"Bridging the digital divide and the impact of new media technologies on development in South Africa".

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1. Introduction

This chapter focuses on several attempts taken to bridge the digital divide in South Africa and the impact of information and communication technologies (ICT) on development in the country. It is important to note that the advent of information and communication technologies (ICTs) has indeed led to technological revolution across the globe and it continues to change the global social and economic milieus of countries making use of these technologies. It is a fact that most developed countries have become knowledge societies because of this technological revolution while most developing countries are also putting strategies in place to bridge the digital divide by encouraging the use of ICTs. Interestingly, most people in these developing and most especially under-developed countries still do not have access to ICTs. This is probably due to the fact that ICT facilities are not available in the area where they reside or because they cannot afford the use of such ICTs. This Chapter will therefore attempt to look at various steps that have been taken towards bridging the digital divide in South Africa and the impact of new technologies on development in the country. The focus of this Chapter will be narrowed down to e-government, e-commerce, e-learning and the impact of telecentres among other with the aim of looking at ICTs as an indispensable tool for enabling governments to deliver public services and information to the populace. This Chapter will also look at attempts towards bridging the digital divide among some selected South African higher institutions and also evaluate the level of their ICT usage and its impact on e-learning in these selected institutions.

2. Theoretical Underpinning

The theoretical underpinning that best underpins this Chapter is the Knowledge Gap Hypothesis as postulated by Tichenor, Donohue and Olien in 1970 and the "Access Rainbow Model". The knowledge gap hypothesis emphasises the knowledge or information gap that

exists in the society and it also stresses the importance of bridging the information gap that exists between the 'haves' and 'have nots'. It states that:

"as the infusion of mass media information into social system increases, segments of the population with higher socio-economic status tend to acquire this information at a faster rate than the lower status segments, so that the gap in knowledge between these segments tends to increase rather than decrease" (Severin and Tankard, 1988: 287).

Media scholars, De Fleur & Ball-Rokeach (1996) argued that communication technology is changing so rapidly that many people speak of a "communication revolution" or an "information explosion". Some of the new technologies are videotape recorders, video cassettes, cable television, home delivery of newspapers printed via satellite, access to computer information services from home computers and communication between home computers via modems. In addition, Tettey (2001) concurs that many of these technologies have the dramatic effect of giving the user much control over the communication process and the information received. Severin & Tankard (1988) further argued that theoretically, these new technologies can be used to the benefit of people throughout the society. However, many of these technologies are expensive and because of the cost, these technologies may be available to those who can afford them than to those who cannot. For this reason and others, an unfortunate effect of the technological revolution in communication could be a further widening of the knowledge gap and the digital divide. For example, continuous ownership of computers provides evidence to who will have access to new technologies and information and who will not?

Severin & Tankard (1988), believed that the tendency is for the well placed, the rich and for example, the financially viable individuals and institutions to continue to have greater access to the new technologies. On the other hand, the poor and financially handicapped individuals and institutions will continue to lack behind in terms of access to the new technologies. It is therefore important that strategies are put in place to close the information gap and bridge the digital divide.

In addition, this study also relies on the "Access Rainbow Model" developed by Clement & Shade (1996) as stated by Gurstein (2000). This model is a 7-layer conceptual model of access to the information / communication infrastructure as shown below:

According to Clement & Shade (1996), in Gurstein (2000), the model aims to provide basis for universal access to the new technologies and point to concrete steps that need to be considered for achieving this objective and aiming to bridge the digital divide. The main element is the content / services layer in the middle. However, it is important to point out that all the other layers in this model are also necessary in order to enjoy content / service access. It is also necessary to note that in this model of information infrastructure, what is vital to achieving success is the careful articulation of the relationships between the seven (7) layers. Starting with the lower layer, the following layers build upon each other and should be carefully considered towards bridging the digital divide and to ensure access to information and technologies (David, 1997; Gurstein, 2000).

The "access rainbow model" is analysed below:

Carriage facilities: These refer to the facilities that store, serve or carry information. Efforts must be made to ensure that carriage media like telephone networks, radio and television networks, the Internet and other networks are widely available and affordable for use by people. This will no doubt help to narrow the information gap that may exist in the society and thus bridge the digital divide

Devices: These refer to the actual physical devices that people operate like telephone terminal equipment, television, and radio receivers, printers and scanners. These facilities should also be affordable, not rapidly obsolete and easy to use by intended users.

Software Tools: These refer to the programme that operate the devices and make connections to services. They need to be affordable, multilingual, privacy enhancing, and easy for everyone to use.

Content / Services: These refer to the actual information and communications services people find useful. The aim is to facilitate access to a wide range of information and communication services that people find valuable in their daily activities. People need to be able to interact meaningfully with others, obtain information easily and contribute creatively

to the store of available information. It is therefore essential that content and services should be affordable, reliable and usable.

Service / Access Provision: The organisations that provide network services and access to users must be easily accessible and affordable too. These include the Internet service providers, telephone companies, community nets (networks), libraries, schools, community organisations, workplaces and other publicly accessible facilities. Even, individual subscribers must be well served.

Literacy / Social facilitation: ICTs are complex technologies requiring a range of skills to manipulate and use effectively. Acquiring these skills is largely a social process involving a combination of formal and informal methods within the context of supportive learning environments. The means of acquiring networking skills need to be affordable, readily available, suitable to learners varied life situations and sensitive to language, cultural and gender differences.

Government / Policy: The central challenge of governance is to foster a democratic process that allows all the stakeholders to have access to basic information and participate in public policy making with ICTs playing a vital role in information processing and dissemination.

It must be noted that various communication services, including the information highway, are becoming very vital on a daily basis if citizens are to have access to social, economic, educational, and government information. Also, many institutions and agencies in the private and public sectors have put policies in place to avoid continuous publication of hard-copy materials and replace them with online access. The aim is to move or motivate people to rely on electronic information and having prompt access to this information when required. However, with this move to digital media, many rural, socially marginalised, and economically disadvantaged citizens and universities are being denied the opportunity to benefit from and contribute to the developing information society (Clement & Shade, 1996; David, 1997; Gurstein, 2000).
As noted by David (1997) and Gurstein (2000), many people, individuals, institutions, and organisations are unable to afford the necessary devices such as hardware and software for them to get online in the first place. Apart from not having these devices, another major problem is not having received the required training to use the devices. Interestingly, the converging nature of these new technologies, and the high costs of acquiring the necessary hardware and software threaten to continuously widen the gap even further between the information "haves" and "have nots". This is what the “access rainbow model” aims to explain. Addressing the various issues hindering access and ensuring affordability of the necessary devices will no doubt help to bridge the digital divide that exists today in the society at large.

3. Defining Information and Communications Technology (ICT)

Over the years, various scholars and researchers have given acceptable and similar definitions of information and communications technologies (ICTs). However, for the purpose of this Chapter, the definition of Kouakou (2003), Nwuke (2003) and Osunkunle

(2008) will be used. They all noted that ICT encompasses various technologies that enhance the creation, storage, processing, communication and dissemination of information. They also stated that ICTs refer to the different infrastructures used in the above processes, their applications and the numerous services these infrastructures render. Research has also shown that the following technologies form the elements of ICTs:
(1) Media of communication (e.g. Radio and Television)
(2) Information machine (e.g. Computers)
(3) Telecommunications technologies and equipments (Satellites, fibre optic cables, phones, facsimile machines). Telecommunications infrastructures in particular have become the driving forces of ICