The Act was passed into law in July 2006 and fundamentally overhauled the telecommunication's regulatory landscape. Gillwald (2009a: 5) states that the Electronic Communications Act of 2005, which started as the Convergence Bill of 2001, was enacted with the intention of preparing the sector for a converged and competitive environment. Specifically, it sought to ensure a non-discriminatory access regime, an effective competition framework and efficient and equitable spectrum assignment use in a technologically neutral licensing framework. Sibinda (2008: 217) also argues that the ECA recognises that markets are better positioned to deliver more value for money for consumers and restrict regulatory intervention to cases where there is demonstrable evidence of market failure. Prior to the ECA the telecommunication industry was governed by two major acts of Parliament: the Telecommunications Act of 1996 and the Telecommunications Amendment Act of 2001. In 2006, the ECA was billed thus repealing and replacing these two acts.

The Telecommunication Act of 1996 provided Telkom with a full government granted monopoly over the rollout of fixed-line infrastructure and providing fixed-line services until 7 May 2002. Exclusivity could be extended for another year if rollout targets were met (Laing 2004). This decision to retain a state monopoly at the expense of liberalisation was motivated by the ANC led South African government's desire for Telkom to play a key role in the reconstruction and development of the country after the fall of Apartheid (Barendse 2004: 51). Furthermore, the Act compelled Value

Added Network Service (VANS) providers and the mobile cellular operators, all of whom compete with Telkom in its downstream activities in various ways, to acquire their facilities from Telkom (Gillwald 2009b: 481). This clause further entrenched Telkom's monopoly and forced VANS or ISPs to lease facilities from Telkom at unregulated costs. In addition to forcing VANS to acquire key facilities and infrastructure from Telkom, the Act allowed Telkom to compete directly with VANS in an already competitive sector. This clause provided Telkom with an incentive to engage in anti-competitive pricing, quality and access practices (Gillwald 2009b: 481).

The Telecommunications Amendment Act of 2001 was, as the name suggests, an amendment of the Telecommunications Act of 1996. The new amended Act began to introduce completion in the telecommunications. It provided for a Second National Operator (SNO) to be licensed (USA 2006: 18-19). After the extended licensing process, the SNO became known as Neotel. With the Telecommunications Amendment Act came the introduction of Under-Serviced Area Licences (USALs). Tlabela et al (2007: 51-52) suggests that Act provides for USALs to be issued to Small, Medium and Micro-Enterprises (SMMEs) to supply telecommunication services. The aim of USALs is to lower telecom costs in rural areas (where teledensity is less than five percent) and to provide low-income groups in those areas with telephone services and connectivity to the Internet. The designated USAL licence areas potentially cover 21.4 million people, representing an estimated forty five percent of the total population (Tlabela et al 2007: 51).

The Telecommunications Act of 1996 and the Telecommunications Amendment Act of 2001 although now repealed by the ECA have had a lasting effect on the telecommunication industry and thus the diffusion of Internet. The ECA did bring with it a more effective regulation and modernisation. However many issues still plague the industry as a result of this two pieces of policy.

2.3. The Regulator and its Establishment

In order for a telecommunication sector to flourish and protect consumers at the same time, a strong regulator and effective policies are needed. This notion has been echoed worldwide through the establishment of independent regulatory bodies entrusted to oversee the sector. The same has been done in South Africa since 1997. Gillwald (2005: 471) reiterates this notion by suggesting that in line with global trends, and in compliance with recommendations made by the World Trade Organisation, South Africa's telecommunication market has been overseen by a sector regulator, firstly by the South African Telecommunications Regulatory Authority (SATRA) and now by the The Independent Communication Authority of South Africa (ICASA).

ICASA was established in 2001 with the merger of SATRA and the Independent Broadcasting Authority (IBA) (USA 2006: 18). ICASA derives its mandate from four statutes: the ICASA Act of 2000, the Independent Broadcasting Act of 1993, the Broadcasting Act of 1999 and the ECA. The introduction of the ECA resulted in the amendment of certain sections of the ICASA Act (Sibinda 2008: 217).

ICASA has been given the function of producing regulations and policies that govern the broadcasting and telecommunication industries. It issues licences to providers of telecommunication services and broadcasters and monitors the broadcasting and telecommunications environment as well as enforces compliance with rules, regulations and policies (ICASA 2009). ICASA also acts as the 'watchdog' of the broadcasting and telecommunication industry and protects consumers from unfair business practices, poor quality services and harmful or inferior products (ICASA 2008).

Numerous industry experts, telecommunication advocates and Internet Service Providers (ISPs) have criticised ICASA for its inability to reduce the high costs of telecommunications in South Africa. Furthermore the regulator has been blamed for inefficient policy making aimed at protecting the interests of telecom incumbent, Telkom. The independence of ICASA has also been questioned. Melody (2003)

suggestions under telecom laws, almost every decision made by ICASA must be approved, and can be vetoed, changed unilaterally or delayed indefinitely by the Minister of Communication. This ability to change or veto any decision made by the regulator has often been exercised resulting in major changes and delays. These matters are discussed in detail in the Findings: Factors Influencing Internet Diffusion in South Africa chapter.

2.4. The Benefits of the Internet and ICTs for the Developing World

A question that tends to be raised is what do developing countries stand to gain from investing in ICTs as opposed to investing that capital into education, healthcare or increasing agricultural yields?

The above question was highlighted and answered in the United Nations (UN) Millennium Report, compiled in 2000. The UN Millennium Report simply stated that an investment in ICT today, is an investment in tomorrow (Sonaike 2004: 51). Nations able to harness the benefits of ICTs "enjoy access to global markets, which spurs GDP growth; greater access to educational opportunities, and up-to-the-minute medical information, which improves standard of living; and a means of monitoring the government to ensure the protection of human rights" (Sonaike 2004: 51). The UN Millennium Report (2000) further argued that:

> *"a country that chooses not to board the 'Internet Express' (today) in order to respond to the immediate emergency needs of its people, runs the risk of being further and further marginalized, and possibly left out of the new global market and its economic and social opportunities. The consensus among member countries is not whether to respond to the challenges brought about by the revolution in ICT, but how to respond and how to ensure that the process becomes truly global and (that) everyone shares the benefits." (UN Millennium Report 2000)*

Although it may be seen as unjustifiable to invest large sums of money into ICTs as opposed to healthcare and basic education, investments in ICTs can have profound

effects on social, economic and political situations. Nulens and Van Audenhove (1999: 451) state that the fact that one speaks of an emerging Information Society in the North illustrates the prominent role attributed to ICTs in the transformation of society. The benefits of ICTs are not considered confined to the West alone. Several observers believe that the widespread use of ICTs in developing countries will improve the economic and social situation of the Third World populations as well. Nulens and Van Audenhove (1999: 451) further state that technological innovation in ICTs and the drastic reduction in prices will enable Africa to 'leapfrog' stages of development and catch up with the global Information Society. This notion is echoed by the World Bank which made the ambitions claim that for every ten percentage-point increase in high speed Internet connections there is an increase of 1.3 percentage points in GDP growth[6] (Zhen-Wei Qiang 2009). Furthermore, the OECD finds that a one percent increase in the number of telephones available in a nation corresponds to a three percent growth in per capita national income (Doh et al 2004: 237)

It becomes apparent that ICTs do have great benefits for the developing world. As with these advantages, ICTs can also have a detrimental effect. Thompson (2007: 2) argues that as with all forms of enabling social infrastructure, ICTs have the power to create new inequities, as well as exacerbate existing ones. This can occur both at the macro-level, by structurally integrating communities into wider, uneven networks of capital, production, trade and communication, as well as at the micro-level, where the frozen discourse of software can 'smuggle' whole, possibly inappropriate value systems into new environments. The inequality associated with ICTs, known as the 'digital divide', holds one of the greatest negative effects when it comes to the role out of Internet access.

Smyth (2006: 1-2) suggests that the concept of a 'digital divide' has been around almost as long as ICTs have been publicly available. While traditionally it has come to mean a division in society, based on socio-economic factors, this notion has limitations. Location, age, culture and background also play a significant role in how

[6] This claim was made in the World Banks ICT Report entitled: Information and Communications for Development 2009: Extending Reach and Increasing Impact.

likely users are to embrace ICTs. While the digital divide is commonly classified as a social/political issue referring to the socio-economic gap between communities and countries, it should be remembered that this term also refers to gaps that exist between groups regarding their ability to use ICTs effectively. The reasons for this 'ability gap' include differing levels of literacy and technical skills, as well as the gap between those groups that have access to relevant, high quality digital content and those that do not (Smyth 2005: 2). The major issue contributing to the 'digital divide' is that of affordability and lack of adequate infrastructure. Thussu (2000:249) reiterates this point by claiming that many developing counties lack affordable access to information resources and their telecommunication systems need technological upgrading. The biggest problem developing countries face is that in order to widen access, telecommunication tariffs need to be reduced and the sector opened to international operators, thus undermining the often subsidized domestic telecoms.

The upgrading and rolling out telecommunication infrastructure is extremely capital intensive. Spending large capital on the role out of such services can be viewed as unjustifiable when it will reach such a small minority. Such inequalities are deeply rooted within societies and differ per country or region (Thomson 2007: 2-4). Challenging the digital divide can be extremely difficult, and given the rate at which technologies are advancing in the developed world it could be argued that it is impossible.

The Internet was once hailed as a democratizing and even subversive communication tool, but the commercialization of the Internet is perceived by many as betraying the initial promise of its potential to create a 'global public sphere' and an alternative medium (Thussu 2000: 242). Although the Internet, to a large extent has become commercialised, it can still act as political and educational tool and can also help provide or speed up service delivery. From an educational perspective, Truetzschler (2000: 76) states that the Internet is an extremely powerful research tool enabling any person to gather information on any conceivable topic. The Internet can be further used as a vast educational resource both in terms of lifelong learning and formal education as it exists in all countries. Information on any possible topic can be found

on the net in the form of general websites, online books, scholarly journals, discussion forums and news sites (Truetzschler 2000: 79).

The rise of the Internet has also opened the possibilities of digital dialogues across the world, and has given one of the biggest boosts for freedom of speech. The unregulated aspect of the Internet and the freedom of speech it brings have also provided a platform for extremist organisations to promote their views and to spread hatred and violence. Although the Internet can provide extremist groups with a voice, it has also played a significant political role in promoting links between community groups, non-governmental organisations and political activists from around the world (Thussu 2000: 242-243). The Internet can further strengthen democracy by providing another platform for debate and discussion. Truetzschler (2000: 77) supports this notion by arguing that the Internet does not only provide near instant information from governments and parliaments to those who have access; it can also be used as a medium for discussion and debate during parliamentary election times. It becomes evident that the Internet provides the ideal instrument to further democracy as it allows citizens with access to be almost as informed as their leaders (Castells 2001: 155). The above benefits as outlined by Thussu (2000), Truetzschler (2000) and Castells (2001) form the foundation to theories relating to e-Government and e-Governance.

2.5. Explaining e-Government and e-Government Policy

The way forward for governments, as for private sector institutions, is through the use of ICTs. Adapting to newer technologies holds great benefits such as increased productivity, short and long term cost reductions and better communications between private and public institutions and their end users. Governments worldwide are becoming more reliant on ICTs to deliver services to their citizens and to improve communication channels. This new approach to governance has become known as e-Government.

Netchaeva (2002: 467) states that the concept of ‘e-Government’ first appeared in the early 1990s but it was put into practice only towards the end of the decade. e-

Government policies and strategies first began appeared in industrialized countries. Nowadays, many countries in the world have e-Government projects; the most economically advanced States having the most advanced e-Government programs and strategies. To adopt e-Government means to transfer government activities into online forms. The goal of this transformation is the same as the goal of transferring a private company's activity to the Internet (Netchaeva 2002: 467).

One of the major issues facing governments, particularly in developing countries, is that of achieving good governance. Heeks (2001: 3) supports this notion by stating that: "as is true all over the world, governments in the developing nations cost too much, delivers to little, and are not sufficiently responsive or accountable". The concept behind e-Government has become the ICT enabled route towards achieving good governance by offering new ways forward, helping to improve government processes and building interactions with and within civil society (Heeks 2001: 2-3).

Fundamentally, e-Government is about transforming government organisations to become more efficient and more customer centred. ICTs are the tools that can help to bring this about (e-Government Services Research Project 2003: 7). The E-government Services Research Project (2003: 7) argues that ICTs can be used to either improve the 'back office ' processes that support service delivery, or improve the ways in which services are delivered to government's customers. Heeks (2001: 2) suggests that one may see e-Government as 'integrated governance' since it integrated both the processing and communication technologies and since it integrates people, processes, information and technologies in the process of achieving good governance objectives. However, the use of ICTs such as the Internet to provide citizens, businesses and non-government organisation with information and delivery of public services is enjoyed by few South Africans (Kuye and Naidoo 2003: 2-3).

The first public policy on e-Government was drafted by the Department of Public Service and Administration in 2001 entitled, "Electronic Government, The Digital Future: A Public Service IT Policy Framework". The policy outlines a ten year implementation plan for implementing e-Government in South Africa. According to the policy, the implementation plan draws on tested worldwide practices and seeks to

avoid the mistakes, and improve on the successes of other governments implementing e-Government initiatives (Trusler 2003: 2). A problem with the policy is that it does not extend to addressing Internet diffusion nor does it provide recommendations on how to increase connectivity. Farelo and Morris (2006: 4) highlight that the policy recommended that an e-Government initiative should address three main domains: the application of IT for intra-governmental operations or government to government; the application of IT to transform the delivery of public services or government to citizens; and the application of IT to perform private business services or government to business. As this research attempts to analyse how Internet diffusion is affecting the goals of e-Government, focus will be placed on two of domains: government to citizen and government to business.

Chapter 3: Literature Review

3.1. Introduction

In order to answer the research questions that have been raised in the Introduction chapter, it is essential to explore literature that is specific to Internet diffusion and e-Government in order to lead the analysis in the correct direction. Although research on Internet diffusion and e-Government is easily obtainable, research on Internet diffusion and e-Government relating to South Africa tends to be limited and found mainly in the area of 'grey literature'. Grey literature being information sources not part of academic literature, for example: news articles, company reports, policy reports, government papers and working papers (Hart 2001: 30)

The literature review forms the foundation to this study and is divided into two sections: literature relating to Internet diffusion and literature relating to e-Government. This research will attempt to fill a gap in literature undertaken on Internet diffusion and e-Government in South Africa.

3.2. Internet Diffusion

Due to the nature of the Internet and the ever increasing number of people gaining access to the Internet coupled with the rapid advancement of technology, there has been extensive research conducted in the field of Internet diffusion and the need for an extensive telecommunication infrastructure for any economy to be successful. According to Kitsing and Howard (2009: 14) there is no uniform definition for Internet diffusion in literature. Often scholars use the terms Internet diffusion, penetration, adoption, connectivity, access, use, and digital divide to describe the same phenomena. Dholakia et al (2003: 2) state that a diffusion of an innovation is a macro process concerned with the spread of the innovation from its source to the public. Dholakia et al (2003) provides an appropriate definition to the term diffusion, especially with regards to the diffusion of technology and Internet diffusion. In a South Africa context, Giovannetti et al (2003: 187) suggests that measurements of Internet diffusion in South Africa are based on indicators such as connectivity,

number of Internet hosts, number of websites, languages used and number of users in proportion to population.

Numerous studies conducted on Internet diffusion in South African tend to focus on the fact that the slow uptake of Internet services and broadband Internet offerings have been as a result of prohibitive costs and poor infrastructure by the fixed-line telecom incumbent, Telkom (e.g.: Guomundsdóttir (2005); Christian (2005); Brown et al (2009))

Guomundsdóttir (2005: 4 -5) argues that the slow rollout and the basic cost of Internet access have hindered more of the population in gaining Internet access. The cost of Internet in South Africa is extremely high when compared to other countries in Africa, North America, Europe, Asia and Australia. These high costs make it difficult for majority of the population to gain access to the Internet, resulting in Internet access figures becoming stagnant. Similarly, Christian (2005) argues that South Africans pay from one thousand to two thousand percent more for Internet access than their international counterparts. High costs have led to South Africa falling far behind the rest of the world in terms of broadband speeds and broadband penetration. A study conducted on consumer choice and Internet in South African homes found that costs (total costs) associated with fixed and wireless Internet access was one of the greatest influences in the uptake of Internet services (Brown et al 2009: 9-10). Although the study found that numerous other factors, such as perceived ease, the media, customer service and compatibility play a significant role in the uptake of Internet services, costs tends to be the major impediment.

The growth of broadband in terms of penetration has also been extremely slow. If South Africa's fixed line broadband penetration continues to grow at the current rate, it will take an estimated sixty six years to reach Australia's current penetration (Christian 2005). When looking at South African prices compared to other countries, it becomes evident as to why Internet diffusion is so small and mainly concentrated in wealthier urban areas. Although these studies play a significant role in understanding Internet diffusion trends in South Africa, they tend to focus on private institutions as the main cause of high prices. Furthermore, they fail to take into account the role

policies, policy outcomes, ownership patterns, State involvement and communication infrastructure plays in the diffusion of Internet services.

Research ICT Africa (2008: 1) claims that like in other countries worldwide, and especially in Africa, fixed-line growth is almost static in South Africa, but with a slight decline in residential telephone lines. This is despite the introduction of pre-payment for fixed services. The reason for the introduction of pre-paid fixed services not having been as successful as mobile services is the relatively high cost of line rentals which continue to be a barrier to the take up of services and which fail to offer the very low denomination chargers for remaining on a mobile network. As a result of the high cost of owning a fixed-line compared to a mobile line, South Africans have turned away from fixed-line services at the expense of the growth of high speed Internet. Research ICT Africa (2008: 2) further claims that mobile Internet services (such as HSDPA) offered by mobile networks MTN and Vodacom have leveraged the benefits of mobility and the initial high prices and caps of fixed broadband services. A large proportion of South African Internet users use HSDPA as a substitute for fixed broadband, unlike many mature economies where it serves as a complementary service to fixed broadband services. Although MTN and Vodacom offer competition from their HSDPA solutions, they also target the top end of the market, leaving a large number of South Africans disconnected. In addition to the above notion, Gillwald (2006a) states that although fixed-line operator Telkom has done little to positively affect Internet diffusion, wireless services from MTN, Vodacom, Cell C, iBurst and Wi-Fi service providers have aided South Africans by providing Internet access more affordably and with less of a reliance from the poor service and infrastructure offered by Telkom.

There are many factors contributing the high cost of Internet in South Africa, many blaming monopolies in the industry, a supply and demand factor and a government policy which is in place to protect telecom companies at the expense of users and potential users (e.g.: Horwitz and Currie (2007); Ponelis and Britz (2008)). Gillwald (2006a: 27; 39) adds that the slow process of policy implementation by the ICASA has contributed to the slow rollout of infrastructure and added to the high costs of Internet access. The implementation and licensing of a second national fixed-line

operator (Neotel) and third mobile phone operator (Cell C) were lengthy with deadlines being constantly extended. This resulted in the other networks gaining a large portion of market share (Gillwald 2006a: 27; 39). For Internet access to become assessable for majority of the population there has been a call for the speedy introduction of competition, competition which will need a level playing field heavily regulated by policy (Information Society 2004). The need for telecommunication liberalisation has been suggested as a key potential factor that will aid in the uptake of Internet services by introducing lower costs and better services. Atkinson (2009: 9) states that most economists argue that competition brings important consumer benefits by forcing companies to cut costs, improve service, and reduce 'excessive' profits. Without competition, economists argue, companies get lazy, limit their innovation, provide poor service, and reap monopoly profits. However it has also been widely argued that the results of liberalisation and privatisation are not always positive. Liberalisation and privatisation can lead to job losses, higher prices and can aid in increasing the digital divide.

Schroder (2002: 2) claims that when British Telecom (BT) was privatised in 1984, it was forced to cut its work-force from 240 000 workers to 100 000 and it is debatable whether such job losses were absorbed by new competitors entering the market. Adding to the potential negative effects of liberalisation and privatisation, Ospina (2002: 11-12) argues that government monopoly provision and particularly in developing countries, local telephone service was often subsidized using the revenues from national and international long distance services in a practice known as cross-subsidisation. The introduction of competition, whether in local or long distance services or both, requires the removal of cross-subsidies in order to ensure fair competition in local services and the competitiveness of the incumbent in long distance services. This results in price rebalancing, which in turn increases the price of local telephone service and decreases the price of long distance services (Ospina 2002: 11-12). It has also been noted that liberalisation and privatisation leads to the concentration of infrastructure and services in wealthier regions of the country thus negatively affecting the digital divide (Makaya and Roberts 2007). Although this may be a valid point, it has be widely argued that regulatory intervention in the form of

universal service and universal access obligations can be used to overcome the concentration of resources (e.g.: Hodge (2003b); USA (2006))

Lack of policy and regulation in dealing with the high price of Internet access and bringing adequate competition to the telecom market has also resulted in anti-competitive behaviour from Telkom, behaviour which is not severely dealt with by the regulating body ICASA (Lewis 2005: 8; 20). The high price of communications in South Africa and its constraining effect on access and usage suggests that there is insufficient competition in the market in order to bring down prices. One can also conclude that regulation is not acting effectively as a proxy for competition (Research ICT Africa 2008: 4). The lengthy regulation and licensing process has also resulted in heavy delays in the role out of WiMAX services. WiMAX being a high-speed wireless broadband service and is the closest alternative to ADSL. Many believed that WiMAX would have been the solution to providing rural areas with broadband if it had been speedily and efficiently introduced (Goldstuck 2008a). Internet access being poorly regulated, centralised in urban areas and aimed at wealthy groups have given rise to the growth of the 'digital divide'.

Another notion that relates to high costs of Internet access and availability of access is that of supply and demand. Muller (2007) argues that as more and more people start to subscribe to Internet services and broadband services, Internet access costs are likely to drop. The business of Internet access is like any other business which relies on the economic model of supply and demand. This theory may not be true for the case of South Africa, where the number of people accessing the Internet has risen year on year yet prices have stayed constant or dropped very slightly (Muller 2007). A second issue with this theory is that high Internet costs have made it difficult for people without access to gain access, thus high have created an uptake barrier and as a result made little impact on the supply and demand model.

High costs and poor infrastructure in many parts of the country have not only led to the end-user suffering but also big business and SMMEs being affected. The costs of Internet access have lead to South African businesses struggling to stay competitive internationally. Doyle (2002: 142) suggests that the Internet is often promoted as a

means for businesses to lower their costs and improve their efficiency in various ways. It speeds up communication and information flows and can be used by firms to provide staff, suppliers and prospective customers with access to information about products, processes and services. Lowering the costs of Internet to a 'world' level and introducing regulation that supports competition will allow South African businesses to compete more fairly in an environment that is becoming more reliant on the Internet and 'e-commerce' (Youngs 2002: 395).

The media industry (in terms of traditional media) has also become reliant on the Internet in order to expand readership and provide different products to its audiences (Truetzschler 2000: 82-83). Although the economic viability of on-line newspapers and print newspapers having an online edition are still unclear, greater Internet diffusion will allow more readers to access such information and aid in the 'digital divide' becoming less developed (Truetzschler 2000: 83). Thus when analysing previous literature and theory, it becomes evident that the small diffusion of Internet in South Africa is as a result of high costs and the lack of efficient regulation and policy in place to provide a competitive landscape.

Majority of research (e.g.: Goldstuck (2007), Goldstuck (2008b) Guomundsdóttir (2005), South Africa Foundation (2005) and Barnard and Gianella (2008)) conducted on Internet diffusion in South Africa have tended to place focus on one major influence: cost. Many studies agree that costs are the largest contributor to the small Internet diffusion in South Africa; however, very few studies provide detailed insight into the reasons as to why the cost of Internet is high and what factors have influenced such high prices. This research differs in that it intends to understand what has influenced the high costs of telecommunication and Internet associated with South Africa. Furthermore, this research fills a gap in literature undertaken on Internet diffusion in South Africa as numerous issues, apart from costs, have been attributed to the low diffusion of Internet.

In order to fill this gap in literature, private and public institutions as well as policies and regulations have been analysed to gain a better understanding as to why high costs have acted as a barrier to increasing Internet diffusion. In addition, the concept

of universal service and universal access are explored to gain an understanding as to what measures have been have been put in place, from a governmental level, to insure the diffusion of Internet is increased evenly in all socio-economic segments of society.

3.3. e-Government

Studies on e-Government in South Africa have also been extensive. Majority of research conducted in this field tends to place focus on how the South African government is perusing policy towards e-Government and on the notion of 'e-readiness'. Such studies are also inclined to rank e-Government services in South Africa with other countries around the world. Although such studies play a crucial role in academia, there is a lack of detail into how effective the penetration has been and why penetration stands at where it is (Farelo and Morris (2006); Palvia and Sharma (2007)). Davenport (2007) states that studies on e-Government has become an fundamental aspect of new media studies. Furthermore, e-Government studies in South African have also arisen due the fact that ICTs are becoming an increasingly integral aspect of the South African government's public service delivery programme. This is evident by the billions of Rands which have been invested in the sector as well as governments continuous drive to discover and adopt new technologies that can align public service delivery with policy outcome.

Palvia and Sharma (2007: 1) claim that there are many definitions to what e-Government actually entails. Some definitions are often conflicting and inconclusive. However, Palvia and Sharma (2007: 1) state that the best definition has been given by the World Bank which states that:

> *"e-Government refers to the use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment*

through access to information, or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth, and/or cost reductions."

Fang (2002: 3) defines e-Government as : Government activities that take place over electronic communications among all levels of government, citizens, and the business community, including: acquiring and providing products and services; placing and receiving orders; providing and obtaining information; and completing financial transactions. Such activities and services benefit citizens through the use of new media technologies, most particularly through web-based communication (Fang 2002: 2). Gartner (2000) definition suggests that e-Government is the continuous optimisation of service delivery, constituency participation and governance by transforming internal and external relationships through technology, the Internet and other new media forms. Panganiban (2004: 7) suggests that e-Government is the use of information and communication technologies to transform government by making it more accessible, effective and accountable.

Fang (2002: 5) and Panganiban (2004: 7) both distinguish between the concept of 'e-Governance' and 'e-Government'. The notion behind e-Governance goes beyond the scope of e-Government. While e-Government is defined as a mere delivery of government services and information to the public using electronic means, e-Governance allows citizen direct participation of constituents in political activities going beyond government and includes e-Democracy, e-Voting, and participating in political activities online. Broadly speaking, e-Governance will cover government, citizen participation, political parties and organisations, parliament and judiciary functions. Thus Fang (2002: 5) and Panganiban (2004: 7) both argue that e-Government is concerned with delivery of governmental services and information that is not that different from traditional systems found offline whilst e-Governance is more concerned with citizen participation and e-Democracy. It must be understood that although e-Governance can strengthen the democratic process, e-Government can as well through access to information and services that were once difficult to find.

Harris (2000) offers one of the strongest summaries of what e-Governance is and entails by suggesting that:

> *e-Governance is not just about government web site and e-mail. It is not just about service delivery over the Internet. It is not just about digital access to government information or electronic payments. It will change how citizens relate to governments as much as it changes how citizens relate to each other. It will bring forth new concepts of citizenship, both in terms of needs and responsibilities. e-Governance will allow citizens to communicate with government, participate in the governments' policy-making and citizens to communicate each other and to participate in the democratic political process. Therefore, in broadest sense, e-Governance has more implications than e-Government.*

Although e-Governance is more concerned with e-Democracy and strengthening democratisation, many believe the e-Government performs a similar function as well. Netchaeva (2002: 469) states that e-Government does not necessarily mean democracy. e-Government portals perform two main functions: to help the population in their everyday life (online services) and provide citizen participation in the democratic process. On the one hand, e-Government is an instrument for better governance and for improving communication between government, business and citizens. On the other hand, some specialists think that IT use in governance may intrinsically change relationships in society, help to achieve real democratic means and even transform people's social and political consciousness (Netchaeva 2002: 469). Westen (2001: 3) supports this above notion by arguing that new communications technology (such as ICTs) will not just affect democracy; it will transform it. This is because democracy is an interactive form of government, the revolution in interactive communications will inevitably have its greatest effect on the most important 'interactive institution': government itself.

The rollout of an extensive e-Government program with the aid of the Internet can provide citizens living outside major cities and towns the potential to access government services without having to travel large distances. Applying for social

grants and pensions and receiving them electronically as well as applying for birth and marriage certificates online can reduce costs for the citizen in terms of transport costs and time wasted in long queues at government departments (Chilwane 2007). Chilwane (2007) adds that ICTs linked to government services alone does not produce e-Government: new technologies must be implemented hand in hand with organisational change and skills development. The role-out of Internet and telecommunication infrastructure is essential for e-Government to become a reality for every citizen. Although affordable access to the Internet is crucial for an e-Government strategy to be effective, communities in rural areas and those unable to afford the high costs of Internet access will not have the means to access such services, thus if Internet diffusion continues to be low, e-Government will merely broaden the gap between the information-haves and the information have-nots.

3.4. Conclusion

This chapter has provided an overview of literature that is specific to research conducted on Internet diffusion and e-Government in South Africa. Although there is a substantial amount of research conducted on Internet diffusion in South Africa, majority of such research falls within the area of grey literature (i.e.: research conducted outside academia). As a result of majority of literature found outside academic research, this study relays extensively on grey literature for its foundation. Furthermore, literature conducted on factors influencing Internet diffusion tends to place focus on one aspect alone: high prices. As mention above, high prices play a significant role in the diffusion of Internet in South Africa, however many studies provide little detail as to why prices are substantially higher than other countries and other countries on a similar development level to South Africa. This study attempts to fill a gap in literature undertaken on Internet diffusion in South Africa by analysing how key private and public institutions as well as how policies and regulations have contributed to high prices and have aided the low diffusion of Internet found in South Africa.

Furthermore, majority of literature conducted on e-Government has focused on how the South African government is pursuing the goals of e-Government and how

successful policies pertain to e-Government are and have been. In addition, a large proportion of research takes the form of benchmark studies in that the level of e-Government in South Africa is compared to other developed and developing countries. Little research has been conducted on how effective the penetration of e-Government services have been. This research differs in that focus is placed on how Internet diffusion patterns in South Africa have influenced the uptake of e-Government services and e-Government programs that have been rolled out in the past. This research is in contrast to many studies conducted in that focus is not placed on the effectiveness of e-Government portals on fulfilling the goals of e-Government and studies conducted on whether e-Government portals provide easily obtainable government services. Instead this research fills a gap in literature in that it links Internet diffusion levels to e-Government success.

Chapter 4: Conceptual Framework

4.1. Introduction

This research will analyse the factors influencing the diffusion of Internet in South Africa by making use of Critical Negotiation Issues as a conceptual framework as as outlined by Lewis (2005) and Wilson (2005) and then link it to government's policy and programs of e-Government. Critical political economy of the media will also be utilised as a conceptual and theoretical framework. This chapter provides an over view of what Critical Negotiation Issues and Critical Political Economy entail.

4.2. Critical Negotiation Issues

Critical Negotiation Issues is an emerging conceptual framework which has not received widespread scholarly attention. Lewis (2005: 1) states that the majority of the studies done on Internet in Africa and Internet diffusion are marked by a structural or determinist approach that tends to place technology or market structure in an independent role as an unequivocal driver of positive change. There is a corresponding tendency to downplay the role of society and social forces, to minimize the aspect of social construction of the Internet, and hence, to overlook contestation between diverse and competing interest groups as a motive force. Lewis (2005: 1) further states that such an approach has often tended to concentrate on the macro-economic causes of Internet diffusion, such as Gross Domestic Product per capita, assuming a straightforward, incremental roll-out of Internet technologies and applications. However useful such studies may be, whether they focus on 'e-readiness', or policy priorities, institutional reforms, and best practices, they have underplayed the experience of the development and diffusion of a new social technology, such as the Internet. The dynamic texture of the politicking, bargaining, manoeuvring, and struggling for economic and social leverage that accompany the expansion of such a valuable wealth-generating resource have often been lost (Lewis 2005: 2).

Wilson (2005: 1) argues that the contemporary study of ICTs rests on several faulty assumptions that limit our ability to understand and act upon their diffusion. These misunderstandings also limit ones efforts to enhance wider access to knowledge for the ever growing numbers of people in the developed and developing world. These limitations show up in faulty theories, faulty concepts and faulty methodologies and thus lead to faulty policies and stunted performance. Wilson (2005: 1) further argues that the dominant tradition of e-readiness reports, descriptions of policy intentions, and discussions of institutional arrangements tends to undervalue the very factors that most drive the policies that affect access to knowledge, and suffer from serious shortcomings. The dominant tradition tends to be static, techno-determinist, a-political, macro-oriented and avoids identifying winners and losers. In order to fully appreciate the factors that most share access to knowledge, and enhanced access to ICTs, analysts and practitioners must pay much more attention to leadership, politics and historical and social contexts. A small group of researchers and theorists have been working on an alternative theoretical framework and methodology for several years, designed to capture the leadership and political elements of ICT diffusion, while retaining conceptual rigor, methodological transparency and a focus on points of policy leverage. This new approach to ICT or Internet diffusion research has become known as Critical Negotiation Issues (Wilson 2005: 2). Critical Negotiation Issues, as a theoretical, analytical and conceptual framework is a recent framework which was created by researchers and theorists at the University of Maryland in the United States. The research was conducted for *Negotiating the Net*, a project designed to generate an in-depth analyses of Internet diffusion in Ghana, Kenya, Rwanda, South Africa, and Tanzania. The authors of the project consider historical, structural, and political factors involved in each country's case study (Wilson 2005). The book, *Negotiating the Net in Africa: the Politics of Internet Diffusion*, was published in 2006, edited by Ernest Wilson and Kelvin Wong, provided the basis of Critical Negotiation Issues theory as a conceptual and analytical framework.

Lewis (2005: 4) suggests that the focus on Critical Negotiation Issues as an analytical tool proceeds from the premise that policy and legal frameworks have a key influence on economic growth and social development. Some social actors or interest groups benefit from particular policies and seek to maintain them. Others find that their

abilities to accumulate wealth, or to derive other forms of social and economic benefit, are hindered by existing policies. This in turn leads them to mobilize for changes to existing policies and laws, or for their replacement by entirely new ones. The ensuing struggle for policy hegemony becomes potentially what is characterized here as a Critical Negotiation Issues. It must be understood that not every disagreement or dispute constitutes a Critical Negotiation Issue. Lewis (2005: 4) further suggests that there are three defining factors that allow an issue to be characterized as being of critical negotiation importance in the context of the Internet. First, a Critical Negotiation Issue should centre on a policy matter or legal question with a high degree of relevance to the development or diffusion of the Internet: one for which the outcome will have a significant impact in shaping the future direction and form of that diffusion. Second, a Critical Negotiation Issue should be characterized by a high degree of contestation. It is engaged in by means of antagonistic behaviour on the part of the competing social actors or interest groups; usually on the basis of the perceived impact (either negative or positive) its resolution will have on business, livelihood, or another fundamental interest. Third, owing from the above two characteristics, a Critical Negotiation Issue will, if left unresolved, impede the future development and further diffusion of the Internet, both because of its degree of relevance and its level of contestation.

The study conducted by Lewis (2005), highlighted four Critical Negotiation Issues that have hindered the diffusion of Internet in South Africa. The four Critical Negotiation Issues are: Anti-competitive behaviour; Access to facilities; Telecommunication liberalisation, privatisation and regulation; and E-commerce policy. In brief, Lewis (2005) describes what each Critical Negotiation Issue entails:

The highly contested issue of Anti-competitive behaviour was initially manifested through clashes between the start-up companies in the sector over market share, but subsequently in the face off between Telkom's ISPs and those in the private sector, over market dominance, and ultimately, commercial survival itself. The beginnings of the South African Internet industry was initially created through comradeship but was later replaced by cut-throat competition, by an aggressive drive to dominate the small (but rapidly growing and highly profitable) market (Lewis 2005: 5; 9).

Access to facilities, the second highly contested issue, focused in terms of which the private sector ISPs sought to secure connectivity from the monopoly provider of infrastructure, Telkom. Telkom which in turn either sought to purposely delay the process or refused to supply access, initially largely through bureaucratic inertia and ignorance of what the Internet was. Later Telkom used its government granted monopoly as a weapon in the anti-competitive behaviour mentioned above. Regulatory policy at the time provided Telkom with a sole licence to provide vital infrastructure to commercial ISPs. This meant that all providers of Internet and related services were required by law to purchase leased lines[7] and other means of telecommunications access from Telkom, which itself competed directly in the ISP market (Lewis 2005: 5; 14).

Telecommunication liberalisation, privatisation and regulation, the third issue, saw intense contestation over the shape, structure, and dynamics of the telecoms market as an extensive policy reform was embarked on in the years following the advent of democracy in South Africa. The passing of the Telecommunications Act in 1996, confirmed Telkom's exclusivity in public switched telephony and telecommunications facilities until 2002. Its provisions dashed the hopes of many in the private sector for a rapid liberalisation of the sector. A number of players felt betrayed by the process, angry that their recommendations had been excised from the final legislation. A mistrust was created, which coloured relations between the government and the private telecommunication and ISP sector for years to follow (Lewis 2005: 5; 17).

E-commerce policy, the last highly contested issue and which is, to a degree a special instance of the previous Critical Negotiation Issues, but one with direct and immediate implications for Internet development. As Internet-enabled e-commerce began flourishing the Department of Communications released an e-commerce discussion paper, thereby launching a formal process to formulate an e-commerce policy leading to legislation. The working paper resulted in legislation in the form of the Electronic Communications and Transactions Bill of 2002. The key issues of

[7] Leased lines are private telephone circuit permanently connecting two points and are mainly used by large businesses and government to link two points or offices.

contention were similar to those arising from the earlier telecommunications reform attempts: complaints about the inability of stakeholders in the participatory process to exert meaningful influence and have their interests reflected in the outcome; concern at the wide-ranging oversight powers the bill granted to government; and the significant number of issues left to the discretion of the executive arm of government via the minister of communications or the director general. Once again, the policy outcomes created a contentious relationship between the government and the private sector (Lewis 2005: 5; 21).

As stated before, although the Critical Negotiation Issues brought up by Lewis (2005) may be valid, the study was focused on Internet diffusion between 1990 and 2003 and since then, there have been significant changes in the sector in particular with concern to access to facilities and anti-competitive behaviour. Lewis (2005) concludes by suggesting that there has been a significant move to deal with the issues of anti-completive behaviour, access to facilities and e-commerce policy. As it has been established (and will be discussed below), three of the four Critical Negotiation Issues highlighted by Lewis (2005) have, to a large extent, been addressed by policy, government and regulatory intervention. This study will thus build on one of the issues and establish two new issues.

The three Critical Negotiation Issues which have emerged from the data collected as having a significant impact on Internet diffusion in South Africa are Telecommunication Liberalisation, Regulation and Policy Making and Universal Service and Universal Access.

4.2.1. Telecommunication Liberalisation

As with many other countries worldwide, South Africa's telecommunication sector established itself through a government granted and controlled telecom monopoly, which allowed for such companies to grow and institute dominance with little or no competition. Telecommunication liberalisation is the introduction of competition into the telecoms sector by allowing commercial enterprises to set up new telecommunication businesses as long as they comply with certain government

defined policies, rules and regulations. It is a fundamental shift in the way a government, at the national level and through international treaty agreements, regulates the provision and use of public telecoms resources (International Chamber of Commerce 2004: 9). Ospina (2002: 2) suggests that the popularisation of neoliberal ideology resulting from the spread of neoclassical economic ideas among the decision-making elites in developed and developing countries and their interpretation as a justification for less State intervention has been one of the main driving forces behind the privatisation and liberalization initiatives during the 1980s and 1990s.

One of the primary goals of liberalising the South African telecommunications sector is to increase access to communications infrastructure by boosting local and foreign direct investment in the sector and thus addressing the imbalance in infrastructure provision and reducing costs associated with the uptake of telecom services.

The International Chamber of Commerce (2004: 9) suggests that technological advances in computers and digital technology in the 1980's and 1990's radically changed the telecoms sector, creating opportunities for market entry by a range of competitors. Governments realised that monopoly networks and services were limiting the development of new markets and services. Economic stimulation and the need to attract investment in the telecoms industry became the catalyst for governments to start the telecommunication liberalisation process. It must be understood that telecommunication liberalisation does not de-regulate nor does it strive for privatisation (International Chamber of Commerce 2004: 10). A liberalised telecommunication sector demands more from regulators and the countries regulatory body. The establishment of a market driven policy framework and pro-competitive regulations is essential for the short- and long-term success of a liberalised telecom sector.

Telecommunication Liberalisation, in brief, deals with the South African government's continual policy of 'managed liberalisation'; Telecom monopolies; introduction and effects of completion; and State ownership patterns and increasing State ownership.

4.2.2. Regulation and Policy Making

For a telecommunication sector to thrive financially, protect consumers and promote competition at the same time, a strong regulator and effect policies are vital. In a study conducted on thirty African and Latin American countries between 1984 and 1997, privatisation of telecommunications by itself was found to be negatively related to main line penetration and connection capacity. The presence of a strong regulator and competition, however, resulted in increases in penetration and decreases in overall prices (Makaya and Roberts 2003: 42-43). A strong regulator and effective regulations also have a lasting effect on an economy's growth and sustainability. van Leijden and Monasso (2005: 37) suggest that it is widely known that major investors and investment bankers in telecom infrastructure need answers to only two questions to determine whether a country has a favourable environment for investment. Firstly, is the regulator independent from the Government and secondly, is the regulator independent from the incumbent operator?

Sibinda (2008: 218) outlines two theoretical approaches to regulation and policy making: neo-liberals and structuralist. The neo-liberals approach is that a common working strategy for most countries and in all situations is to liberalise and not do much else. It has strong theoretical premise that markets are efficient and that the necessary institutions already exist to make markets function effectively, and if there are deviations from optimality, they cannot be effectively remedied by governments. In contrast, a structuralist approach sees a vital role for policy in industrial success. The structuralist view puts less faith in free markets as the driver of dynamic competitiveness, and more in the ability of governments to effectively mount interventions (Sibinda 2008: 218). These two grounding theories in essence provide two approaches to regulatory intervention and policing making, one being a market-driven approach and the other a non-market-driven approach.

Broadly speaking, Regulator and Policy Marking examines ICASA's role as a regulator; its strengths and weaknesses; the regulators constraints; and the current policies and former policies that have and may have affected Internet diffusion in South Africa

4.2.3. Universal Service and Universal Access

The Group of Eight (G8) countries have emphasized that ICTs empowers, benefits and links people the world over. Access to digital opportunities is a necessity and therefore be open to all segments of society (Mansell 2001: 282). The above statement made by the G8 forms the basis of what has become known as universal service. Universal access and universal service are one of the most used terms in telecommunications, and in the delivery of public services. Crémer (2001: 9) states that universal service and access is defined as the provision of a service at 'affordable' prices to all citizens, sometimes with the added requirement that the price be the same for everyone. In the case of the Internet, the call for universal service is often justified by the existence of a 'digital divide'. The notion that "it is not fair that some people do not have access to the benefits of cheap information" is one of the more popular most often used in the political arena for the justification of universal service and access (Crémer 2001: 9).

Although often used interchangeably, the terms universal service and universal access with regards to telecommunication have different meanings. There is still no universal consensus on what each term refers to and why they should be policy goals; this often leadings to a highly contested debate from policy makers. The two term provide a range of meanings that is so wide as to allow both right- and left-wing politicians to consider it a admirable objective, notwithstanding the fact that their respective interpretations of that objective may actually be polar opposites (Preston and Flynn 2000: 91). The International Telecommunication Union provides the best explanations of the two terms by broadly defining universal service as referring to a telephone line for every household, whereas universal access refers to a publicly available telephone, not necessarily in one's home, but provided through payphones, telecentres, multi-purpose community centres or other community-based centres (Msimang 2006: 217). Although having different meanings the overriding objectives of universal service and universal access policies are to expand and maintain the availability of affordable telecommunications services to the public (USA 2006: 15). In particular, universal service and universal access policies are aimed at providing

affordable telecommunications services to those segments of the population who would not normally be served (for example: high cost areas such as remote and rural regions, as well as lower income groups).

The last Critical Negotiation issue, Universal Service and Universal Access, as a whole, analyses the strides and failures of Universal Service and Access in South Africa, provides examples of countries with Universal Service and Access, and looks at telecom companies' individual service obligations. Furthermore, it encompasses the body entrusted with the role out of Universal Service and Access in South Africa.

4.3. Linking Critical Negotiations to High Costs

These three Critical Negotiation Issues have been identified as they meet the criteria of Critical Negotiation Issues as stated above; however, this does not mean that there are no other issues of key importance influencing Internet diffusion. High prices, for example, have remained a key constraint on the South African Internet industry and are an ongoing hindrance on the development of the Internet growth (Muller 2007). Although the issue of pricing does not fit the criteria of Critical Negotiation Issues, it does play a significant role in Internet diffusion and thus will be addressed separately.

By analysing the three Critical Negotiation Issues, it becomes evident that the issue regarding high costs are directly linked and as a result of all three issues. The three Critical Negotiation Issues identified for this study will further have a lasting influence over the South African government's policy and attempts to create a successful e-government program.

4.4. Critical Political Economy

In addition to Critical Negotiation Issues, the use of Critical Political Economy theory is a necessity in research conducted on Internet diffusion. Critical Political Economy theory is used as a secondary conceptual framework as it is concerned with the production, distribution and consumption of resources as well as ownership structures and the influence they have on resources and products (Inglis 1990: 111). Golding

and Murdock (2000: 74) argue that Critical Political Economy is interested in the interplay between economic organisation and political, social and cultural life. Mosco (1996: 25) adds that Critical Political Economy can be defined as the study of the social relations, particularly the power relations that mutually constitute the production, distribution and consumption of available resources.

According to Boymal et al (2007: 409) political economic dimension is important to the study of technological innovation including those relating to Internet diffusion as technological innovation is a dynamic process involving political, social, organisational and technological change. One of the reasons for this is that politics and technology have power as their central focus, and large technological innovation at a societal level is deeply interwoven with politics in modern societies. Additionally, in recent studies on ICTs and Internet diffusion, several authors suggest that institutions such as political parties, telecommunication operators and regulators play a major and multifaceted role in the diffusion of technological innovation in society. Agreeing to this notion Milner (2006: 179) argues that political institutions in particular matter for the adoption of new technologies because they affect the manner and degree to which winners and losers from the technology can translate their preferences into influence. Groups that believe they will lose from the Internet try to use political institutions to enact policies that block the spread of the Internet. These 'losers' hope to slow down or stop its diffusion, and some institutions make this easier to do than others. In addition, Boymal et al (2007: 409) suggests that without governmental support and financing, the deployment of national information infrastructures would have been impossible. As specific institutional interests and legitimate positions are at stake, government institutions, telecommunications operators and service providers try to implement institutional policies and influence political decisions to shape technological outcomes according to their own particular status, visions and interests (Boymal et al 2007: 409).

On a basic level, Dholakia et al (2003: 16) argue that the diffusion and adoption of ICTs entail decisions at various levels (individual, organization, national, international) about allocation of scarce resources. Critical Political Economy theories help explain how individuals, organizations and governments make decisions

regarding the allocation of resources in ICT investment. Therefore, in order to analyse the above in a South African context and understand the effect it has on the rollout of Internet services and infrastructure, the use of Critical Political Economy as a theoretical framework is necessary. Critical Negotiation Issues alone cannot answer such questions and thus the two theoretical approaches are used throughout the research to complement each other.

Private telecommunication companies and ISPs in South Africa fall within a capitalistic market system and thus have the ultimate goal of profit making. Linklater (2001: 713) defines capitalism as "a system of production in which human labour and its products are commodities that are bought and sold in the market-place". Within private, profit striving telecommunication companies, ownership structures and patterns have a large influence over the direction companies take and as a result will influence the diffusion of Internet services and infrastructure (Wunnava and Leitter 2009). Furthermore, Critical Political Economy approach sees the fact that culture is produced and consumed under capitalism as a fundamental issue in explaining inequalities of power, prestige and profit. It extends to the debates over whether cultural industries serve in the interest of the wealthy and powerful only (Hesmondhalgh 2007: 24). From this perspective, a Critical Political Economy approach aids in the understanding as to why inequalities such as the digital divide arise and why such inequalities continue to grow unimpeded.

A Critical Political Economy theoretical approach will therefore be used to analyse the ownership patterns in telecommunication companies and to analyse and determine the impact and influence they have on the diffusion of Internet. Furthermore, this theoretical approach identifies the influence politics and economics have on both positive and negative factors effective Internet diffusion. With regards to pricing, Critical Political Economy theory is also needed to gain an understanding of the influence ownership patterns and monopolies have, and have had, over the high costs of Internet access that are found in South Africa.

4.5. Conclusion

This chapter has provided an outline of Critical Negotiation Issues as used as a conceptual framework for this study. The identification of three Critical Negotiation Issues has supplied the basis of this study in that they have provided insight into the major factors influencing Internet diffusion in South Africa. Telecommunication Liberalisation, Regulation and Policy Making and Universal Service and Universal Access are the three Critical Negotiation Issues that have been identified as having a significant impact on Internet diffusion. Furthermore, these three issues have been selected as they fulfil the requirements of Critical Negotiation Issues as defined by Lewis (2005) and Wilson (2005).

In addition to Critical Negotiation Issues, this study has used Critical Political Economy theory in order to aid in answering the research questions posed at the beginning of this study. Critical Political Economy theory also assists in analysing the effect ownership patterns and government ownership patterns in telecommunication companies have on the diffusion of Internet. Furthermore, ownership patterns play a large role in the enforcement of regulation and in the making of policy. Critical Political Economy theory also provides an analysis method in determining as to why the cost of telecommunications and Internet access in South Africa are incomparably higher than in other countries.

Chapter 5: Methodology

5.1. Introduction

The core focus of this research is to critically analyse the factors influencing the diffusion of Internet in South Africa by making use of three Critical Negotiation Issues as explained in the previous chapter. Furthermore this research attempts to link the effects Internet diffusion is having on the rollout of e-Government services, currently and in the future. It is recognized that the adoption of ICTs and the expansion of Internet diffusion is a multifaceted phenomenon that takes place in a variety of ways over time. In addition to this, the researcher asks 'why' the status quo is way it is by analysing events, policies and legal rulings that have shaped the diffusion of Internet. In this respect, the research takes on a qualitative approach.

5.2. Research Approach

Due to the nature of this research, this study makes use of a qualitative approach to data collection as opposed to a quantitative approach which is more concerned with numerical reflections. At a basic level, Price (1997:192) defines quantitative research as simply recording the number or quantity of events, compared to qualitative research, which aims towards discovering more about the meanings found within events. The Fundamental distinctions between qualitative and quantitative methodologies are found in the location of meaning in texts. A quantitative analysis emphasizes a fixed meaning that can be repeatedly identified by different readers using the same analytical framework. Qualitative analysis procedures emphasize the capacity of texts to convey multiple meaning, depending upon the receiver (Gunter 2000: 82).

Creswell (2003: 179) suggests that a qualitative inquiry employs different knowledge claims, strategies of, and methods of data collection and analysis. Qualitative procedures rely on text and image data, have unique steps in data analysis, and draw on diverse strategies of inquiry. Creswell (2003: 182) further suggests that qualitative research is fundamentally interpretive. The researcher makes an interpretation of the

data. This includes developing a description of individual or setting, analysing data for themes and categories, and finally making an interpretation or drawing a conclusion about its meaning personally and theoretically, stating the lessons learned, and offer further questions to be asked. A quantitative method is not well suited studying deep questions about textual and discursive forms. It is not good at exposing aesthetic or rhetorical nuances within texts (Deacon et al, 1999: 105). Furthermore, qualitative research approach is generally a social research that is based upon the need to understand human action and social interaction from the perspectives of insiders and participants (Greenstein 1991:49). A qualitative method is thus primarily concerned with description and explanation of data rather than measurement of the data as observed by quantitative research techniques (Greenstein 1991: 49).

Numerous research conducted on Internet diffusion tends to follow a qualitative methodology. This includes Wilson and Wong (2005) *Negotiating the Net: The Politics of Internet Diffusion in Africa*¸ Lewis (2005) *Negotiating the Net: The Internet in South Africa (1990-2003)*, Naidoo et al (2005) *The South African Telecoms Innovation System and the Diffusion of Broadband* and a recent study by Ochara et al (2008) entitled *Internet Diffusion in Kenya and Its Determinants: A Longitudinal Analysis* which was conducted at the University of Cape Town. The study of Internet diffusion in a particular country or region tends to and should be reliant on a qualitative approach (Wilson and Wong 2005, Lewis 2005, Ochara et al 2008).

Although qualitative research has been criticised for being impressionistic, subjective and limited in scope (Bryman 2004: 284 -285), it does provide a good grounding for understanding and interpreting factors influencing Internet diffusion in a particular country or region and thus a qualitative approach will be ideal for this type of research.

5.3. Methods of Data Collection

This research project has made a significant reliance on three methods of data collection: secondary research, document analysis and interviews. Deacon et al (1999: 16) suggests that a range of agencies regularly produce statistics and other

materials that one is able to use in a research report or a study. Official sources and research conducted by universities, independent institutes and individual researchers are particularly useful for answering certain kinds of research questions. Such sources provide useful information for mapping general patterns in the field one is researching. Furthermore, some research projects are conducted annually or at regular intervals and act as running records to help identify changes and continuities over time (Deacon et al 1999: 16). The notion of accuracy is an obstacle when analysing secondary sources however, for this study, numerous studies were analysed and claims crossed-referenced in order to ensure accuracy.

5.3.1. Secondary Research

As there is a rapidly increasing number of people gaining Internet access and the rapid advancement of Internet technologies, the study has gained much of its secondary research form online journals and the Internet itself as they are both often updated and stay abreast with continues advancements. Hewson et al (2003: 24) suggests that the Internet provides researchers with quick and easy access to a wealth of information that is constantly updated and results in research being conducted more accurately, appropriately and more efficiently. However, there is a tendency for researchers to become too heavily reliant on the Internet and the assumption arises that if information is not easily found on the Internet it does not exist (Hewson et al 2003: 24). This above notion has become known as 'FUTON bias' or 'Full Text on the Net' bias (Ghosh and Murali 2003).

Although this study has made a heavy reliance on Internet sources, it has avoided the notion of FUTON bias as it also makes use of more traditional methods of gaining data (e.g.: books, journals and interviews). News articles that appeared on general newspaper websites and technology and Internet inclined website are also used to gain an understanding of existing trends in the market and to get updates on developments currently taking place. A qualitative analysis of news articles provide an understanding on the progress, hindrances and stances private and public sector officials and institutions have with regards to the Internet diffusion.

5.3.2. Document Analysis

In order supplement news articles and secondary research and strengthen the research, document analysis has been used to analyse government policy relating to ICTs. The Independent Communications Authority of South Africa (ICASA) and the Universal Service and Access Agency of South Africa (USAASA) policies were also examined. These institutions policies stem from Bills and Acts of Parliament which have been examined in this research. Legislation dealing with Internet access, ICTs and telecommunications was analysed in the study to determine whether there are provisions made to accelerate the rollout of ICT and Internet access and if these provisions are being adhered to and are effective. Altheide (1996: 24) notes that document analysis relies on the researcher's interaction and involvement with selected documents relevant to a research topic. Document analysis in terms of looking at policies, drafts and final forms of legislation and press releases from government departments and regulatory agencies play an important role in research projects and aid in answering ones research questions (Deacon et al 1999: 18-20).

5.3.3 Interviews

In addition to secondary research and document analysis, interviews were also conducted. This provided the study with insight given by industry players. Interviews allowed the research to become less reliant on solely secondary research and document analysis. Furthermore, interviews provide the basis of Critical Negotiation Issues as the conceptual framework demands that information is gathered from experts in the telecommunication industry as well as those responsible for policy making and/or change (Wilson 2005: 2-4).

Jensen (2002: 240-241) points out that multiple interviews can be used to increase information and broaden a point of view. Thus four interviews were conducted over the course of the research. Two interviewees, one a senior councillor from ICASA and the second an upper management advisor from MTN South Africa, wished to stay anonymous. Additionally they both agreed to do interviews in their own capacity and not on behalf of the organisation they represented. The MTN South Africa

interviewee is an advisor in policy making and strategies involving the rollout of 3G Internet services. The third interview was conducted with the acting CEO of the USAASA, Winile Lamini. The fourth interview was conducted with Charley Lewis, a senior lecturer at the School of Public and Development Management, University of the Witwatersrand and author of *Negotiating the Net: The Internet in South Africa (1999-2003)*. Furthermore, Charley Lewis is a specialist in ICT policy and regulation, universal service and consumer protection at the Link Centre, University of the Witwatersrand. These four interviewees were selected as provided insight from two public sector institutions and one private sector telecommunication operator as well as insight from an academic perspective.

The research employed a semi-structured approach to interviewing[8]. Bryman (2004: 321) states that in a semi-structured interview, the research has a list of questions or topics to cover, often referred to as an 'interview guide', but the interviewee has a great deal of leeway in how to reply. Questions may not follow on exactly in the way outlined by the schedule. Questions that are not included in the guide may also be asked as the interviewer picks up on things said by the interviewee (Bryman 2004: 321). According to Berger (2000:112), semi-structured interviews support a 'casual quality', which can set the tone of the interview in a manner that can elicit trust and therefore may encourage the interviewee to divulge pertinent information.

This semi-structured approach to interviewing was beneficial in this study as interviews were conducted on a 'one on one' basis as opposed to group interviews (focus groups) in which a different approach would be used (Kvale 1996: 101). Qualitative research has been often criticized for its overreliance on the interview technique (Silverman 1998: 10-13). Additionally and as Lewis (2005: 3) points out, there is a potential for interviewees to mislead or dissemble for self-justification or other reasons, there is the difficulty of uncovering the subconscious intent or tacit objective beneath the overt professed motivation. To address the above concern, each interviewee was asked the same or similar questions in order for data gathered to be cross referenced for accuracy. In addition to these standardised questions, a different

[8] See Appendix A for the Interview Guide

batch of questions, each pertaining to the particular interviewee, was asked for the benefit of gaining further insight from their own perspectives.

While a semi-structured interview method could be seen as less quantitative and open to interview bias, it does present the best structure for gaining an insight into factors influencing Internet diffusion as well as the influence Internet diffusion is having on e-Government strategies and implementations.

In addition to interviews, two annual conferences where attended: IWeek[9] and the MyBroadband Conference[10]. The two conferences place focus on ICTs and ICT developments in South Africa with a bias towards Internet and Internet access advancements. The conference provided insight through a series of lectures conducted by academics, industry insiders, the private sector and by government agencies such as ICASA.

5.4. Methods of Data Analysis

Critical Negotiation Issues was used as an analytical theoretical and conceptual framework to identify the issues hindering or advancing the diffusion of Internet in South Africa. As discussed in the previous chapter, for this study three Critical Negotiation Issues have been identified: Telecommunication Liberalisation; Universal Service and Universal Access; and Regulation and Policy Making. These three issues provide the base of the data analysis section. Critical Political Economy theory also aids this research project to analyse influences over Internet diffusion. A Critical Political Economy perspective was utilised when analysing costs of Internet access and ownership patterns of telecommunication operators and thus determine how both are influencing the rollout of telecommunications infrastructure and policy.

[9] IWeek took place between 2nd and 4th of September 2009 at The Forum in Bryanston, Johannesburg.
[10]The MyBroadband Conference took place on the 12th of November 2009 at Vodaworld in Midrand, Johannesburg.

5.5. Limitations

There have been a number of noticeable limitations identified in this study. This first limitation pertains to interviews. Critical Negotiation Issues demands that a number of interviews be conducted with industry experts and those responsible for policy making in order to fully understand what factors influence Internet diffusion in a particular country or region. As the knowledge base surrounding Internet diffusion is a still relatively small, sourcing interviews from industry players and industry experts proved difficult given the time constraints. Majority were either too busy or outside Gauteng at the time interviews needed to be conducted. Although the necessary alternative arrangements were provided by the researcher, such interviews did not come to fruition. Sourcing interviews from ICASA and the Department of Communications also proved difficult as on numerous requests interviews were denied. In order to overcome such constraints it was decided by the researcher to attend two ICT conferences, mentioned above, to gain insight provided by regulators, company representatives and industry experts who offered lectures and speeches at each conference.

As this research study has made a heavy reliance on secondary research and document analysis to gather data, it brings with it the limitation of having sources that may be outdated given the rapid advancements and changes taking place in this field of study. In addition to interviews conducted and conferences attended, the research has attempted to overcome this limitation by sourcing news articles published by reputable news agencies that provide constantly updated information pertaining to the various topics being discussed.

Chapter 6: Findings: Factors Influencing Internet Diffusion in South Africa

6.1. Introduction

This chapter seeks to critically analyse which factors are advancing or hindering Internet diffusion in South Africa. In order to answer the research questions posed, Critical Negotiation Issues as a conceptual framework was utilised. With the aid of the three Critical Negotiation Issues identified in this research, four major factors have been recognised as continuing to provide the greatest influence. The Regulator, Regulation and Policy Making; State Ownership Patterns; The Failures of Universal Service and Universal Access and; Pricing and Undersea Cables all have both positive and negative effects on Internet diffusion in South Africa.

Although the timeframe analysed for this study is between 2004 and 2009, reference has been made to events, achievement and hindrances that have taken place prior to 2004. It is imperative to analyse events, achievement and hindrances prior to 2004 as they provide a fundamental understanding as to why issues of Internet diffusion have arisen today.

6.2. The Regulator, Regulation and Policy Making

On a basic level, Makaya (2002: 9) argues that a regulatory agency such as ICASA should facilitate the accomplishment of policy goals with regard to the telecoms sector. Regulatory reform is often undertaken for some public policy objectives such as increasing teledensity, increasing investment in a sector and increasing competition through liberalisation. The regulatory regime has to make sufficient provision for the attainment of these goals. Problems may arise where the objectives are not clearly stated or where they are conflicting. Achieving policy goals will normally involve promoting effective competition whilst protecting consumers. The regulator will also be responsible for the realisation of universal service, universal access and other social aspects of telecommunications (Makaya 2002: 9).

As argued above, a liberalised telecommunication sector coupled with an efficient regulator and effective policies are necessary to aid Internet diffusion and increase growth. Reiterating this notion, it is argued that that "increased competition without quality regulation will bring no benefits at all" (Alison Gillwald, IWeek 2 September 2009). With this argument in mind, it is essential to analyse how ICASA and certain policies are hindering or advancing the spread of Internet in South Africa.

ICASA, being the telecommunications regulator, and thus indirectly the 'Internet regulator', has often been accused of being 'soft on Telkom' and protecting its monopoly over the telecommunication market. But, Naidoo et al (2005: 7-8) argue that in reality the regulator was in a very weak position with respect to promoting liberalisation and preventing anti-competitive behaviour in the past; its ability to act was proscribed by the Telecommunications Act of 1996, which served to protect the monopoly position of Telkom. Naidoo et al (2005: 7-8) further argue that ICASA has limited resources and personnel and depends on government for funding. The government has not been averse to interfering with the regulator; for example a previous head of the organisation was sidelined and removed for acting too independently of government. As a result, the effect of legislation and regulation has been to severely restrict the growth of Internet diffusion (Naidoo et al 2005: 8).

ICASA has also been perceived as a weak regulator, lacking the resources and expertise to regulate the sector effectively. Barnard and Gianella (2008: 103-104) believe that this is a result of its independence being compromised by the strong role the Department of Communications plays in the industry. The Department of Communications is responsible for the development of policies and legislation in the telecommunications sector, and has a strong say in regulatory issues through policy directives, the appointment of ICASA Councillors and with budget approvals. (Barnard and Gianella 2008: 104). Like many other countries, the regulator's entire operating budget is determined, supplied and annually reviewed by Parliament, with no provision to use regulatory fees raised from industry towards operating costs (Cohen 2003: 10). The way in which ICASA is funded is inscribed in the ICASA Act of 2000. This method of funding has tended to lead to the regulator being restrictively

underfunded and as such, ICASA's lack of recourses and reliance on money from the government has been seen to be a major problem that has prevented it from effectively regulating the industry. The adequate funding of a regulator is fundamental to effective regulation. Tarjanne (2007: 44) suggests that in countries where the regulator is under-resourced or inadequately funded, it is all too easy for the regulator to be captured by narrow sectoral or commercial interests. This can happen as easily in the industrialised countries as in the developing world, and it can be done by legitimate means: such as by lobbying, by sponsoring favourable studies, by constant recourse to the courts to slow down progress, and as well as by non-legitimate means. Regulatory capture invariably produces results which militate against the public interest, which are economically sub-optimal, and which can be narrowly protectionist (Tarjanne 1997: 44).

Additional resources will enable the regulator to hire and secure policy and regulatory experts as well as ensure the equipment and support structures that these people will require to do their jobs properly (Knott-Craig 2009). Knott-Craig (2009) proposes a different funding structure by stating that ICASA should be funded purely from licence fees[11], and that the government only receives normal tax on profits and dividends of operators, value-added tax and import duties. Currently ICASA is reliant on the National Treasury for funding and the amount of funding issued is at the discretion of the Treasury. This alternative funding model may ensure that the regulator is properly funded and at the same time may lead to less government interference (Knott-Craig 2009). Agreeing to this funding model, Tarjanne (1997: 45) argues that a properly funded regulator should receive funds not from the State but rather from the industry it regulates; however, this should be done in an open, transparent and shared way, and not through hidden transactions or under-the table dealings.

The enactment of the ECA in 2005 has brought greater powers to ICASA and granted more independence from government (and Department of Communication) interference (Cohen 2008: 116). Cohen (2008: 116-117) states that ICASA receives

[11] In some countries communication regulators are permitted to use a percentage of licence fees toward operating costs. For example: Brazil (1 percent), Botswana (78 percent), United Kingdom (82 percent) and the United States (87 percent) (Cohen 2003: 12).

its regulatory powers from the ECA, ICASA Act and the ICASA Amendment Act but many critics believe that the independence of the regulator is still undermined by the Minister of Communications and the President who still have vast powers over it. It could be argued that ICASA is independent in name only and it has very little authority of its own. By international standards established by the World Trade Organisation (WTO) Agreement on Basic Telecommunications and other organisations, ICASA does not qualify as an independent regulatory agency (Melody 2003).

Government interference is an ongoing challenge for not only ICASA but the industry as a whole. The reluctance to grant ICASA true autonomy stems from the ANC's and ANC-led government's distrust of independent government agencies. Horwitz and Currie (2007: 447; 449) argue that the ANC-led government has been leery about permitting real independence for government institutions, and in the case of ICASA, has purposely not given it adequate operating resources. The regulator has suffered not only from having to do many difficult tasks without adequate human skills capacity, but was in effect not permitted to develop and exercise those capacities because its authority and budget are so often undercut by the Ministry and the Department of Communications. Ministry representatives and ANC parliamentarians fought very hard to limit the statutory independence of the regulator in the final legislative debates in Parliament, arguing that the then SATRA, an institution of a democratic government should be 'aligned' with government and not independent of it. The inherent distrust the ANC-led government initially displayed toward independent agencies has resulted in a weakened regulation that has merely intensified the incumbent's power over the regulator and in the market place (Horwitz and Currie 2007: 460).

The Minister of Communications and the government continue to undermine the autonomy of ICASA, placing strain on its ability to regulate the industry properly. This argument has been highlighted in a 2008 court case between ICASA and JSE-listed technology group Altech. The court case was brought by Altech, essentially to force ICASA to issue a new category of telecoms licences to anyone who applied, rather than cherry-picking a select handful that the regulator decided were worthy (Mail & Guardian 2008). The landmark High Court ruling in August 2008 found that

VANS, which include ISPs, were entitled to Individual Electronic Communications Network Service (I-ECNS) licences. The licences would allow VANS, such as Altech and others, similar capability as bigger industry players, like Telkom, Neotel, Vodacom, MTN and Cell C, to develop and operate their own telecommunications networks (Webb 2008). I-ECNS licence holders, in theory, would have the ability to compete directly with the major operators in terms of voice and data services through the use of their own infrastructure.

The basis of the court case between ICASA and Altech was in light of a statement made by former communications minister, Dr Matsepe-Casaburri, in 2004. MyBroadband (2008c) states that in September 2004 the Minister of Communications published various determinations as per the Telecommunications Act; one of these determinations was that VANS may self-provide facilities from 1 February 2005. ICASA, after holding workshops and calling for industry input, also released an official statement that VANS may self-provide from 1 February 2005. Self-provision contemplates the procurement of telecommunication facilities by a VANS licensee from any telecommunication facility supplier and to use them under and in accordance with its licence to provide telecommunication services. MyBroadband (2008c) further states that in January 2005 the Minister retracted her statement claiming that "the issue of self-provisioning was issued in the government's policy determinations only in relation to mobile cellular operators in terms of fixed links, to give full meaning to the intention to reduce the costs of telecommunication services in South Africa. It is the intention that value-added network operators may obtain facilities from any licensed operator as specified in the determinations." According to Altech, a media statement is not binding and this statement is further in conflict with ICASA's internal documents stating that VANS can self provide (MyBroadband 2008c).

In essence, the landmark High Court ruling, to large degree, liberalised the South African telecommunication sector entirely as an estimated six hundred VANS licence holders would now have the same licence under the ECA as Telkom, Neotel, Vodacom, MTN, Cell C, iBurst and Sentech. It must be noted, however, that out of the estimated six hundred VANS in South Africa, only a few have the financial

capability to roll out their own networks, thus not posing a great threat to the current operators nor would the market be oversaturated. The rollout of infrastructure is prohibitively expensive and financially unfeasible for a large majority of VANS/ISPs. It is estimated that out of all I-ECNS licence holders only the five biggest ISPs have the financial capability to rollout limited infrastructure and still it is unclear whether the large capital expenditure on infrastructure is feasible for them in the short- and long-term.[12]

In light of the ruling, ICASA stated and confirmed that it would not appeal the court case (Olivier 2008). The Department of Communications and the Minister of Communications opposed ICASA's decision not to appeal the ruling by stating that Minister would sideline ICASA's decision and appeal the court case herself (McLeod 2008). The Ministers application for leave to appeal the High Court ruling was refused on all points. It is unlikely that the new Minister or the Department would attempt to appeal the case again (McLeod 2008). The former Ministers decision to go against ICASA's statement and appeal the court ruling further suggests that the independence of the regulator is still undermined by the government and the Minister of Communication. If a decision is made by ICASA which goes against the will of the Minister and/or the government, it is likely that they will intervene and change the decision to work in their favour. The appeal may also suggests that after years of statements and promises, the Department of Communications and the government have no intention of speeding up liberalisation in the telecommunications sector.

With the fall of apartheid in 1994, many telecommunication industry analysts believed that the South African fixed-line telecommunication industry would be liberalised, ending Telkom's inherent monopoly that it enjoyed for so many years (Lewis 2005: 17). However, as mentioned previously, Lewis (2005: 17) argues that the Telecommunications Act of 1996 further confirmed Telkom's exclusivity over public-switched telephony and telecommunications facilities. Telkom's extended exclusivity has had a dramatic effect on the telecoms market and is, to a large extent, still influential today.

[12] Self-provision by I-ECNS licence holders was debated on the Broadband Panel Discussion at the MyBroadband Conference, 12 November 2009.

In 1996, South African government policy makers decreed that retaining a State monopoly would increase the number of fixed phone lines faster than allowing private businesses to enter the market and stimulate it with competition. It was felt that rapid infrastructural rollout to previously under-serviced areas was critical to the promotion of economic growth and economic empowerment by stimulating local economies (Hodge 2003: 2-3). As these under-serviced areas were either low-income or rural in location, it was argued that immediate competition in fixed-line services would not best serve the objectives since new entrants would target the more lucrative and easily established business and long-distance markets first and not seek to rollout in under-serviced areas. Competition within the telecom market would also squeeze the profitability of Telkom and therefore limit its ability to offer services in unprofitable areas (Hodge 2003: 2-3).

Telkom was thus given a full monopoly over the rollout of fixed-line infrastructure and providing fixed-line services until 7 May 2002. Although its exclusivity could be extended for another year if rollout targets were met, Telkom never applied for this extension by the 2001 deadline (Laing 2004). Telkom's reluctance in applying for an extension could have been because the government's five-year plan had, to great extent, failed. It is estimated that up to two thirds of the new lines Telkom installed to meet government`s targets were soon disconnected (Laing 2004). Anderson (2004) suggests that many industry experts argue that Telkom's entrenched monopoly between 1996 and 2002 was one of the largest obstacles for economic growth during that period.

Telkom's extended government granted monopoly remains an issue of concern that would have an effect on Internet diffusion in South Africa for many years. It could be argued that the high costs of Internet access and lack of adequate fixed-line infrastructure is a direct result of a lack of competition in the fixed-line sector, aided by the government's reluctance to relinquish its control of the telecommunication industry. Thussu (2000:249) reiterates this point by claiming that many developing counties lack affordable access to information resources and their telecommunication systems need technological upgrading. The biggest problem developing countries

face is that in order to widen access, telecommunication tariffs need to be reduced and the sector opened to international operators, thus undermining the often subsidized or lucrative domestic telecoms. The International Chamber of Commerce (2004: 20) confirms this notion by adding that one of greatest challengers for telecom liberalisation is the reluctance by governments to give up incumbent operators. This is due to the fact that such incumbents generally act as 'cash cows' for the national budget. However it must be stated that the loss of direct revenues to the state as a result of liberalisation may also be offset by higher tax revenues generated by market entrants and as a result of growth throughout the economy which will be facilitated by telecoms liberalisation (International Chamber of Commerce 2004: 21)

The commercial ISPs sector, since its onset in 1993, has continued to enjoyed market liberalisation that has lead to an abundance of competition. In 2009 there were 154 ISPs registered with the Internet Service Providers' Association (ISPA 2009). It could be seen that the large amount of competing ISPs has resulted in downward pressure on prices and an increase in Internet diffusion across South Africa. Because ISPs are reliant on Tier-1 service providers such as Telkom, they are unable to directly affect the rollout of telecommunication infrastructure and are limited by pricing structures placed on them for bandwidth. Instead, ISPs fall within the multi-faceted environment of providing Internet access and thus indirectly have a great impact on the diffusion of Internet in a particular country or region. There is continued speculation and conflicting arguments as to why Telkom allowed ISPs to grow relatively unimpeded during the 1990s (Lewis 2005: 8-9). By allowing ISPs to foster, Telkom effectively placed itself in a position for major competition in the Internet provision market. Charley Lewis claims that "Telkom saw itself as a data carrier and viewed the abundance of ISPs as a new revenue stream that wouldn't threaten the core nature of its business" (interview 2 November 2009). Others argue that "Telkom initially did not recognise the impact that Internet could and would have on their revenue" (anonymous interview 15 October 2009). Liberalisation of ISPs has been and still is essential in driving consumer uptake of Internet services and offering consumer choice within the sector. However competition within the ISP sector alone cannot have a major affect on Internet diffusion in South Africa and therefore the

liberalisation of telecommunication sector as a whole is essential in bringing about any meaningful change[13].

The Telecommunications Amendment Act of 2001 made amendments for the establishment of competitors to Telkom. The process of introducing a second national fixed-line operator was marred in difficulties, initially over selecting an appropriate equity investor for the licence consortium, and later because of internal fighting among the members of the consortium (Lewis 2005: 20). The result of the often troubled and frequently aggressive negotiations around telecommunications reform in South Africa has been the entrenchment of Telkom as a sole provider of telecommunications and thus Internet infrastructure.

With the introduction of policy allowing a second national fixed-line operator, the South African government and the Department of Communication embarked on the model of what has now become known as 'managed liberalisation'. The concept of managed liberalisation was birthed by the former and late communications minister Ivy Matsepe-Casaburri. The sentiment that the industry should be liberalised in a controlled environment did not make the late minister or her Department popular amongst industry players and experts (Jones 2009a). The desire by government and the former Minister to pursue a policy of managed liberalisation is explained by the Department of Public Enterprise (2008) which argues that the objective in pursuing the managed liberalisation strategy were threefold. Firstly, it aimed at promoting greater competition and thus ensuring cheaper and more reliable telecommunication services. Secondly, to ensure that teledensity increased to around seventy to eighthly percent. Thirdly to promote domestic ownership, in particular ownership by those previously disadvantaged. Furthermore, the managed liberalisation approach is intended to ensure that competition is introduced in a responsible manner, both at a facilities or infrastructure level and also at a service based level (Department of Public Enterprise 2008). Although a managed approach to liberalisation could be seen as a positive to ensure the above goals are met, in practise it has left minimal choice for consumers and has done little to increase Internet diffusion.

[13] This notion was highlighted on the Broadband Panel Discussion at the MyBroadband Conference, 12 November 2009.

Ramshai (2008) states that twelve years of failed policy over managed liberalisation has resulted in a lack of choice and competition as well as high prices for South African consumers and businesses. Goldstuck (2008b) reiterates this notion by arguing that there was a significant slowdown in Internet users in South Africa during the period between 2001 and 2006 when Telkom's monopoly was at its strongest and most damaging. This was a clear indication that government's "managed liberalisation was a deeply flawed and damaging policy, becoming a euphemism for maintaining the status quo" (Goldstuck 2008b). Goldstuck (2008b) further argues that former Minister Matsepe-Casaburri should not be blamed for this failed approach to liberalisation as she was merely pursuing the officially cabinet-backed policy directives. Thus government's decision to push for managed liberalisation merely provided Telkom with a five year period to prepare itself for eventual competition. This provided Telkom with further growth through monopolistic business practices and provided potential competitors with an even more difficult landscape to establish themselves in.

With the establishment of the Zuma administration in April 2009 and the subsequent appointment of a new Minister of Communications, Siphiwe Nyanda, it was widely hoped that the notion of managed liberalisation would be dropped. Furthermore the release of the Draft Broadband Policy in September 2009 details how government plans to boost competition in the telecoms space (Jones 2009b). The Draft Broadband Policy brought further assumption that true liberalisation was entering South Africa's telecommunication sector. However Minister Nyanda, shortly after the release of the Draft Broadband Policy, stated that he believed that the view that markets would self-regulate and promote competition among themselves would never occur, even if the market was fully liberalised (Jones 2009a). The Minister also cited the situation with the banking sector in the United States, which aided the 2008 and 2009 global financial crisis, as an example of unregulated and liberalised markets that have not succeeded (Jones 2009b). The Minister has further confirmed that he plans to uphold the policies of managed liberalisation (Jones 2009a and Jones 2009b). In this sense, the Minister, his department and thus the government as a whole has taken on a structuralist approach to liberalisation and regulatory intervention in that it is

understood that markets alone cannot self regulate and that regulatory intervention and policies are needed to guide and protect the sector (Sibinda 2008: 218)

Although the Minister makes a valid point that a neo-liberals approach of an unregulated liberalised market, will succeed, he reiterates a common misconception that telecommunication liberalisation has to equate to deregulation. Instead a liberalised market requires more regulation. Pisciotta (1997: 335) states that most countries engaged in liberalisation commonly experience a need for increased regulation. Licensing, enforcement of licence obligations, rate rebalancing and review, interconnection rules, accounting standards and frequency allocation all normally require a significant degree of regulatory oversight, at least until fair competitive market rules are firmly established. Even then, perpetual changes in technology, network architecture and service provisioning continually raise issues and conflicts within the industry that must be resolved.

In 2007, five years after the fixed-line liberalisation (or 'managed' liberalisation) process began, Neotel, the second fixed-line operator, began rolling out enterprise services and in 2008 began offering consumer products (Neotel 2008). However, Neotel has often been quoted as saying that at present they are not attempting to compete with Telkom and would not engage in a 'price war' (MyBroadband 2007; Jones 2008a). Neotel has continued to reinforce the government's standpoint that a new entrant in the fixed line sector would target the lucrative and already established business markets and not be inclined to roll out infrastructure to under-serviced areas. Neotel has placed focus on the three major metropolitan areas of Gauteng, Cape Town and Durban. Within these three regions, services are still limited to more lucrative middle and upper income areas and in areas where businesses are concentrated. Neotel being a private profit seeking company, accountable to local and international shareholders, cannot to be blamed for attempting to target particular segments of the market with their services. As a private company working with in a capitalistic market system, it is understandable that the company aims to attract a profitable market that will provide the greatest return on investment.

As Neotel is a new entry into the telecommunication sector, it is difficult to gauge the effect that the company is, and will be having, on Internet diffusion and its effect on current pricing structures. In October 2009 Neotel had over thirty thousand subscribers and aimed to reach fifty thousand by the end of 2009. The group intends to gain fifteen percent of market share by the time it reaches its fifth year of operation (Reuters 2009). While Neotel has seen significant growth within their short existence, their limited coverage and small amount of subscribers (when compared to the already established telecom operators) it is still currently difficult to determine if it is making any significant change to Internet diffusion. International experience demonstrates that the incumbent operator manages to retain its leadership position and market power long after liberalisation, this is true in Britain, Malaysia and Mexico and will most likely be the case for South Africa (Makaya and Roberts 2003: 43). Makaya (2001: 1) suggests that incumbent leadership long after the introduction of competition is a direct result of the natural barriers competitors face such as the high levels of capital investment required and incumbency advantages such as customer loyalty. Although the inherited fixed-line infrastructure has continued to limited Internet growth and diffusion in South Africa, wireless technologies and more competitive mobile Internet industry have began to provide a solution to increasing Internet penetration

As Neotel has made it clear that it will make no attempt to compete directly with Telkom thus it could be suggested that access to the Internet via a wireless connection offers the only true competition against the fixed-line giant. Speaking at an Internet forum in 2006, the then regional sales director of Motorola, Paul Budgen, stated that if Telkom remained insistent on hanging onto key infrastructure, competing service providers should just ‘go wireless’ (Mwanza 2006).

Wireless Internet provides users with a more flexible and at times affordable connection. There is also competition within the wireless Internet industry. Potential clients are able to choose between the three largest providers, Vodacom, MTN and iBurst, as well as numerous, regional, Wireless Internet Server Providers (WISPs). Since 1994 the mobile telecommunications sector has been largely liberalised (Barnard and Gianella 2008: 104). Cohen (2008: 120) argues that in South Africa

only about fifty percent of the broadband market relies on a fixed-line solution. The increased rollout of wireless services is continually expanding the broadband customer base. Fixed-line Internet services have been significantly impacted by the growth of mobile Internet services, which is a result of an often healthy competition between Vodacom, MTN and other mobile Internet providers and a strong downward pressure on prices (Endelbrecht 2008). The use of wireless or mobile Internet solutions to grant access to those outside the fixed-line footprint has began to aid in expanding Internet diffusion in South Africa.

Castells et al (2006: 239) suggests that fixed-line telecommunication operators are not interested in providing infrastructure to rural or remote areas as there is not enough guaranteed profits to be made. The characteristics of these areas place those living there at a disadvantage that is not easy to overcome. However, wireless technologies are able to bring new opportunities for development. Castells et al (2006: 239) further suggests that wireless technologies create an alternative but better suited for the challenges of expanding Internet connectivity to rural areas because of the costs associated with wireless, given the fact that unlicensed spectrum is available and is cost effectively obtained from the telecommunications regulator. The rollout of fixed-line infrastructure to certain rural areas with a low population is uneconomical given the extremely high costs of providing a physical copper or fibre optic line to each individual household or business (providing the last mile) when compared to wireless technologies where one base station can provide coverage for many square kilometres (Castells et al 2006). The economical benefits of wireless technologies for telecommunication operators has been further highlighted by Neotel's choice to initially establish its voice and data network by utilising Code Division Multiple Access 2000 (CDMA2000), a hybrid 2.5/3G wireless technology, and WiMAX until it is able to financially offer a fixed-line service (Neotel 2008).

By selling a fifty percent stake in Vodacom in 2008, Telkom has now been allowed to embark on rolling out a W-CDMA (Similar to HSDPA and CDMA technologies) network to provide corporate customers, high-end residential customers and high cable theft / high maintenance areas with broadband access (Telkom SA 2009a; MyBroadband 2008a).

Telkom has made it clear that the rollout of a wireless service will not compete with HSDPA products being offered by cellular operators. Its new wireless offering will merely complement its existing offerings. As a fifty percent owner in Vodacom, Telkom had been restricted by a contractual clause to develop its own wireless Internet solution. In October 2008, Telkom announced that it would sell its fifty percent stake in Vodacom thus allowing them to develop their own wireless network. Thirty five percent was sold to British based mobile phone giant Vodafone whilst the remaining thirty five percent was distributed amongst Telkom shareholders and sold to the public through the listing of Vodacom on the Johannesburg Stock Exchange (MyBroadband 2008b). The selling of Vodacom has increased Vodafone's stake in the company to sixty five percent.

Competitiveness and liberalisation of the mobile broadband sector has aided Internet diffusion in South Africa; however it must be understood that providing the last mile via wireless technologies is considerably less expensive than providing it via a physical copper or a fibre optic line (Goldstuck 2008b). The Internet and broadband industry in South Africa is largely reflective of the historical monopoly situation. The introduction of competitors in the Internet market, although not on an equal footing with Telkom, and increasing competition in the voice market has resulted in a market that is slowly evolving. Nevertheless, the new industry players have made only a very small dent in the prevailing market structure (Naidoo et al 2005: 7). The success of the mobile and wireless broadband sector has not been without its share of regulatory problems and controversies.

6.2.1. Regulatory Delays and Ineffective Policy

In addition to ICASA being criticised for being 'soft on Telkom' and its independence questioned, many critics also believe that the lengthy and costly regulation and licensing process has also resulted in heavy delays in bringing about change in the telecommunication and thus Internet industry. Lengthy delays in the issuing of under-serviced area licensees, licensing a second national fixed-line operator, allocating WiMAX spectrum and producing policy which is often flawed and open to

interpretation has cost the telecommunications sector millions of Rand, has done little to resolve the many issues facing the sector and is further hindered the diffusion of Internet (Goldstuck 2008a; Tobin and Bidoli 2005: 32l; Senne 2008). The issuing of WiMAX spectrum has created one of biggest controversies in the telecoms market and resulted in many industry plays and critics questioning ICASA's ability to effectively regulate and stimulate the sector.

Delays in the awarding of licences for providing WiMAX high-speed wireless broadband service to businesses and consumers and the limited roll-out of services that have been licensed has resulted in dampening of its potential impact. WiMAX is often seen as a solution to the small diffusion of Internet in South Africa and Africa as the deployment of WiMAX infrastructure is relatively cheap, easier to deploy and has a large reach, making it an ideal solution for providing broadband data and even telephone services to rural and remote areas. It is also seen as a powerful technology for bringing affordable yet quality Internet access to isolated communities (Goldstuck 2008a). When providing Internet via a copper landline (which is the traditional way of delivering ADSL broadband services) the end user must be within 5kms of the nearest telephone exchange. When proving Internet via WiMAX, depending on the landscape one needs to be only within 20 to 30kms of the tower. The large footprint that WiMAX provides makes it the ideal technology for areas with limited fixed line infrastructure, high cable theft and a small population density.

The notion that WiMAX or any other wireless technology holds the key to rolling out Internet services to numerous rural communities is once again highlighted by Andries Delport, executive director of Vodacom. Delport claims that "wireless is and will be the only solution to the rollout of Internet services to rural South Africa. The country is just too vast and spread out for sustainable fixed line infrastructure" (MyBroadband Conference, 12 November 2009). Although it could be argued that Andries Delport's opinion is biased due to his position at Vodacom, it has been argued numerous times before that utilising wireless technology as the last-mile in countries with a similar geographic landscape to South Africa is essential for the even diffusion of Internet.

An example of the potential of WiMAX to increase Internet diffusion in South Africa is being highlighted in the remote and isolated village of Dwesa. Dwesa is located in the former Transkei homeland in the Eastern Cape, 130kms north of East London. With the aid of the Telkom Centres of Excellence at the University of Fort Hare and Rhodes University, four WiMAX towers have been constructed at four schools, allowing the community to access the Internet at the various computer labs (Dalvit et al (2007: 11-12). In addition to gaining Internet access, WiMAX technology has also led to the community establishing a website (www.dwesa.com) which sells arts and crafts made in the area and provides advertising to potential tourists. The village of Dwesa is a true example of how the Internet (with the aid WiMAX in this case) can improve rural communities around South Africa in terms of access to knowledge and additional revenue streams.

At present, only Vodacom/iBurst, Sentech, Telkom and Neotel have been issued commercial WiMAX licences by ICASA. In 2006 Vodacom bought a ten percent stake in iBurst which gave them access to iBurst's allocated spectrum (Finn 2007). It was hoped that licences would not only be granted to large national operators, but to numerous VANS which would be able to provide addition competition and in turn would further liberalise the sector. Once again, ICASA was criticised for further entrenching monopolies by providing WiMAX licences only to large operators (Finn 2007). ICASA issued licences to operators who met certain criteria which was claimed to ensure fairness and transparency in the licensing process. In order to obtain a licence, an operator had to have industry knowledge, a solid track record, be broad based black economic empowered and had the ability to allow subscribers to migrate to and from their network (Jansen 2007). The criteria issued by ICASA were seen to be vague with little detail as to what was meant by "industry knowledge" and "a solid track record". One interviewee argued that "although criteria for issuing WiMAX licences were extremely vague, many applicants were believed to have met the requirements but did not receive licences. There was little feedback given to why certain applicants where denied a licence" (anonymous interview, 15 October 2009).

In addition to the issuing of four commercial licences, ICASA also issued trial licences to numerous VANs including ISP giant Mweb. Mweb was successful in

rolling out WiMAX services to around one thousand residential users including one hundred residential users in Soweto at a cost of over ten million Rand (Jones 2008b; Finn 2007). Mweb provided proof that WiMAX could indeed provide the answer to bridging the digital divide in areas such as Soweto. Despite Mweb's trial being extremely successful, in April 2008 the trial came to an end, leaving millions of Rands worth of equipment and infrastructure dormant. Mweb's appeal to extend its trial licence was denied by the regulator (Jones 2008b). It is still unclear as to why ICASA ended the trial so abruptly instead of continuing the trials until WiMAX spectrum had been announced. One interviewee suggests that "the industry has been extremely frustrated with ICASA when it comes to the WiMAX spectrum saga. Numerous motives and delays go unexplained and ICASA's ability to handle the allocation of spectrum has been continuously questioned" (anonymous interview, 15 October 2009).

ICASA argues that spectrum is extremely limited, with a large chunk already allocated to the incumbent. At most, the regulator would only be able to allocate additional spectrum to three or four more operators (Jones 2008b). Although WiMAX spectrum is limited, "ICASA should dish out the spectrum and those not using their allocated spectrum should lose it"[14]. The 'use it or lose' it approach to WiMAX spectrum policy is a highly contested debate that is normally aimed at Sentech. Sentech, Neotel and Telkom are arguably not making the most of their allocated WiMAX spectrum (MyBroadband 2008d). Although Neotel and Telkom have begun to rollout WiMAX services, Sentech is still to make use of its valuable spectrum. Such spectrum could be passed on to companies such as Mweb who are in a position to utilise the spectrum and therefore aid in the diffusion of Internet. A senior ICASA councillor argues that "the 'use it or lose it' approach is difficult to regulate or enforce. ICASA does not currently have the resources or the expertise to manage WiMAX spectrum effectively let alone remove it from companies that do not use it" (anonymous interview, 29 September 2009).

[14] Broadband Panel Discussion at the MyBroadband Conference, 12 November 2009.

Regardless of their short comings in the issuing of WiMAX spectrum, both ICASA and the Department of Communications have established targets which include, among other things, improving broadband connectivity and infrastructure, providing Internet and voice services to the poor, addressing high prices and establishing a more competitive playing field, but both the Department and ICASA still continue to lack any coherent policy framework for bringing about their goals (Cohen 2008: 117). It has been stated that South African telecom acts and telecom policies are "not fit for purpose, probably impossible to implement and a patchwork of foreign policies with little relevance to the country" (Ewan Sutherland, IWeek 2 September 2009). Furthermore, incompetence on the regulators behalf has lead to acts such as the ECA which has "no guiding quality and lacks vision for the sector" (Alison Gillwald, IWeek 2 September 2009). Policy issues tend to plague the not only the regulator but also the Department of Communications, resulting in a detrimental effect on the industry and on the end consumer. An example of a poor policy outcome that is filled with controversy and open to interpretation is that of the ADSL Regulations of 2006.

Implemented in August 2006 by ICASA, the ADSL Regulations intended to protect consumers, implement standards and provide better transparency from ISPs, Telkom and the then Second National Operator (now known as Neotel). The policy was welcomed and had the potential to provide change within the sector however a number of provisions were extremely vague and interpretable and thus has made very little lasting impact (ISPA 2006a). One provision that has created the largest amount of controversy and debate is Provision 3.4 which states that: "local bandwidth[15] usage shall not be subject to the cap[16]". This Provision is extremely interpretable and numerous ISPs, industry experts and telecom operators have different takes on this clause. Consumers and telecommunication advocates interpret this provision to mean that local bandwidth usage should not be counted towards ones monthly Internet usage or that once ones bandwidth cap has been exhausted one would be entitled to unlimited free local browsing (Senne 2007). In light of this interpretation, Telkom argues that in the absence of a regulatory definition of what 'capping' is, Telkom

[15] Local bandwidth refers to bandwidth that can only be used to access content and websites that are hosted in South Africa.
[16] 'Caps' or bandwidth allowance is the amount data one is able to transfer (download and upload) for a given product or package.

defines capping as Internet usage, which includes local and international usage and thus cannot separate the two (Senne 2007). In not defining 'capping' the ADSL Regulations in turn fails to protect consumers by providing Telkom and ISPs with such loopholes. Currently no ISP offers free unlimited local Internet once ones bandwidth limit has been reached. Instead certain ISPs, such as ISP giants Mweb and Telkom Internet, provide unlimited local Internet once their customers have been capped, however this is not a free service and customers are charge per megabyte of local data transferred.

The ADSL Regulations have also been criticised for doing nothing to promote competition in the delivery of ADSL. Instead, the Regulation tends to entrench a model of where Telkom is the only viable wholesale provider of ADSL access (ISPA 2006b: 4). The ADSL Regulation had the potential to provide more for consumers, promote competition within the provision of ADSL and the wholesale of ADSL services however short-sightedness has led to a policy that is not only unworkerable but flawed on many levels. One interviewee confirmed this by arguing that "the ADSL Regulations were an embarrassment for ICASA and is mostly ignored by the ICASA because it provides no valuable input for them or the industry and because once again it obviously protects Telkom" (anonymous interview 15 October 2009). The repercussions of not adhering to the ADSL Regulations are also questionable. Provision 6.1 and 6.2 state that Telkom, Neotel and ISPs have to on a quarterly basis publish key performance indicators and statistics (such as contention ratios and average latency on their networks) as a commitment to good business practices. This provision has been mostly ignored by majority of ISPs and operators with the exception of Telkom: albeit with its own interpretation of how it should be done (MyBroadband 2009b). Those ISPs who ignore these provisions go unpunished by the ICASA suggesting that either the regulation is unenforceable or that the regulator is in such a weak position that it is unable to enforce its own policies.

Once again, poor policies and poor policy outcomes have been attributed to the fact that ICASA lacks funding and skilled personal. Relating to this notion, one interviewee stated that "companies and individuals have continued to grow frustrated with ICASA's inability to regulate the industry and draw up proper policies because

of undertrained and unskilled people in positions of power. Key positions have also been filled by those with no background in telecommunications or policy making" (anonymous interview, 15th October 2009). ICASA's funding issues have also led to a "major exodus of skilled personal who find the private sector more lucrative" (Winile Lamini, 26 October 2009).

6.2.2. Local-Loop Unbundling

One objective that will speed up telecommunication liberalisation and bring to light ICASA's ability to regulate the industry successfully is that of local-loop unbundling (LLU). Unbundling the local-loop is imperative to fully liberalise a telecommunication sector but brings with it an extensive (and often lengthy process) policy framework. In addition, how best to promote competition through LLU is by far the most controversial topic in telecoms regulation (de Bijl and Peitz 2005: 50). Sutherland (2007: 1) defines LLU as the regulatory process of allowing multiple telecommunications operators use of connections from the telephone exchange to the customer premises. The physical wire connection between customer and company is known as a 'local-loop', and is generally owned by a single telecoms company, in the South African case, Telkom. Unbundling the local-loop would allow other operators access to the Telkom owned and operated last mile thus eliminating the expensive and time consuming establishment of their own infrastructure. Providing the last mile by new entrants is prohibitively expensive and largely unnecessary given the potential that LLU can provide. Hausman and Sidak (2005: 137-138) present two rationales offered by regulatory agencies in support of mandatory unbundling. In general, mandatory unbundling is believed to generate competition in retail markets through greater innovation and investment and lower prices and secondly generate greater competition in wholesale markets (Hausman and Sidak 2005: 137-138). Moreover, due to the former (and to a certain extent current) government ownership patterns in Telkom, South Africa's national network and local-loops were built with taxpayers money and thus providing the argument that the local-loop should not belong to one operator/company.

LLU is commonly opposed by the country's incumbent operators because of the naive and narrow minded view that new entrants choose to 'leech off' the incumbent's network as an alternative to building their own local loop network (The Local Loop Unbundling Committee 2007: 2-3). However, new entrants disagree and argue that they cannot economically replicate the incumbent's local loop and that they cannot make available certain telecommunication services such as ADSL without access to the local loop infrastructure. As a result, not implementing LLU will promote the incumbent operator to go on monopolising the fixed-line telecommunication market and limiting innovation and in so doing reducing economic growth (The Local Loop Unbundling Committee 2007: 2-3). This argument ties in with the current situation in South Africa where Neotel is unable to provide fixed-line Internet access such as ADSL due to the fact that they are not yet in a financial position to rollout the costly last mile. It is therefore imperative that LLU be introduced in order to easily attract competition and thus indirectly aid in the diffusion of Internet.

In 2007, former communications Minister, Dr Matsepe-Casaburri told Parliament that the unbundling process in South Africa should be urgently implemented but would give Telkom until the 1 November 2011 to unbundle the local-loop, thus providing Telkom with another extended monopoly (Ensor and McLachlan 2007). By setting the deadline in 2011 provides Telkom time to strengthen its market dominance and prevents the newly formed Neotel from significant expansion (Barnard and Gianella 2008: 102). It must be understood though that the unbundling process is time consuming from a regulatory and policy perspective and numerous delays are usually anticipated. The view adopted by the Local Loop Unbundling Committee in their 2007 report is that South Africa should follow the same process as that adopted by the European Commission, which is to unbundle the local loop to encourage greater competition particularly in the supply of broadband services. Local loop unbundling essentially warrants the creation of a range of regulatory 'products' to achieve this end, including full-unbundling, whereby the entire copper/fibre last mile is leased to competitor providers, part-line unbundling, which provides access to the high frequency portion of the copper last mile to competitors to provide broadband services, and bitstream access, which provides competitors access to customers to

offer broadband services but does not require significant investment in infrastructure for them to do so (Hawthorne 2009: 2-3).

As mentioned above, incumbent operators generally oppose LLU as they stand to lose the most due to increased competition and it is expected that Telkom will therefore try to "retard LLU process for as long as possible"[17]. Building on this notion, ICASA Councillor Fungai Sibanda argues that numerous major regulatory delays are caused by the private sector particularly when decisions that do not favour them are made. (IWeek 2 September 2009). The LLU process has taken as long as a decade in many other countries, partly attributable to delaying tactics from the incumbent operator (MyBroadband 2009c). Due to lengthy delays associated with the LLU unbundling worldwide it is questionable whether ICASA (and Telkom) will be able to reach the November 2011 deadline.

Since the announcement and LLU report published in 2007, little has been said on the matter and it is unclear how much headway Telkom has made with the process. It is also unknown if there will be any consequences if the company does deliver open access by the set deadline (Jones 2009c). An ICASA Councillor argued that "the unbundling process is extremely difficult and time consuming and setting the deadline for 2011 was very ambitious. [ICASA] is working on drawing up policy but it is very far behind and unlikely to meet the deadline at this current rate" (anonymous interview, 29 September 2009). Numerous countries around the work have introduced LLU with varied degrees of success.

Although not on a comparable level to South Africa, Japan is held up as the prime example of the potentially positive effects of LLU. The Japanese government mandated LLU in 1997 and in 2001 extended these regulations to include unbundling of fibre optic facilities, including FTTH[18] (Wallsten 2006: 9). Japan viewed itself as a late starter in the broadband market, especially in comparison with South Korea, but in a short period was able to become a global broadband leader, partly attributed to a successful LLU process (Sutherland 2007: 5). Through the utilisation of NTT's (the

[17] Broadband Panel Discussion at the MyBroadband Conference, 12 November 2009.
[18] FTTH or Fibre-to-the-home is a method used to connect to the Internet through fibre optic cables as opposed to ADSL which uses copper cables.

former fixed line monopoly) local loop, numerous operators offer very high speed, low priced broadband connections to consumers. Widespread competition has lead to broadband speeds of up to 100 Mbps through FTTH and 50/12.5 Mbps (download/upload) for ADSL offerings (Sutherland 2005: 6; Wallsten 2006: 9).

LLU in the United States has been far less successful than in Japan and many other European Union member States. Sutherland (2005: 7) suggests that in the United States LLU was implemented by the Telecommunications Act of 1996, with the details left to the Federal Communications Commission (FCC) to decide upon. After several attempts, implementation mandatory unbundling was abandoned, because of disagreements amongst the five Commissioners and a series of reversals in the courts. Unbundling is now available only on commercial terms to those operators willing to take it.

In justification for LLU, the United States and the FCC adopted the "stepping-stone theory" approach to the whole process. Proponents once again argued that network externalities and the relatively high sunk costs of entering telecommunications markets were barriers to entry, and that new competition was feasible only if entrants had access to incumbents' networks (Wallsten 2006: 4-5). According to this theory, the entrants would use LLU as a "stepping stone" to building their own networks. Once they had attracted enough subscribers to increase market share, they would begin building their own facilities, resulting in real facilities-based competition (Wallsten 2006: 4-5). Even with the "stepping stone theory" approach and the large amount of capital poured into the process LLU was largely unsuccessful in fostering competition, increasing broadband diffusion and increasing broadband speeds to the level of many European Union States, Japan and South Korea. Wallsten (2006: 6) argues that many regulators, economists and studies suggest that LLU in the United Stated failed because it reduced incentives for incumbents to invest in high-speed Internet infrastructure. Wallsten (2006: 5) further notes that cable companies, whose broadband services were largely unregulated, invested more quickly in their broadband networks than did telephone companies, who were required to share their broadband facilities with competitors

Given its controversy unbundling the local-loop is still critical in South Africa to encouraging and speeding up competition. But the regulatory process has to be done appropriately to ensure that Telkom is not able to abuse its power. Adding competition to the market without access to the local-loop will bring slow to little change, evident in small effect Neotel is having on Internet diffusion. As with many other former monopolies worldwide, it is likely that Telkom will do what it can to ensure the process is slow and ineffective resulting in anti-competitive behaviour. In order to guarantee that anti-competitive behaviour is not practiced, there is a need for a strong regulator and with ICASA being an historical weak regulator, it is unlikely that target dates will be met and anti-competitive behaviour obverted. Furthermore, given the regulatory complications and high costs associated with introducing LLU and ICASA's funding and skill shortage, it is questionable whether the regulator is able head the process.

6.3. State Ownership Patterns

The South African government, at various levels, has indicated that it will continue with the market liberalisation process of the telecommunications sector in view of its objectives of increasing service penetration and reducing the costs of communication for all of its citizens. This notion is in contrast with the government's ownership patterns in Telkom and its intentions to rollout a broadband infrastructure of its own (USA 2006: 17). Barnard and Gianella (2008: 102) suggest that the involvement of the State in the sector is on the rise, despite many promises of liberalisation.

In 1997, the South African government took one of the its most significant steps on the road to liberalisation by selling a thirty percent stake in the fixed-line operator, Telkom, to the Thintana consortium comprising of Telecom Malaysia and South-Western Bell Corporation of the United States. The partial privatisation of the operator was contingent on the guarantee of an exclusivity period of five years. The exclusivity focused on the ability to be the sole provider of fixed-line voice and data services (USA 2006: 17). In 2004 the South-Western Bell Corporation and Malaysia Telecom sold their equity stake in Telkom and removed their operational personnel. They did this for a variety of reasons, including the impending competition

anticipated from a Second Network Operator, pending liberalisation, and the proposed advent of a new licensing regime in the form of horizontal licensing (whereby the network and the services run on it are licensed separately) rather than the current vertical integration model (which licences Telkom to own the physical network as well as provide services across it) (Naidoo et al 2005: 6-7).

South-Western Bell Corporation and Telecom Malaysia pulling out of the South African telecom market, in the advent of a Second National Operator and a more liberalised sector, suggests that attracting much needed international investment can be more difficult when the telecommunications market is liberalised. A government granted monopoly ensures ample profits for international corporations and a liberalised market with increased competition is not attractive as profits will inevitably decrease. The above notion ties in with Wilson‘s (2004) view that a liberally diffused ICT infrastructure will always be opposed by “those who calculate that the introduction of these new resources undercuts in some way their own institutional interests as regulators, ministry officials, or telephone company managers” (Wilson 2004: 44).

Although the South African government was applauded for selling a thirty percent stake in Telkom and thus commencing the liberalisation process, the South African government, today, is still the largest shareholder in the company. The South African government owns 39.4 percent of shares and the Public Investment Corporation (which is wholly owned by the government), directly and indirectly, owns 15.3 percent of shares (Telkom SA 2009b). As a result of the Public Investment Corporation being owned by the government, the South African government still owns a 54.3 percent controlling stake in the company.

The notion that ICASA is ‘soft on Telkom’ may further stem from Telkom being 54.2 percent owned by the government. By being ‘soft on Telkom’, ICASA and therefore the government are merely protecting a very profitable interest. Winile Lamini suggests that “ICASA will always have to favour Telkom in terms of policies and leniency because of governments interests in the company”. Lamini further suggested that “ICASA cannot be blamed for following the orders of the Department of

Communications who are in fact responsible for protecting Telkom" (interview 26 October 2009). Another interviewee highlighted this regulatory issue by stating that "in the past and in isolated incidents today, ICASA has been told to 'go easy' on the company" (anonymous interview 29 September 2009). ICASA and the Minister of Communications are in a difficult position due to the complicated State ownership patterns found within the telecommunication sector. As Telkom is majority State owned, the Minister of Communications has the responsibility in protecting government asset and thus guarantee the profitably and growth of Telkom whilst also stimulating competition and ensuring fair practice within the sector at the same time.

It becomes evident that until the government relinquish their control over Telkom and Telkom becomes one hundred percent privately owned, it will be unlikely that other operators will be able to compete on the same level as the operator when it comes to policy and regulatory issues. Currently there is no evidence to suggest that the government is willing to fully privatise Telkom. Apart from the fact that government is unwilling to sell its stake in the company, the enormous growth of the mobile industry in South Africa and in Africa at the expense of the fixed line industry provides the argument that market trends dictate that government will find it extremely difficult to find a suitable buyer for its share. Regulatory and policy issues pertaining to government ownership patterns in Telkom are consequently likely to continue for many years to come.

The government is also committed to increasing its ownership and involvement in the provision of key telecommunication infrastructure. This increased involvement is evident in the establishment of Broadband Infraco, a fully State-owned broadband company which will take over the existing telecommunication networks of Eskom and Transtel, Transtel being a former subsidiary of Transnet. The South African government has been open in suggesting that it will continue to foster competition but at the same will continue in infrastructural investment and control. This was recently highlighted once again in the Draft Broadband Policy of 2009, Provision 4.2.1.1 which states that "Competition will be promoted in the market. Where market forces fail, government will intervene to increase the availability of infrastructure and

services." In terms of Broadband Infraco, it could be seen that government has seen market failure and thus is intervening with creating another State-owned enterprise.

Broadband Infraco was established by the Broadband Infraco Act of 2007 as an intervention to rapidly normalise telecommunications market efficiency (and address the cost of broadband to their industry players and end users) by making infrastructure in the national backbone and international connectivity area available at reduced prices (The Department of Public Enterprise 2008). Under the Act, Broadband Infraco is also responsible for expanding the availability and affordability of ICT access, including in underdeveloped and under serviced areas. This will be the government's second attempt at rapidly increasing broadband penetration in South Africa, the first being through Sentech.

In 2004, Telkom was the only operator proving broadband services through its ADSL offering. In a bid to increase broadband penetration and in order to offer competition, the Department of Communications through Sentech began rolling out a wireless broadband offer, MyWireless at more competitive rates than Telkom's ADSL offerings. Initially MyWireless offering enjoyed strong uptake but major funding issues hindered the expansion of infrastructure and coverage. Inadequate funding also made advertising and marketing of the product impossible. Amid poor uptake, a rise in strong competition in the broadband market (especially from Vodacom and MTN) and the bad publicity it received from poor service levels, Sentech discontinued it offering in 2009 (MyBroadband 2010). In 2007, it was estimated that Sentech had just over four thousand subscribers, representing less than one percent of the broadband market at the time (Esselaar and Gillwald 2007: 38). In 2007 Sentech was also given the task of rolling-out an affordable broadband infrastructure solution for five hundred underprivileged schools at a budget of R500 million (R1 million per school). The company failed to deliver and its budget had not been spent as it could not produce a business plan acceptable to the National Treasury (MyBroadband 2010). In light of government's failure to address broadband penetration through Sentech, it is difficult to believe that Broadband Infraco will deliver any positive results. Esselaar and Gillwald (2007: 38) support this notion by suggesting that it is unclear as to why the government believes that the State, clearly unable to operate

other State-owned, un-privatised networks in the sector efficiently, will, via Broadband Infraco be able to bring down infrastructure prices.

The ownership and control of Broadband Infraco does not fall under the Department of Communications (as Sentech does) but under the Department of Public Enterprise. In the control of the Department of Public Enterprise, it could be possible that Broadband Infraco could bring about the change that Sentech was not able to. The Department of Public Enterprises (2008) justifies government ownership of a national backbone by stating that in order to achieve the goals of the accelerated economic growth and ensure higher ICT penetration levels and affordable broadband connectivity, government should continue to own and invest in communications infrastructure. Although the establishment of Broadband Infraco could be seen as a positive move by the government in addressing Internet diffusion, it raises questions of the government's liberalisation intentions. By owning a national telecommunications backbone, telecommunication companies and VANS will be as reliant on Broadband Infraco as they are on the government owned Telkom's national backbone. Broadband Infraco will merely create a duopoly, two monopolies both owned and controlled by the South African government.

The establishment of Broadband Infraco and its potential impact "has created heated debates between industry exports and industry players" (Charley Lewis, interview 2 November 2009). These debates tend to focus on the ownership patterns of Broadband Infraco. Winile Lamini argues that "the role of government in infrastructural projects in South Africa is not a new trend and government involvement in communication infrastructure should be welcomed" (interview 26 October 2009). Charley Lewis agrees by stating that "although ownership of Broadband Infraco should be debated, focus must be put on the benefits of added competition within the national fibre backbone" (interview 2 November 2009). Although added competition within the national backbone has the potential increase to Internet diffusion through lower costs, it is still questionable whether Broadband Infraco will bring with it significant benefits. Communication consultant, Suveer Ramdhani has stated that "Broadband Infraco will do nothing or if anything do very little for South African Internet" (MyBroadband Conference 12 November 2009).

This statement is in light of the fact that the government has failed to address the issue of Internet connectivity in South Africa through its ownership of Telkom and to a certain extent through the ownership of Sentech. It can thus be argued that Broadband Infraco, like Telkom, could be used as an additional 'cash cow' for the government at the expense of the spread of Internet diffusion.

The South African governments growing involvement in the telecommunication industry may lead to a mix of positive and negatives effects on the diffusion of Internet and other ICTs. However its involvement poses serious issue from a regulatory prospect and goes against world trends and international best practises. Esselaar and Gillwald (2007: 12) argue that globally, the move away from State involvement in the operational side of the sector, to a State role in determination of the policy framework only, has accompanied increased competition and been associated with improved penetration of ICT services. With an effectively regulated environment less involvement has also been associated with reduced prices. Where the State has been an effective mobiliser of ICT development, such as in Asian largest economic nations, the State has been characterised by a highly-skilled bureaucracy, high levels of capital or the ability to mobilise private capital to deliver on sophisticated and integrated development plans (Esselaar and Gillwald 2007: 12).

The global move towards privatisation and away for government ownership has also been justified in terms of the need for costly infrastructural improvements. Pisciotta (1997: 333) suggests that particularly in developing countries, investment in telecom infrastructure is considered to be a necessary foundation for economic growth. Massive investment is required to combat low telephone densities and poor service quality and to take advantage of modern technologies. Such investments are far beyond the reach of many governments that have other social and development programs in urgent need of funding. Private sector investment through privatisation of the national carrier or other forms of private sector involvement is often the only recourse. Many countries have also realised that continued lack of investment, particularly in new technologies, leaves the country vulnerable to loss of revenue through by-pass, at either the local or international level (Pisciotta 1997: 333).

Although it has been argued throughout this subchapter that direct government operational involvement in the telecommunication sector can hinder the growth of the market, Makaya and Roberts (2003: 45) suggest that areas in need of infrastructural upgrade or rollout and ambitious programmes aimed at 'technological leapfrogging' may benefit from initial government support. This is more so given the risks these projects pose and the externalities that they will generate. Even in the United States where government involvement is kept to a minimum in the telecoms sector, government involvement in certain projects have been seen to be beneficial. This is especially true in rural areas with poor provision and in cases where significant upgrading is required and where there have been problems with under-investment by the private sector. Direct public sector investment in infrastructure has successfully extended services and has been financially viable based on the returns to the government provider from the network use (Makaya and Roberts 2003: 45). This case could be true for Broadband Infraco. As the project is extremely capital intensive with the aim of providing low cost infrastructural access and low cost ICT access to under-serviced areas, it is unlikely that a project of this nature would be seen as profitable enough for a private consortium investment. It thus might be the case that if not for government involvement, the project would be unlikely to materialise.

However, Esselaar and Gillwald (2007: 12) state that with the challenges of human capital necessary to deliver on core State functions highlighted within government itself, and the benefits of shifting investment risk from the public to the private sector under conditions of increased competition, the ability of the State to deliver better than the market is open to question

6.4. The Failures of Universal Service and Universal Access

To achieve the goals of universal service and universal access as proscribed by governments, Universal Service Obligations are generally compelled on telecom operators. Hodge (2003b: 2) agrees to the above by adding that a Universal Service Obligation involves imposing a target for the roll-out of either residential or community access over a predetermined time period as part of an operating licence. The target for this service will be uneconomic customers, uneconomic areas, or

uneconomic services (for example payphones). The need for universal access and for a Universal Service Obligation placed on telecommunication operators may stem from the fact that economic factors dictate which areas or regions are economically viable to lay costly infrastructure. The above notion leads to operators concentrating infrastructure in areas that will provide the largest profits and returns on investment at the expense of those living outside such areas. Neotel being a new telecommunication operator has continued to reinforce this notion by initially concentrating infrastructure in three major economic hubs of Gauteng, Durban and Cape Town. Universal access, universal service and/or Universal Service Obligations will aid in distributing infrastructure to all areas and regions of a country thus increasing Internet diffusion in the short and long term as well as aid in bridging the digital divide.

To a certain extent universal access does existent in South Africa in the form of access to public telephones. The South African universal access model provides for a public telephone to be located within a travelling distance of thirty minutes anywhere in the country (Gyamfi 2005: 24). All telecommunication licensees, Telkom, Vodacom, MTN, Cell C and Neotel, are obliged to rollout payphones and/or community service telephones in under-serviced areas. The exact number of payphones or community service telephones has been established under each company's licence conditions. In addition to the rollout of community telephones Neotel is also oblige to establish Internet laboratories in rural schools. Sentech is exempt from rolling out telephone services but is obliged to establish Internet labs in rural schools. As Sentech is moving away from Internet services, it is now unclear as to whether their Universal Service Obligation to rollout Internet services is still applicable. The table below illustrates the Universal Service Obligations (rollout and community service obligations) for each licence holder:

Licence Holder	Rollout Obligation	Community Service Obligations
Telkom	· 2.69 million lines to be brought into service of which: · 1.676 million be in under-serviced areas · 20,246 for priority customers (e.g.: schools, clinics and libraries) · 3204 for villages	· 120,000 payphones
Vodacom	· 60 percent population coverage in 2 years · 70 percent population coverage in 4 year	· 22,000 community service telephones in underserviced areas over 5 years · low community service tariff
MTN	· 60 percent population coverage in 2 years · 70 percent population coverage in 4 years	· 7,500 community service telephones in underserviced areas over 5 years · low community service tariff
Cell C	·8 percent geographic coverage in 5 years, · 40 percent with roaming agreements · 60 percent population coverage in 5 years; 80 percent through roaming agreements in 1 year	· 52,000 community service telephones in underserviced areas over 7 years · low community service tariff
Neotel	· Coverage of all Metropolis in 5 years · 80 percent of territory in 10 years	· 30,000 community service telephones in rural areas over 10 years · 2500 Internet labs in rural schools over 10 years
Sentech	None	· 500 Internet labs in rural schools over 5 years

Source: Hodge (2003b: 3-4); USA (2006: 20)

As evident in the above table, apart from Telkom's rollout obligation, there are no requirements made in the other operator's obligations to lay telephone lines directly to the end users premises. There are also no provisions made to rollout Internet access to ones premises. Although the rollout of Internet access to individuals is not mandatory, Telkom's obligation to install 2.69 million lines in exchange for an extension on its monopoly brought with it a 'stepping stone' to for those without Internet access to gain connectivity more easily. However, as mentioned in The Regulator, Regulation and Policy Making subchapter, Telkom's rollout obligations in the long run were a complete failure with around two thirds of all new lines being disconnected. In some of the rural areas the rates of discontinuation have been as

high as between fifty and seventy percent. Most lines were disconnected within a few months of activation due to economic and not technical reasons (Msimang 2006: 217). Thus in essence Telkom's extended exclusivity was granted in exchange for the installation of lines in under-serviced areas and not necessarily to increase long-term penetration.

By May 2002, Telkom completed the second highest access line cumulative annual growth rate in the world, second only to Deutsche Telekom's rollout in Hungary. Over the five years Telkom installed some 2.61 million lines (gross) and saw its total line increase from 4,645,065 to 5,500,000. Similarly both Vodacom and MTN successfully completed the fulfilment of their respective Community Service Obligations (Barendse 2004: 57). Telkom fell just 11 448 short of the 2.69 million target for new lines to be installed between 1997 and 2002 because the company elected not to rollout lines in the last year where it was deemed uneconomical to do so and rather selected to pay a fine instead (Makaya and Roberts 2003: 48-49). Given the fact that Telkom was easily able to financially and physically rollout out it's prescribe targets but did not have the ability to sustain the subscriptions suggests that the problems lay within the Universal Service Obligations itself. Hodge (2003b: 6) attributes two reasons why Telkom's rollout obligations were a policy failure: firstly, the rollout targets were themselves set with a limited information set and in an uncertain environment, making their suitability subject to enormous potential error. Secondly, the rollout targets, whether for residential use or payphone access, were implemented with inflexible terms, making them unable to adapt to potential changes in the market.

Telkom's rollout obligations came with little conditions and regulations and the company was left with the responsibility of defining what constituted under-serviced areas and what defined 'needy people' and 'priority costumers'. Furthermore, little insight and thought was given to the feasibility and sustainability of rolling out telecommunication infrastructure to rural and lower-income customers. Supporting this notion, Teljeur et al (2003: 4-5) argue that the major failure points in Telkom's rollout obligations was that regulation lacked and that Telkom was left to its own discretion on a number of issues including the identification of under-serviced areas.

Teljeur et al (2003: 4-5) further argue that the licence obligations provided no substantive measurement indicator for how long a new customer should remain on the network for it to be counted toward the rollout obligation before being disconnected because the subscriber was unable to afford the new service.

This inability to adapt to market changes also proved detrimental to Telkom's rollout obligations as it was not able to compete with Vodacom and MTN which were both experiencing enormous growth at the time as a result of high consumer uptake of cellular services, particularly pre-paid cellular services. Although cell phone call charges were and still are considerably higher compared to fixed-line call charges they require no monthly fees, making them more favourable to lower income groups (Hodge 2003b: 9). Horwitz and Currie (2007: 446) suggest that in addition to inflexible terms, Telkom's high prices for line rental and a sociologically inappropriate billing mechanism for rural areas were to blame for the disconnection of the vast majority of the new lines. Horwitz and Currie (2007: 446) further suggest that whereas access to telephone service in South Africa has improved considerably since the introduction of Universal Service Obligations, gains in connectivity have been accomplished almost entirely due to the market-led growth of pre-paid mobile telephony rather than by the legislatively mandated rollout of the fixed line network by Telkom. It is unclear whether Telkom's rollout obligation, had it been successful would have had a large impact on Internet diffusion as no audit of the operators rollout obligations during its exclusivity period has ever been conducted by ICASA (Msimang 2006: 234). One interviewee agreed and added that "it is a pity that Telkom obligations were not sustainable because its expansion could have increased the number of Internet users maybe not now but definitely in the future" (anonymous interview 29 September 2009).

Penalties for not adhering to ones Universal Service Obligations can also be seen as having a negative effect on the rollout of services stipulated in ones obligations. In 2006, Telkom was fined fifteen million Rand for not providing basic services in under-serviced areas as outlined in their licence conditions. The fine was minimal when comparing it to the R9.3 billon profit Telkom declared in the same year (Telecoms Action Group 2007). Having a Universal Service Obligation does place

strain on telecommunication operators but is essential for the diffusion of Internet in the short and long-term. By looking at the fine imposed on Telkom, it becomes clear that it is more affordable for telecom operators to pay the fines imposed on them instead of rolling out expensive infrastructure to areas where it is uneconomical to do so, and as outlined by their licence conditions. Telkom has continued to prove this notion in the past by electing to pay monetary penalties instead honouring its obligations. Until stricter regulations and policies are established, it is unlikely the telecom operators will not adhere seriously enough to their Universal Service Obligation nor would the diffusion of telecoms and Internet benefit from it.

Although Telkom's rollout obligations had the long-term potential to increase Internet diffusion, there is still the issue that obligations have not been extended to incorporate Internet access in homes. Gyamfi (2005: 24) argues that in this technological age, where information and communication are acquired and disseminated through different sources and media, access to a working telephone is no longer sufficient to enable people to participate in the 'information age'. The concept of universal access should therefore be expanded to include access to a telephone, a computer and the Internet. Agreeing to this notion, Winile Lamini suggested that "one of the problems facing universal access in South Africa is that Universal Service Obligations are outdated and make no provisions for new technologies and the growing needs of people" (interview, 26 October 2009). In order to have a positive effect on Internet diffusion, there is a need for Universal Service Obligations to be updated to include providing telephones lines to homes and telephone lines that are Internet enabled Great Britain is an example of a country which has continued to modernise and adjust Universal Service Obligations to meet different and growing demands of their citizens.

In Britain the former State-owned monopoly, British Telecom (BT), has been given a Universal Service Obligation by the British communication regulator Ofcom (Office of Communication) that has introduced provisions for Internet access. Ofcom (2005) claims that a Universal Service Obligations placed on BT ensures that every Briton who wants a fixed line service is entitled to one, no matter their geographic location or their income group. BT is also obliged to structure a repayment plan that suites all

income groups as well as provide a telephone line that is able to receive basic Internet services although the minimum required speed of the line has to be only mere 28kps: a speed well below world trends. By instituting a similar Universal Service Obligation on the South African telecommunication operators may aid Internet diffusion by providing under-serviced areas with infrastructure and low-income groups with affordable voice and data services. The introduction of this type of universal service through beneficial Universal Service Obligations promotes the notion that governments are attempting to help the diffusion Internet and brings ICT issues and policy amendments forward on the government agenda (Crémer 2001: 10).

It must be understood that Britain's geographic landscape, GDP per capita, population density and e-readiness allows for the rollout of infrastructure at faster and cheaper rate than would be possible in South Africa. As a result, one is unable to compare Universal Service Obligations imposed on operators in the two countries. However, the Universal Service Obligations imposed on BT provides a good example of the potential such obligations can have on Internet diffusion. Currently, the UK has over forty six million Internet users which equates to one of the highest penetration rate in the world with 76.4 percent of the population having Internet access (Internet World Stats 2009a). In an attempt to modernise universal service and access, the British government issued a recent report, entitled 'Digital Britain', which has made provisions to guarantee that every household in Britain would have broadband access (at speeds of at least 2Mbs) by 2012 (Tryhorn 2009). Obligations will need to continually adjust to facilitate technological improvements and societies ever changing needs. The updating and modernising of Universal Service Obligations are thus pivotal for ICT and Internet diffusion as well as necessary for a country to achieve its universal service and universal access goals. One organisation in South Africa which has been mandated to provide recommendations on Universal Service Obligation changes and strive for universal access and service is the Universal Service and Access Agency of South Africa (USAASA).

The USAASA which was established by Section 80 of the ECA has been granted the task of promoting the goals of universal access and universal service especially in the under-serviced areas of South Africa (USAASA 2008a). Formally known as the

Universal Service Agency (USA), the USAASA still derives its core mandate from the Telecommunications Act of 1996 (and The Telecommunications Amendment Act of 2001) but underwent a name change with the enactment of the ECA. As per its mandate the statuary body has the responsibility for foster the adoption and the use of new methods of attaining universal access and service; encourage, facilitate and offer guidance for the adoption of universal access and service; and manage the Universal Access and Service Fund (USAF). It is also responsible for making recommendations to the Minister of Communications to determine what constitutes universal access (USAASA 2008a). The then USA was created in order to rectify the inequalities in telecommunication and ICT access created by the Apartheid regime through the promotion of universal service and access. In doing so, the agency would increase access to ICTs so that the 'Information Age' would start to benefit all South Africans. Its first objective was to create policies to promote and even entrench the notion of universal service into the minds of ordinary citizens as well as provide provisions for affordable access to telecoms and ICTs (Benjamin 1999: 198-199). Over its lifespan the USA, and now the USAASA, has had the potential to have a major positive effect on Internet diffusion in South Africa, however, it has to large extent failed to achieve many of its own goals and the goals of universal access and service.

As of August 2008, three years after the establishment of the USAASA, there was still uncertainty within the agency over the definitions of 'universal service 'and 'universal accesses' (USAASA 2008b). The agency has been criticised for doing very little in terms of promoting universal service and making little to no impact on telecommunication and Internet diffusion. In 2009 the USAASA was asked by Parliament's Communications Committee "if anyone would miss it if it did not exist" (Vecchiatto 2009). The Committee also stated to the agency that "[we're] not saying that you are not doing some good work, but the problem is that the scale is so small that it makes no difference" (Vecchiatto 2009). These comments by Parliament's Communications Committee have been in response to USAASA not being able to achieve any meaningful change as well as failing to stimulate public awareness of benefits of universal service and universal access. One issue that has been attributed to this is agency's lacks human resources, "like at ICASA, one of the major problems facing UAASA is losing skilled personal to the lucrative private sector" (Winile

Lamini, interview 26 October 2009). In addition to skill shortages, the agency has lacked leadership following the firing of former CEO James Theledi in February 2009 for charges of sexual harassment. The negative publicity the agency received after the dismissal has led to mass exodus of top level staff and the inability to attract a suitable candidate for the CEO position. Currently top level positions include the CFO, senior manager of human resources and the head of corporate affairs are vacant. One interviewee responded to USAASA lack of top level personal by posing the following question: "how do you think the USAASA is going fulfil its mandate when it's not even able to fill basic positions?" (anonymous interview, 29 September 2009).

The policies that have been pursued by the agency have been widely seen as ineffective and flawed, which the USAASA has itself have recognised (Barnard and Gianella 2008: 104) Winile Lamini confirmed this by stating that "in the past the USAASA pursued many ineffective policies with very few positive outcomes" (interview, 20 September 2009). Another interviewee provided insight into USAASA policies by claiming that "the USAASA has no desire in producing policies and prefers to just talk rather than actually make decisions (anonymous interview, 15 October 2009). Having developed no universal service policy and thus having failed to implement its mandate, the Agency has became the direct mechanism for implementing projects identified by the Department of Communication rather than an assessor of projects that would be implemented by other players. Taking on an implementation function was neither intended by its Agency's mandate nor by the legislation that created it (Teljeur et al 2003: 21).

Acknowledging that policy making and Universal Service Obligations alone would not be sufficient to ensure a rapid increase in telecommunications access for the poor, government through the Telecommunication Act of 1996 created the Universal Service Fund (USF) which would be administered by the USAASA (under the Department of Communications) and would be used to contribute and subsidise the rollout of universal service and access programs (Gillwald 2005: 475). Universal Service Funds are systems designed to enhance and achieve universal service and access goals. Achieving universality in ICT is a capital-intensive endeavour and thus such funds have been used in many countries to improve access through network

rollouts and to finance universal service projects (Intelecon 2002). The same purpose of the fund is found in South Africa but with an additional duty of paying subsidies to assist needy persons in accessing ICTs (Hodge 2003b: 3).

With the enactment of the ECA in 2005, the USF underwent a name change and became known as the Universal Service and Access Fund (USAF). The new act brought with it little change to the structure of the fund with the exception of minor changes to how it would be funded. Currently all telecommunication licensees (issued by ICASA) including VANS licensees are obliged to contribute a percentage of their annual turnover to the fund each year. VANS contribute no more than 0.5 percent of their annual turnover. As the fund depends on a percentage of turnover, the yearly contributions depend on the level of profitability telecommunication companies achieved in that particular year (Mandioma and Muyingi 2006: 4). The way in which the monies get transferred into the fund is often seen as unnecessarily complicated and displays a lack of co-ordination between the USAASA, ICASA and the Department of Communication. ICASA collects the funds from the operators and then sends them to the Department of Communications. In turn the Department then hands over the funds to the USAASA to place into the fund. These steps often lead to delays in funds being received and thus allocated (Makaya and Roberts 2003: 57).

The fund has been plagued by many issues that have obstructed it from achieving its goals. Such issues relate to delays in finding suitable definitions to 'universal service', 'universal access' and 'needy people' and presenting them to the Minister as required by the Agency's mandate. Furthermore, lack of policy directive and leadership issues has resulted in payments from the fund not being issued. In 2008, around R850 million was sitting unused in the funds account with little direction to where that money would be best spent (Vecchiatto 2008). One interviewee added that "it is still unclear to many as to why USAASA is not allocating money from the funds but it is speculated that it does not know who to issue the funds to which is a problem because it could really be put to very good use" (anonymous interview, 15 October 2009). In the past, and to a certain extent at present, USAASA has been inclined to "throw all its eggs into one basket and back the establishment of telecentres with all the [USAF] monies" (Hodge 2003b: 18). The continual investment into telecentres

has had varying degrees of success especially in the areas of Internet and ICT diffusion.

6.4.1. Community Access Centres

Mandioma and Muyingi (2006: 4) suggest that the USAASA, by the beginning of 2006, had established 133 telecentres nationwide in disadvantaged rural communities. These community access centres or telecentres are telecommunication access points deployed in unserviced and under-serviced rural areas to provide access to electronic communications services. The purpose of setting up these centres is to provide universal access to ICTs in communities where telecommunication infrastructure is limited or non-existent (Mandioma and Muyingi 2006: 4). The unserved areas are defined as those that do not have telecommunications access whilst the under-serviced are areas that have teledensity lower than five percent. The telecentres have enabled communities to access basic services like computers, telephones, the Internet and ICT training services. At these multipurpose telecentres, ICT facilities and services are made available to the public on a pay-per-use basis. The fee charged is more affordable than the cost of renting a telephone line and services or purchasing a computer or any other ICT tool. Telecentres thus contribute to the elimination of the barriers that prevent people in South Africa from using ICTs (Gyamfi 2005: 25). The establishment and funding of telecentres has brought with it major controversy and debate over how effect the rollout has been on ICT diffusion, the subsequent failures of the project and whether funding could have been better spent elsewhere. The USAASA's involvement in the implementation of telecentres cements the fact that the Agency has continued to move away from its core mandate and instead act as mechanism for implementer of projects identified by the Department of Communication as critical to universal access.

A study conducted by Benjamin (2003) found that of the first 65 telecentres that had been established between 1997 and 2000, 21 (or 32 percent) were not operating, 12 (18 percent) were operating without a phone, 2 (3 percent) were operating without any computers, and 20 (47 percent) had both phones and computers working (Benjamin 2001: 3-4). It is evident from the above that from their onset, telecentres have faced

enormous issues generally pertaining to their long-term success. Benjamin (2003: 9-12) attributes numerous reasons that have resulted in their failure by suggesting that the South African styled telecentres were inappropriate for delivering broad access to ICTs mainly because they provided far more than was necessary and this raised the cost of such centres dramatically. A typical South African telecentres would have cost about between R150, 000 and R250, 000 at the time and would generally included five computers with Internet access amongst other communication devices. The higher than expected costs lead to a limited number of telecentres and this has therefore limited the extent of improvement in ICTs. There was little or no effort to match the equipment provided with the specific needs of the local area. This was partly due to the centralised purchasing of equipment from the Agency's central office (Benjamin 2003: 9-12; Hodge 2003: 19). It has also been proposed by Benjamin (2001) that the Agency continue to rollout telecentres but within its intended functions of research, advocacy and monitoring of implementation, rather than be directly responsible for implementation.

Currently none of the telecentres have proven to be profitable enough to cover the depreciation of equipment, let alone being able to pay back the original investment Teljeur (2003: 22). In order to address the problems encountered by the telecentres, the USAASA has, since 2007, embarked on a rehabilitation program by upgrading facilities and equipment that had become obsolete. The ongoing rehabilitation program (which is funded by the USAF) aims to bring the centres up to standard to allow them to fulfil their purpose of universal access (USAASA 2008c: 17). Though the rehabilitation program can be seen as a positive move in aiding Internet diffusion, the issue of feasibility and sustainability of the centres are still not being addressed. Given the telecentres problematic history, it is still unlikely that in their current form they will ever be able to be self-sustainable.

Although legislation has never mentioned any specific projects, from its inception the Department of Communications has urged the USAASA to set up telecentres. In practice and with monies received from the USAF, this has been the Agency's main activity even though there are many other aspects to its mandate (Benjamin 2003: 1-2). The establishing telecentres country-wide do have the potential to have a great

positive effect on the diffusion of Internet, the bridging of the digital divide and at the same time making positive strides in achieving universal access on a larger scale. For those living in areas with low teledensity and those that lack the adequate resources to gain Internet connectivity, telecentres may prove essential in order to access ICTs. As telecentres are currently the main focus of the USAASA, steps are being taken to improve the telecentres model through addressing facilities and by making them more conducive to the areas in which they serve. Winile Lamini stated that "it is obvious that the Agency has made a number of mistakes in the past when it comes to telecentres but as it is our main goal now, we are now pushing for a better model and more beneficial practices" (interview 26 October 2009). It is still to be seen whether new measures will be taken to make telecentres profitable and less reliant on continual funding from the Agency.

One of the more successful initiatives that have been created by the USAASA is the rollout of Cyber Laboratories in rural and underprivileged schools. Mandioma and Muyingi (2006: 4) highlight that schools in under-served and lower income communities have been used as access points to ICT through the establishment of Cyber Laboratories by the USAASA. By December 2005, two hundred and thirty five Cyber Labs had been established in schools in all of the nine provinces of South Africa. These laboratories provide ICT services and computer literacy training to the schools in the communities. The schools are responsible for maintenance costs while Internet connectivity for the initial 12 months is paid for by the Agency. The Cyber Laboratories are equipped with thirty computers, one photocopying machine, and one printer. Fax machines are provided when there is a need. The USAASA provides for the whole setup and security of these labs. Once the establishment of a laboratory is complete, they fall under the ownership of the particular school and thus indirectly owned by the Department of Education. There is a tendency that Cyber Laboratories have been more successful than telecentres however the uptake and usage of the incentive is still regarded as very low. One likely reason for this is the fact that ICT training is not integrated into some school's curriculum which leads to the laboratories being underutilised (USAASA 2009: 19). This can be seen as a problem outside the control of the Agency and an issue that falls under the responsibility of the Department of Education. The cost of installing and lack of monitory resources has

hindered the expansion of Cyber Laboratories in more schools across the country. This is most probably due to the USAASA dedicating financial and human resources in uplifting and expanding its failed telecentre program. Cyber Laboratories, coupled with adequate training, provide the answer to enticing people from a young age to engage and benefit from ICTs and at the same time provides a platform for the expansion of Internet diffusion.

6.4.2. Under-Serviced Area Licences

In addition to using the USAF to fund telecentres and Cyber Laboratories, the USAASA in the past has been tasked with providing funding and guidance for the establishments of Under-Service Area Licences (USALs) as proscribed by the Telecommunications Amendment Act of 2001. USALs are defined as SMMEs, black empowered operators who are licensed to provide public telecommunication services in under-serviced areas with a teledensity of five percent or less with the Minister of Communication determining the under-serviced areas. Gillwald (2006b: 7) highlights that under section 40 of the Telecommunications Amendment Act USALs are required to provide telecommunications services, including Voice over Internet Protocol (VoIP), fixed mobile services, and public pay telephones within the areas in which they service. The Act made no provision for Internet access but it was thought that through the provision of telephone services (especially VoIP) that Internet access would follow shortly afterwards. The Minister through ICASA had granted seven of the initial ten applicants licences by June 2004[19]. The USAASA with funding from the USAF would finance each licensee R5 million per annum for a period of three years for the development and rollout of infrastructure. With R35 million being paid out to operators in the first year and over R10 million in the second year, none of the seven operators have been successful in launching their services. Marred in difficulties, funding has been subsequently suspendered by the USAASA until a sustainable model on the business case, regulatory, financial support and policy be developed (USAASA 2009: 24). Given numerous problems and delays in issuing the

[19] See Appendix B for a graphic representation of the original seven USALs and the under-serviced areas in which they would operator.

initial licences coupled with delays in addressing the current problems it is unlikely that any resolution will be found anytime soon.

By June 2004 all seven USALs had been licensed but regulatory issues and delays by ICASA in the issuing these licences meant that the first licences only became operational in 2005. Gillwald (2006b: 6) argues that regulatory challenges arising from the 2001 Amendment Act had overwhelmed ICASA. It had at the time been engaged with the Ministry in the chaotic joint licensing of the fixed-line competitor (Neotel) to Telkom, and the licensing of signal distributor, Sentech, to offer multimedia services and an international gateway. With the September 2004 ministerial policy directives permitting VANs to offer voice services and the deregulation of the pay telephone market, the business case of USALs had not only ceased to exist, but the regulator was again forced to turn its attention to new developments that were underpinned by more powerful financial interests and was divert from issuing USAL licences. The delays encountered as a result of ICASA's inability to issue licenses has been one of the reasons recognized for the failures of USALs operators. Gillwald (2006b: 7) further argues that the process and selection of the licence areas had been filled with controversy as the mobile and fixed line incumbent operators claimed that most of the areas selected had a teledensity of above five percent at the time. This was due to the fact that the Ministry drew on teledensity figures from the 1996 census thus not taking into account the growth of the cellular market and expansion of Telkom's rollout obligation.

In addition to licensing issues, the USALs project has been overshadowed by various challenges including shortage of capital, interconnection agreements with incumbent operators not being favourable, lack of financial support, poor business cases and lack of effective policy (USAASA 2009: 24). Given the problems facing USALs and their incapability to launch even after numerous years and funding from the USAF, it could be argued that the project was a failure from its onset. Winile Lamini agreed to this notion by stating that "from the beginning USALs have always been a policy failure" (interview 26 October 2009). This policy failure could be as a result of poor research into the potential profitably of USALs. Charley Lewis also argued that "the operators

never had a sound financial plan or a suitable business case" (interview 2 November 2009).

Certain USALs had been given areas with major commercial or government centres, such as East London, providing them with adequate clientele and room for growth. However, government, business, and urban residential inhabitants were already being serviced by Telkom and the mobile operators. Thus attracting these customers away from the better known, if not preferred operators, was unlikely without very innovative pricing or bundling models, which had been eroded by unsupportive regulatory frameworks, continued delays, and new competitors to the USALs (Gillwald 2006b: 7-8). The continuous delays that USALs encountered had long term negative effects as one interviewee pointed out that "while USALs were waiting for their licences to be finalised, Vodacom, MTN and even Telkom were expanding their networks and operations more and more into these allege under-serviced areas" (anonymous interview 15 October 2009).

While the USALs are SMMEs with a small licence area, they are in direct competition with large corporations that operate throughout South Africa and beyond. This difference in scale can be seen to be both an advantage and a disadvantage to the USALs (van Leijden and Monasso 2005: 27-28). van Leijden and Monasso (2005: 27-28) suggests that the greatest advantage for small operator is that they often have more flexibility to adjust to the needs of the customer, but at the same time has the disadvantage of having less capital and human resources available. Another issue worth noting could be negotiations between the parties involved. Where the large operators for the most part have a significant legal department, the USALs usually have only a few employees, especially in their start-up period. Furthermore, any possible regulatory solutions that could support the USALs in their struggle against the larger operators could be considered as anti-competitive.

Although the licensing of USALs was considerably delayed and the controversial process questioned, the project had the prospective to fulfil universal access and universal service in areas which were found to be uneconomical for Telkom and for other operators. As no USALs have become operational, it is unclear what effect they

could and would have on Internet diffusion. From a liberalised sector point of view, even with mobile and fixed line operators having a presence in such areas another operator would have brought additional, much needed competition which would have hopefully led to price reductions, innovative offerings and better service and thus eventually contributing positively to the diffusion of Internet. It is likely that future USALs will face many issues. Offering services in areas deemed uneconomical presents a difficult challenge requiring effective regulation and policy directive, which are both currently lacking.

It becomes evident from the above that South Africa has struggled to achieve universal access and service as set out by its various acts and policies. The omission of Internet access from Universal Service Obligations can be seen as a major hindrance in the diffusion of Internet. Until measures are in place to insure that Internet access features prominently in universal access and universal service policies, South Africa will continue to fall behind world standards which in turn will lead to even greater digital divide. With the introduction of the Draft Broadband Policy in 2009, it is apparent that policy makers are attempting to modernise universal service and access by making broadband an integral part of future programs and policies. Provision 1.1.2 of the Draft Broadband Policy states that "Broadband infrastructure is central in achieving the goal of digital inclusion, enabling universal, sustainable, ubiquitous and affordable access to ICT's by all, and providing sustainable connectivity and access to remote and marginalized areas at national, provincial and municipal levels". Provision 4.1.1.1 also states that "Each citizen in South Africa has a right to have access to basic broadband". The policy is a positive move for broadband and Internet diffusion and it is hoped that regulators, policy makers and the USAASA will draw on problems faced in the past and produce effect policies and programs that will address access disparities between urban and rural areas.

6.5. Pricing and Undersea Cables

The high cost associated with Internet access, dialup and broadband, has been one of the most significant issues facing the diffusion of Internet in South Africa. It could be argued that the three Critical Negotiation Issues discussed above have been a direct

influence on Internet access pricing structures found in the past and at present. Supporting this notion, it has been stated that "high prices are a direct result of policy outcomes" (Ewan Sutherland, IWeek 2 September 2009). The high cost of Internet access are also in stark contrast with the objectives of Universal Access and Universal Service being promoted by the Department of Communication, the USAASA and the government as a whole. Limited competition and lack of policy directives addressing high costs can also been seen to influencing current pricing structures. Another attribution which has had a serious and lasting impact over the high costs of Internet access is the limited amount of undersea cables and a monopoly ownership of the only one of the cables that connects South Africa with the rest of the world.

The South African public have continued to face some of the highest voice and data costs in the world. In 2005, the South Africa Foundation (now known as Business Leadership South Africa) conducted a study to determine how expensive Internet access in South Africa was compared to the rest of world. The comparison was conducted against Hong Kong, Canada, Israel, Norway, Singapore, Sweden, South Korea, the United States, India, Brazil, Thailand, Philippines, Malaysia and Morocco. These countries were selected as they give the best 'cross-section' of the world economies and certain countries selected are equivalent to South Africa in terms of telecommunication infrastructure and policy (South Africa Foundation 2005: 14-16). South Africa Foundation (2005: 18-19) showed that a Telkom's 512kps ADSL offering was the most expensive of all countries studied: 148 percent more expensive than the average price. This study excluded an additional ISP fee needed for ADSL connectivity in South Africa. Although prices have decreased since 2005, when the study was compiled, prices in the comparator countries have also been dropping thus Internet access costs still remain the highest of all fifteen countries (Barnard and Gianella 2008: 103). It is evident that the cost of fixed-line Internet access (dialup and broadband) is extremely high compared to the rest of the world, however, wireless broadband prices are internationally competitive but still expensive and out of reach for the majority of the population (Cohen 2008: 120).

The high costs of Internet access (especially broadband Internet) are as a result of the high charges levied on ISPs for access to Telkom's network. Telkom's former

government granted monopoly compelled ISPs to purchase access to vital infrastructure owned by Telkom at inflated prices. These largely unregulated charges were in turn passed onto end-users. Gillwald (2005: 478) argues that the high cost of Telkom's basic fixed-line telephony services has been accompanied by the high facility-leasing and interconnection tariffs it charges ISPs. Whilst raising prices above cost is incentive-compatible for an incumbent required to extend its network and with a monopoly precisely to ensure revenues from such activities, this has impacted negatively on the ISPs segment of the sector, a segment that is critical to the development of a fully networked economy and to the diffusion of Internet. Despite the intention of policy and law to include the regulation of these wholesale prices, Telkom's tight control of access to international data bandwidth and the relatively high prices ISPs are charged for access to this bandwidth tend to continue undisturbed. This negative impact has not only been felt by consumers. High data communications costs have had a large impact on the economy as they are a major consideration in companies' determination of investment destinations, even for non-telecommunications activities (Gillwald 2005: 478).

As Telkom owns and operates its own ISP (Telkom Internet), its tight control over international bandwidth and the high prices it charges ISPs for access to facilities can be seen as anti-competitive behaviour. Horwitz and Currie (2007: 451) suggests that as legislation in the past provided Telkom with the power and incentive to favour its own offerings and/or hinder those of competitors. This has led to artificially inflated prices in the provision of wholesale products which continue to affect the market today. As with other VANS, over eighty percent of the ISPs' costs accrue directly to Telkom for facilities and network usage. Likewise, around eighty percent of Internet customer usage costs go directly to Telkom in the form of telephone line rental and dial-up access call charges and ADSL line rental. Thus, the vast majority of revenue generated through Internet service provision in South Africa has been going directly to Telkom (Gillwald 2005: 479). This once again suggests that the liberalisation of the ISP sector alone can do very little in decreasing prices and thus increasing Internet diffusion. In order for prices to come down significantly enough, liberalisation of Tier-1 Internet providers (e.g.: Telkom and Neotel) is necessary to provide ISPs with better choice in their networking and infrastructural needs. Telkom's monopolistic

and to a certain extend anti-competitive behaviour has been extended to its control of the South Atlantic Telecommunications cable 3/ South Africa Far East undersea cable system (commonly known as the SAT3/SAFE cable system).

6.5.1. International Undersea Cables

One of the underlying causes of the high costs of telecommunications in South Africa and Africa has been and continues to be the charges made for international capacity between countries and especially to other continents. The cost of accessing the Internet in South Africa remains disproportionately more expensive when compared to countries in the northern hemisphere. A major factor in the high costs has in the past been the monopoly for voice and data transmission exercised by Telkom over undersea cables, landing stations and international gateways. The monopoly of undersea cable systems landing in South Africa was originally granted to Telkom because it was held to be a 'natural monopoly' and that direct provision by the State was seen to be the most efficient option. It was also seen as a 'cash cow' that could have been used to fund the construction of national networks within the country. (Esselaar et al 2007: 1). Schmidt and Stork (2008: 2) argue that these monopolistic practices and ownership of cable systems have impacted negatively, not only on the development of the ICT sector, but also, as it is a major input cost of business, on national economies. With the exponential uptake and growth in business reliance on Internet services, increased capacity on undersea cables and a decrease in capacity costs are necessary for meeting world standards and improving business competitiveness. Esselaar et al (2007: 1) adds that with the emergence of cellular providers and the increase in ISPs there has been growing demand for access to cheaper and competitive international connections. In addition, where competition has been extended to the supply of international bandwidth it has proved to be successful, having driven down prices and driven up demand.

Up until July 2009 the SAT3/SAFE was the only cable system linking South Africa with Europe and Asia (Cohen 2008: 121). Cohen (2008: 121) argues that Telkom, a part owner of the cable and which has had exclusivity to it in South Africa has generated not only a bottleneck, but the operator has also been accused of charging

users exorbitant prices for access. Telkom charges many times more than other African countries that also use the cable system for international bandwidth. The South African government has acknowledged that one of reasons for the high costs of Internet access is due to South Africa's limited investment in submarine cables and that the government will continue to investment and to promote investment into new cable systems[20] (Department of Public Enterprise 2008).

There have been many proposed new undersea cables which would connect South Africa with the rest of the world and provide additional much needed bandwidth. Launched in July 2009 Seacom, which links South Africa to Africa, India and Europe, was the first cable system built that would directly compete with the SAT3/SAFE system. Through added competition and better wholesale prices, it has been anticipated that Seacom would dramatically reduce Internet access costs for end users in the short- and long-term. Seacom began having an effect on the telecoms industry prior to its activation. Anticipating completion, Telkom began upgrading capacity on its SAT3/SAFE cable and has reduced costs of international bandwidth sold to ISPs and other operators by over fifty percent (price reductions have been implemented year on year since 2007) (Paterson 2009). It has been argued that had it not been for looming competition from Seacom, it would have unlikely that Telkom would have imposed such reductions (van der Merwe 2009).

While costs have been reduced as a result of Seacom, prices cuts have been slow in reaching the end-users. van der Merwe (2009) claims that as undersea cables are laid, ISPs will start having more flexible pricing schemes as they are freed from commitments to Telkom. This is predicted to only largely benefit the end-user after two years, although small decreases should start taking place before then. Additionally, an increase in the number of undersea cables will also drop the entry barrier for new ISPs, the second driver to affordable broadband. As Goldstuck (2009) suggests, price reductions will take time before benefiting end-users but ISPs have already began passing on savings not through lower prices but through provide more for the same price. It been suggested that additional undersea cables will lead to the

[20] See Appendix C for a graphic representation of current and future cable systems landing in South Africa.

fact that "costs will not come down but caps will increase, giving consumers more 'bang for their buck'"[21] ISPs such as Telkom Internet and Mweb have confirmed this move by beginning to increase subscriber's bandwidth caps by between one and two gigabytes, depending on one's package, with no added cost. One interviewee stated that "at the moment profit margins are very tight for ISPs so it is more beneficial for them to give more than drop prices" (anonymous interview, 15 October 2009). Although this can be seen as a positive move, especially for businesses and for those with Internet access, it does not provide much for the diffusion of Internet. Costs associated with Internet access continue to be the greatest obstacle in the uptake of Internet services. Until price decreases continue to be passed on to consumers, Internet access will continue to be inaccessible for a major portion of the population.

In addition to the SAT3/SAFE and Seacom cable system, numerous other cable systems are in various stages of development and planning. By the end of 2011 it is believed that three additional cables will land in South Africa leading to increased completion and eventually lower prices. One interviewee noted that "the more cable systems that service South Africa, the better for consumers and the Internet industry as a whole" (Charley Lewis, interview 2 November 2009). East Africa Submarine Cable System (EASSy) is another planned cable system which will link South Africa with other African countries. Prior to the opening of Seacom, East African countries were reliant on costly satellite uplinks to transfer international bandwidth as no undersea cables ran down the east coast of the continent. EASSy was planned to fill a gap in undersea cable provision to East African countries and also to link up to landlocked countries through fibre optic cables (Esselaar et al 2007: 4-5).

EASSy is the oldest planned cable project which was planned to begin construction by mid December 2007. The project however has been hit with many problems that continue to delay its construction (Muller 2008). Muller (2008) argues that many feared that numerous delays coupled with the landing of Seacom would lead to the EASSy project having trouble gaining continual support and funding. This notion builds on the concept that the numerous cables landing in South Africa would "lead

[21] Broadband Panel Discussion at the MyBroadband Conference, 12 November 2009.

too having much bandwidth available" (Ewan Sutherland, IWeek 2 September 2009). Added competition and an oversupply of bandwidth from a business perspective may lead to a sector that is oversaturated with competition which will in turn lead to low costs that are financially unsustainable by the cable operators and thus unfeasible[22]. Neilson (2009) suggests that because of added competition and increases in the amount of unneeded bandwidth that will become available; it is likely that not all of proposed projects will materialise. Attracting foreign investment into the projects will also become more difficult. Having faced many delays, it is anticipated that EASSy project will be completed in second quarter of 2010; however given the numerous delays in the past, it is uncertain whether the project will meet its deadline.

The WACS (West African Cable System) and the ACE (Africa Coast to Europe) are two undersea cable projects under early development which will link South Africa and Africa with Europe providing a large amount of additional bandwidth to the continent and to the country. Both projects are expected to be complete during 2011 (Song 2009). The WACS cable has the largest capacity of any of the other systems that are active or are in various stages of development, with a massive 5120Gbs capacity. Furthermore, Broadband Infraco is one of the largest investors in the WACS cable system whilst Sentech had signed a landing party agreement to use its telecommunications licence to land ACE in South Africa (Broadband Infraco 2009; MyBroadband 2010). With Sentech and Broadband Infraco's involvement in different cables, two State-owned enterprises will thus compete in the same market. It also been questionable whether Sentech involvement falls outside their mandate and whether the company has the experience in cabling and building landing stations that bring the cables ashore (MyBroadband 2010). Sentech, unlike Broadband Infraco, does not have an established fibre optic national network which will link the ACE cable system to major cities. Given the failure of Sentech's wireless broadband offering, MyWireless, and its subsequent discontinuation, the company's poor track record and funding problems (as discussed in the State Ownership Pattern subchapter) it is arguable that the State enterprise has lost most of their telecoms expertise to the

[22] The financial sustainability was highlighted by Ewan Sutherland in response to a question posed at the IWeek Conference, 2 September 2009.

private telecoms sector as well as lost their credibility in the telecommunication business.

It comes as no surprise that government has elected Sentech to land the ACE cable system given their expanding interest in the ownership and control of infrastructure. The use of State-owned enterprises to rollout infrastructure is likely to continue as it is now being made official with the Draft Broadband Policy. Provision 4.4.3.1 of the Policy states that "Government may use [State-owned enterprises] to achieve certain objectives but this would be determined on a case by case basis…" Government's use of Sentech could also be justified terms of 'if not Sentech then who else?' Broadband Infraco is currently involved with WACS whilst Telkom, Neotel and other private operators are currently involved with the constructing and landing of other cable systems. Sentech thus provides the only other viable option to land ACE as no other companies have the interest or the capital to invest in the multiple systems landing in the country.

A fifth undersea cable system has also been proposed by the New Partnership for Africa's Development (Nepad) called the UhuruNet cable system. If this project is to materialise, it will be the biggest of all three projects. The undersea cable system will circle Africa, linking both the east coast and the west coast with a transatlantic link to Brazil and will consist of a total of forty five thousand kilometres of cable (Kelly 2008). At present, the project has just been proposed and no construction and competition dates have been set or any concrete details have been released. The likelihood of such a large and extensive cables system materialising is also debatable. Although worth mentioning, the project is extremely ambitious and once complete will compete with a vast amount of well established systems that would have already landed in various African States.

Although the South African government has continually supported addition cable systems, there has been controversy over the landing of the cables on South African shores in the past. The Department of Communications and the former Minister of Communication issued guidelines which state that any undersea cable landing in country had to be majority South African owned. This posed serious problems for

both Seacom and EASSy who are both majority foreign owned (ISPA 2007). The Minister and her Departments guidelines came under fire from industry players and critics who suggested that her guidelines for landing rights were merely in place to protect the SAT3/SAFE cable system and thus once again protect Telkom's interests (Kasonde 2008). The land rights were also in direct contrast to the government's continual promise and commitments to market liberalisation. Such guidelines also went against the World Bank's recommendation that suggest that allowing all competing undersea cables equitable landing rights while limiting public sector involvement in telecommunications is the way to reduce prices (ISPA 2007). Broadband Infraco's involvement in the WACS cable system and Sentech's involvement in ACE also goes against the recommendation made by the WTO Agreement on Basic Telecommunications. South African government involvement in undersea cables is on the rise as it is now indirectly involved in the WACS, SAT3/SAFE and ACE systems.

Amid high level critique of the landing guidelines, the Department of Communications has begun a process of refining the landing requirements to allow for foreign ownership. Amongst a negative perception of the monopolistic SAT3/SAFE club consortium a decision was made at the Meeting of African Ministers in Rwanda in 2008 (in which South Africa attended) that cables that were not predominantly locally (African) owned would not in future be permitted to land on the continent (Gillwald and Stork 2009: 33). Through local ownership must be welcomed it does limit the ability to attract foreign investment into such costly projects. The need for attracting foreign investment into various sectors of the economy has been the continual goal of the South African government in order to fulfil its policies on development and year on year growth. In addition, undersea cables are extremely costly projects and it is common practise worldwide that these projects relay on international backing (ISPA 2007). Following heavy high level criticism over the landing rights guidelines issued by the Department of Communication as well as the inevitable landings of foreign backed cable systems it is questionable whether the government will adopt the requirement made at the Meeting of African Ministers.

The high costs associated with Internet access and telecommunication in South Africa has and continues to have a large negative effect on the diffusion of Internet. High costs have also had an effect on universal service and access evident in the widespread disconnections of lines Telkom installed to meet its rollout obligations. As long as Telkom continues to monopolies key infrastructure needed in the provision of Internet services it is unlikely that prices will drop to accommodate the majority of the population. The landing of Seacom which has brought an end to the SAT3/SAFE monopoly coupled with the addition planned cable systems will have a dramatic effect on pricing structures. Agreeing to this notion, Neotel's CTO Angus Hay has stated with regards to cable new and future cable systems that "bandwidth prices have to come down" (MyBroadband Conference, 12 November 2009). How low bandwidth prices will drop and if they will be significant enough for major uptake broadband Internet services is still uncertain as there are "a lot of costs involved with the provision of broadband" (Matthew Tagg, MyBroadband Conference, 12 November 2009). Until Telkom's hold on key national infrastructure needed for the provision of Internet services is challenged by effective completion and/or regulation, it is doubtful whether South Africa will begin benefitting from the vast amount bandwidth capacity entering the country.

6.6 Conclusion

It has been widely discussed throughout this chapter that South Africa's low diffusion on Internet is as result of numerous issues plaguing the telecommunication sector. These issues have been derived from the three Critical Negotiation Issues identified and as described in the Conceptual Framework chapter.

Although the country has made great strides to improve Internet diffusion through regulatory intervention, policies and through Universal Service and Access, governmental interference, regulatory delays and lack of human capital continues to impede developments in the diffusion of Internet. Furthermore, these issues have continued to keep prices artificially high which in turn continue to act as a barrier for uptake. Telkom's monopolistic behaviour, which at times is sanctioned by its major shareholder, the government, continues to place strain on the market in terms of anti-

competitive behaviour and concentration of infrastructure. Telkom's inherent monopoly has also been expanded to the provision of much needed international bandwidth carried through undersea cable systems. With the arrival of Seacom in 2009, Telkom's monopoly on international provision came to an end. This major event together with the arrival of future cable systems is anticipated to have a significant effect on Internet access cost. However, undersea cables alone cannot ensure that access to the Internet becomes affordable and that Internet diffusion is widespread. The liberalisation of the sector coupled with effective regulation, governmental commitment, effective Universal Service Obligations and affordable access are all necessary to positively aid Internet diffusion.

The need for a high diffusion of Internet is essential for continual economic and social growth of the country, to stay internationally competitive and for the strengthening of democracy. The digital divide is apparent in South Africa and until Internet diffusion is widely available and evenly spread, the country will continue to be divided by those who have access to information and those who do not.

Chapter 7: Findings: The Implications of Internet Diffusion on e-Government

7.1. Introduction

The South African government on various levels and in line with its goals of economic growth and sustainability have begun making use of e-Government strategies in an attempt to speed up and streamline service delivery. e-Government is often employed as an innovation mechanism to obtain greater levels of efficiency and effectiveness. Purportedly, because digital government offers substantial performance gains, it has become one of the core elements of information reform. For most government operations, the use of ICTs in the provision of services has become a standard for achieving performance gains (Brown 2007: 178).

South Africa has a strong online presence with numerous governmental departments and agencies having established an online presence through the development of websites. Not all of these websites offer e-Government services but instead provide a minimum amount of information relating to the given department or agency. For the purpose of this study the South African Revenue Service (SARS) and the Department of Labour websites[23] have be analysed to gain a better insight into the type of e-Government services being offered. These two website were selected as they provide an excellent example of a public agency website that is well tailored to the needs of its stakeholders and provides a very attractive and simple design that allows users to quickly find what they are looking for (United Nations 2008: 26).

7.2. SARS and e-Filing

The SARS website or online portal provides individuals and businesses with access to a fast amount of information pertaining to the revenue service and to governing policies, legislation and documentation which are all downloadable and printable. The SARS website also provides access to the well appointed e-filing system. Naidoo

[23]SARS: www.sars.gov.za; Department of Labour: www.labour.gov.za

(2007: 325) states that an early e-Government achievement was the introduction of electronic filing or e-Filing in 2001. The initiative was in accordance with government's broader e-Government strategy of service delivery and streamlining of government agencies. Naidoo (2007: 325) further states that the main aim of the e-Filing system is to facilitate the electronic submission of tax returns and payments by taxpayers and tax practitioners. e-Filing is aimed at improving operational efficiencies in order to deliver a better and quicker service. e-Filing has also enabled corporate entities to submit and pay certain tax returns online. As a result of e-Filing, there has been an increase of over R100 billion in SARS revenue since the inception of the program and has lead to the reduction of personal needed. Furthermore, the streamlining the program has brought has aided in the fight against corruption (Naidoo 2007: 325). The benefit of e-Filing for both SARS and for its 'customers' ties in with the benefits of e-Government which have been outlined by the World Bank. The World Bank (2005) suggests that making use of e-Government services and rolling out e-Government projects can result in "less corruption, increased transparency, greater convenience, revenue growth and/or cost reductions" (World Bank 2005).

7.3. The Department of Labour

The Department of Labour's website is less developed but provides easy access to vital documentation and to labour related legislation. Such information is made available in many of the official languages. The website also provides a link to uFiling where one is able submit UIF (Unemployment Insurance Fund) payments and declarations. uFiling is based on the same principle to e-Filing but is less developed and more limited. The two websites can provide a vast amount of knowledge and documentation for both employers and employees. Furthermore, through the Department of Labour's uFiling portal those unemployed can make claims on their UIF. The two portals and websites can reduce or even remove commute times and time wasted in lengthy queues. Such e-Government services can have a significant impact on how individuals live, how companies do business and how government practises democracy.

7.4. e-Government in South Africa

It has been widely discussed above that the impact of a high level of Internet diffusion (especially broadband diffusion) can provide major benefits for society and the economy through economic growth and foreign investment. However, South Africa continues to suffer from a small diffusion of Internet which the government has struggled to address through policy, Universal Service Obligations and through universal service and access goals. Internet penetration is also low due to high access prices relative to income and broadband Internet that is priced out of the range of the vast majority of households (Abrahams and Newton-Reid 2008: 7).

As household Internet penetration is extremely low in South Africa and majority of telecommunication infrastructure is concentrated in urban areas, telecentres provide the best opportunity to those with otherwise no Internet connection to gain access to e-Government services. Heeks (2002: 7) highlights the need for telecentres of community access centres by arguing that in Africa (and in South Africa) there are two predominant models of accessing e-Government. The first model, citizen direct ownership and use of ICTs, will apply to only a small fraction of the population for the foreseeable future. The second model, non-ownership but direct use of ICTs, will apply to most South African's who will access e-Government services at work, through schools, through Internet cafés and through telecentres or community access centres. According to Abrahams and Newton-Reid (2008: 10), India has overcome the concentrated uptake of e-Government services through the rollout community-owned information kiosks where citizens are able to gain connectivity at low costs. The Department of Communication through the USAASA has failed to supply a suitable and sustainable model for telecentres which has led to their demise. It could be argued that telecentres, correctly established, provide the best means to deliver on universal access goals and thus benefit the spread of e-Government as they are able to supply ICTs to a wider market.

In this sense and in line with the argument made by Makaya and Roberts (2007: 12) with regards to the need for initial government involvement in communication infrastructural projects, it could be argued that initial State involvement will become

necessary to achieve universal service and access to make e-Government services more attainable. Furthermore, it has been discussed that markets dictate that rural and lower income areas will struggle to attain access through private infrastructure. The Draft Broadband Policy addresses the issue of e-Government being inaccessible to majority of the population. Provision 4.4.1.1 of the policy states that "Involvement by the State will be focused on investment where instances of market failure are prevalent, but also with emphasis on… connecting the arms of government at all levels and enabling the distribution of e-Government services." Although this provision could be seen as interpretive it does suggest that government acknowledges the need for widespread infrastructure and connectivity for a successful e-Government strategy.

The lack of infrastructure in South Africa has impeded the progress e-Government projects for both the public and private sectors. For the vast section of the population, infrastructure is often limited or non-existent, and is unaffordable (Kuye and Naidoo 2003: 14). Affordability of computers and other ICTS and human capital also provide a great obstacle. It is unsurprising that majority of the South African population has limited or no access to e-Government services given the legacy of Apartheid and the concentration of infrastructure. Norris (2001: 106) suggests that countries with an environment rich in access to many traditional forms of communication technologies, such as telephones, televisions and fax machines are almost likely to experience a high diffusion of Internet and thus a high uptake of e-Government services.

In order to address the current limitations of infrastructure Universal Service Obligations need to be changed and modernised to include the rollout of telephone lines to homes which are also Internet enabled. Although an Internet enabled telephone is not the only necessity to gain access to e-Government services it once again provides a 'stepping stone' to connecting to online governmental services. Even in areas which have the infrastructural requirements to access ICTs, high costs of line rentals coupled with high costs of Internet access continue to provide a barrier for increased uptake. The fast tracking of liberalising, done with an effective regulatory process and through well appointed policies will add much needed competition in the fixed-line and mobile sector which inevitably will lead to lower

prices and wider reach. Establishing infrastructure for e-Government access in rural and/or low income areas is also going to be a difficult task. Broadband Infraco promises to address under-serviced and underserved areas through the rollout of much needed infrastructure. Adhering to their mandate and with a strong and efficient regulator behind it, Broadband Infraco may just provide better access to e-Government services.

7.5. Conclusion

The low diffusion of Internet will inevitably lead to a small uptake of e-Government services by a large portion of the population. This will in turn lead to a vast amount capital being injected in programs that will benefit very few. The South African government should however continue to expand and invest in e-Government projects to increase much needed service delivery and in doing so strengthen its democracy at the same time. The SARS and Department of Labour websites both provide an excellent example of how effective e-Government projects can be integrated into traditional methods of service delivery. Furthermore, the two websites provide appropriate examples of the benefit e-Government projects and e-Government as a whole can have. One aspect nonetheless has continued to hinder the widespread potential and uptake of such websites: the low level of Internet diffusion.

As Internet access increases, the benefits of e-Government will become more apparent as such websites will become better known and thus better utilised by citizens. If current Internet penetration trends continue, the benefits of e-Government will merely aid in the exacerbating of the digital divide. In addition the values of *Batho Pele* (or People First) objectives, as outlined in the first e-Government policy, of equal access to government services, more and better information, better quality of service and guaranteed standards, and value for money will never materialise for the majority.

Chapter 8: Conclusion

8.1. Introduction

This study has critically analysed the factors influencing Internet diffusion in South Africa. It has investigated the implications the low diffusion has and will have of on the rollout of e-Government services and projects currently underway and ones being implemented in the future. In doing so, this research has answered the research questions and fulfilled its aim as outlined in the Introduction chapter.

Critical Negotiation Issues as a conceptual framework has been utilised in the identification of three high contested that continue to provide the biggest impact over the diffusion of Internet. The use of Critical Negotiation Issues has assisted the study in finding the most significant factors influencing Internet diffusion in South Africa.

8.2. Conclusion and Discussion

The Internet in South Africa has seen remarkable growth since its inception in the early 1990s and particularly in the last eight years. Year on year growth has been for the most part steady; however, when compared to the rest of Africa and the rest of the world, it becomes evident that South Africa is falling behind in terms of the users per one hundred people and in terms of growth rate. Internally, the South African communication landscape `is rife with inequalities. Those living in rural areas have limited to no resources available to gain Internet access. In urban areas and the four economical hubs, Internet penetration is also still remarkably low and concentrated in wealthier areas and areas with a high density of business.

Many factors are hindering Internet diffusion, and if not addressed by those who have the power to do so, South Africa will continue to slip down the Internet user rankings which will in turn hinder economic growth, competitiveness and the rollout of service delivery. The high cost of Internet access has been blamed for being the greatest barrier in the spread of Internet diffusion. Although the high costs are a major influence over the uptake of Internet services, in order to further understand the

relationship between high costs and Internet diffusion in South Africa, prices must be analysed side by side with the three identified Critical Negotiation Issues. By analysing high costs with the aid of Critical Negotiation Issues, it becomes apparent that they reflective of an industry that is still monopoly dominated with a weak regulator that is not in a position to enforce and produce effective policies.

To address the issue of a monopolistic sector and to help spread Internet access, there has been a considerable move to liberalise the sector, evident in the mobile telecommunication industry and in provisions made for a second national fixed-line operator which has now, after many years of delay, become operational. The government, the former and present Minister of Communication, has on numerous occasions made promises that the sector will continue to be liberalised at a swift rate. Thus far the process of liberalisation has been extremely slow. Statements and regulatory actions and rulings suggest that neither the government nor the Minister have any intentions to liberalise the telecommunications market.

ICASA has also come under fire for not effectively dealing with the issues of high prices or the poor diffusion of Internet access in South Africa. ICASA is faced with limited resources and limited qualified personal to deal with the many issues facing the telecommunications industry. Its regulatory powers are also constantly challenged by the government and by the communications minister who is able to overrule any decisions made. The Electronic Communications Act of 2005 did bring greater regulatory powers to ICASA and has made provisions for less interference yet the Minister still holds great control over the regulatory body and interference is still a common occurrence. This was clear in the late and former Ministers attempt to appeal the Altech versus ICASA High Court ruling. By looking at policies, legislation and official statements, it becomes apparent that the notion that ICASA is ‘soft on Telkom’ is to a large extent true. Until ownership patterns are changed in Telkom and the government relinquishes its 54.3 percent controlling stake in the company, it is unlikely that ICASA and the government as a whole will attempt to challenge the extremely profitable institute.

There have been positives steps made by the government in terms of aiding the diffusion of Internet. The USAASA has rolled out telecentres and cyber laboratories to underserved and under-serviced areas, providing many communities with Internet and other ICT access. The deployment of such services is limited and it is questionable to what effect they are and will be having on Internet diffusion. The USAASA, which has the role of promoting and advising on universal access and universal service, has also done little in promoting Universal Service Obligations which currently do not extend to Internet access. Provisions have been made by the USAASA and ICASA to ensure all telecommunication operators rollout public and community telephone services. In an era where reliance on Internet access has become crucial, there is no evidence that Internet access will become a Universal Service Obligation in the foreseeable future. As is the case with ICASA, the USAASA lack human capital to produce quality policies. Additionally it lacks a clear mandate as to what its role is and should be. Instead of taking on an advisory job, the agency continues to take on an implementation role with has merely lead to ineffective and mismanaged projects.

Although there have been many negative factors influencing Internet diffusion in South Africa, there are positive changes that may provide a platform for major Internet growth. The landmark High Court ruling in favour of Altech played a critical role in the liberalisation of the telecommunications sector. National and regional VANs, with the financial capabilities, now have the ability to develop and operate their own networks which would allow them to effectively compete with the large, well established, telecom operators. ICASA not appealing the case may suggest that it is adhering to the calls for market liberalisation. The new undersea cables landing on South African shores in the near future are also likely to bring considerable, much needed change to the patterns of Internet diffusion. The completion and subsequent operation of Seacom in mid 2009 has arguably brought with it a small but significant change in its short lifespan. The arrival of future international cable systems will add much needed competition to the Telkom controlled SAT3/SAFE cable system and also bring ample international bandwidth

The South African government has made it clear that it is highly imperative that the issues hindering Internet diffusion need to be addressed and challenged. At times, the government's statements and actions contradict each other but there has been continuity in the fact that in order to increase economic growth, provide more efficient and effective service delivery and to bridge the ever growing digital divide, the diffusion of Internet needs to grow rapidly and steadily. The current state of Internet diffusion in South Africa is providing a barrier to widespread uptake of e-Government services and particular e-Government projects that have been successfully implemented. If current trends stay constant, the prospect of e-Government will continue to be undermined by its contribution to the digital divide.

In order achieve the goals economic growth, social empowerment and development the South African government will need to produce a single, strong, ICT policy that is adhered to on all governmental levels. This policy will need effective regulation from a regulatory agency that is well funded, independent and has access to adequately skilled personal. Universal Service Obligations will also need to be adjusted to keep up with technological advancements to ensure the bridging of the digital divide. Furthermore, updated e-Government policies will need to be created that understands the need for a high diffusion of Internet for the realisation of the full potential that e-Government holds.

8.3. Recommendation for Future Research

This research has only looked at how the rollout of infrastructure by public and private institutions coupled with an effectively regulated liberalised sector can aid in the uptake of Internet access thus benefiting Internet diffusion in the short- and long-term. As prices begin to drop as a result of an abundance of international bandwidth and added competition it is inevitable that website hosting costs will come down. Future research should look at how local hosting of content and websites can aid in the uptake of Internet services as a result of less reliance on costly international communication infrastructure. The low costs of 'local only' bandwidth coupled with more locally hosted websites may ensure greater uptake of Internet access and more

likely broadband offerings and could lead to the cost of international bandwidth becoming considerably less expensive.

In addition, research undertaken on the diffusion of technology in terms of computers and other methods of accessing the Internet could provide significant insight into current and future trends in the spread of Internet access. These could also provide a more holistic understanding of the factors influencing Internet diffusion and its implications for the uptake of e-Government services.

This research could have benefited from conducting more interviews. It is advisable that future studies conducted on factors influencing Internet diffusion and its effect on e-Government services make use of a substantial amount of interviews. This will remove the reliance on secondary sources and provide better insights from industry experts and industry players.

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Appendix A

Interview Guide

Many issues plague the telecommunications sector which in turn is effecting Internet diffusion

- Has this stemmed from an inherent monopoly and an incumbent not willing to lose its position?
- Has South Africa truly moved away from a monopolistic telecoms market?
    - Are there benefits to a monopoly fixed like operator?
    - Are there benefits in government ownership?
    - Do monopolies lead to a stagnate sector?

Has and is government still trying to own interests by keeping the sector reliant on Telkom?

To what extent is anti-competitive behaviour still a problem?

What roll do policies play in diffusion of Internet (in South Africa and elsewhere)?

What is the largest influence on Internet diffusion from a policy perspective?

- From a regulatory and governmental perspective
- From a private sector perspective
- Are current policies failing the industry? To what extent?
- Are costs continuing to hinder the market?

ICASA has often been seen as a weak regulator, lacking the ability to adequately regulate often complex sector. Why do you think this is the case?

- Is ICASA upholding its own mandate?

Many blame ICASA's inability to speedily enforce regulations, issue licenses and resolve disputes

- Is this adversely affecting the sector and country
- Is this not understandable given the complexity of the industry and the complexity of many of the cases brought to them
- Has this lead to costs continuing to be extremely high?

Is the private sector as much to blame for the countries low diffusion of Internet?

Are ISPs able to reduce prices and increase Internet diffusion alone?

- Or are ISPs to reliant on Tier 1 providers to have any really influence?
- What about ISPs now being able to self provide?

Will the market not dictate that prices will eventually have to decrease?

Is the government / ANC using ICASA to protect its own interests?

Does government have a large influence over ICASA and its decisions?

- To what extent?
- Can the same be said for the private sector especially big players such as Telkom, Vodacom and MTN?
- Is it possible to achieve regulatory independence?
- How does one separate the State and independent bodies given the nature of the Ministers vetoing powers?
- Is South Africa alone with respect to State interference in independent regulatory decisions?

Are license holders adhering to their individual universal service obligations?

- Are obligations effective enough?

Does universal service and universal access hold the key to increasing Internet diffusion and bridging the digital divide in South Africa?

- Does universal service and access work anywhere in the developed and developing world?
- Is USAASA achieving government's goals of universal service and access?
- Is the independence of USAASA also a contentious issue
- Why is USAASA not achieving its own and its given goals?

It is evident that USALs have failed

- Do USALs have the potential to succeed?
- Why have they failed, given the large investments made into them?
- Can USALs be competitive give the strong growth of mobile telephones and mobile Internet in the areas in which they would operate?
- Is USALs another example of government constant ambition to become a major player in the telecoms sector?

Broadband Infraco is clear example of governments desire to become a player in the telecoms industry

- Is there still a place for government ownership?
- Will government ownership have negative or positive affects?
- Will Broadband Infraco play a leading role in driving down prices and increasing the diffusion of Internet in South Africa
- Will Broadband Infraco not just turn out to be another government owned institute that is not financially viable (i.e.: Sentech)

There has been major media hype with the landing of Seacom and the future of other undersea cables. Will undersea cables bring with them dramatic price reductions?

Will South Africa ever truly see a liberalised telecommunications sector in the near future?

- What is your opinion on liberalisation?
- Is local loop unbundling a step in the right direction for liberalisation?
    - Will local loop unbundling truly bring with it change given the mixed results in other countries?
    - Do we have the regulatory capabilities and will to introduce (successfully) local loop unbundling?

The growth of Internet in South Africa is on a steady increase. Is this as a result of any of government's initiatives or is it purely consumer driven

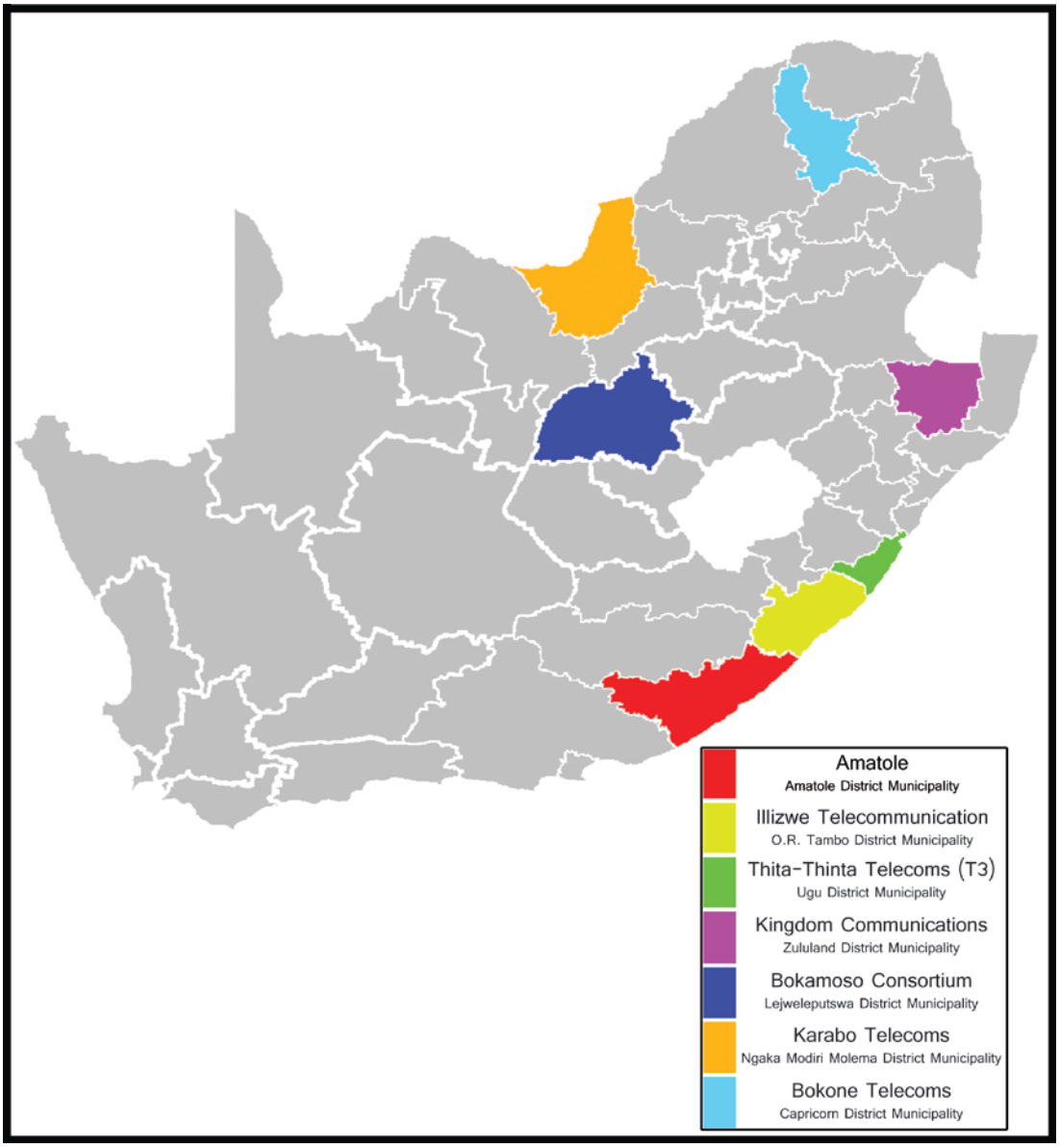
Are things beginning to change for the better?

Is the South African telecommunications sector on the right track?

- Is South Africa keeping up or able to keep up with international trends and technological advancements?

Appendix B

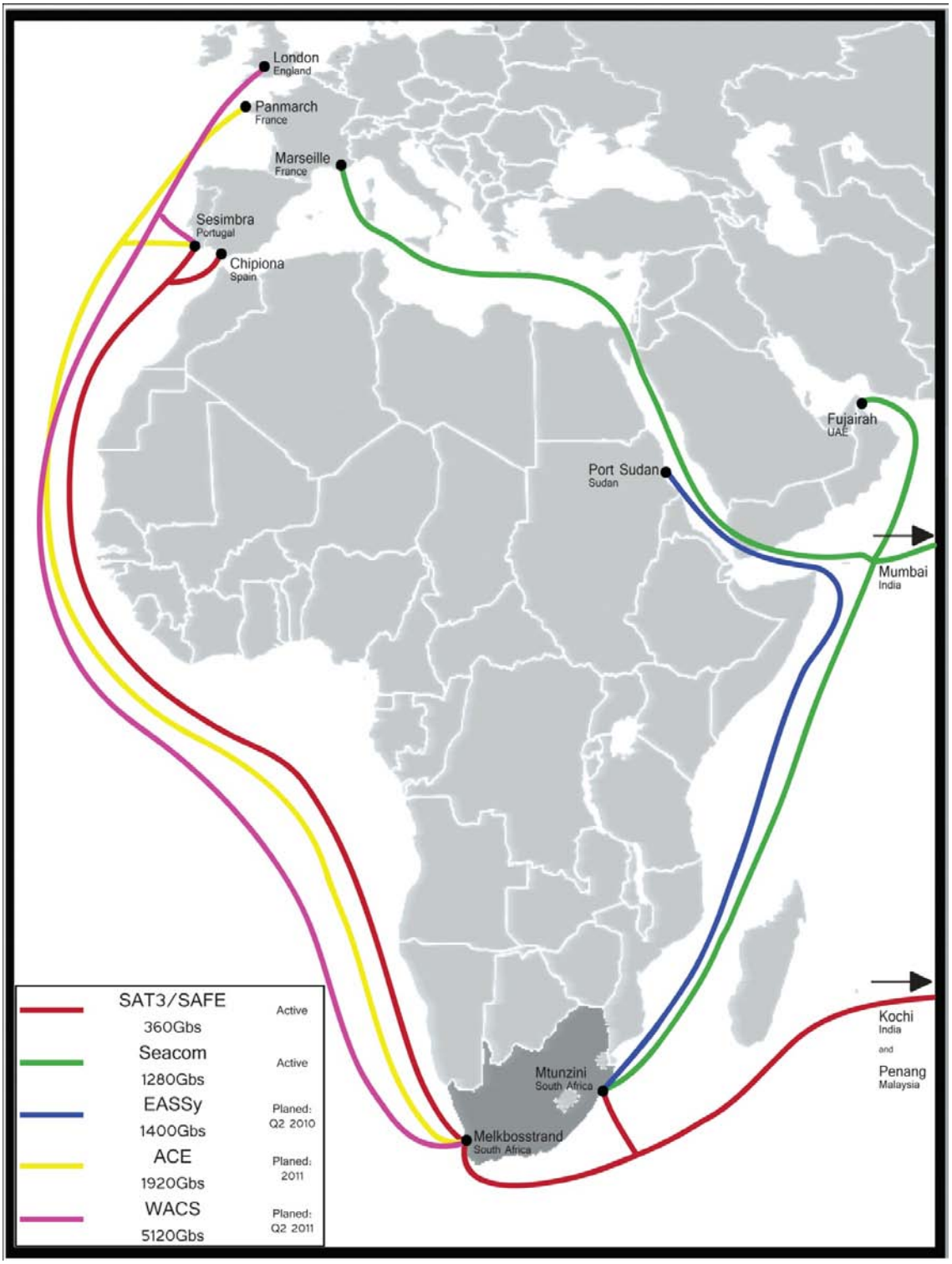
Graphic Representation of District Municipalities with a Teledensity of Five Percent or less and their respective Under Serviced Area Licences.



Compiled with data collected from: USAASA (2008c: 16); USAASA (2009: 24)

Appendix C

Graphic Representation of Undersea Cables Landing in South Africa from Point of Origin: Active and Future System with their Individual Capacities.



Compiled with data collected from: Song (2009); SAT-3/WASC/SAFE (2009); Seacom (2009)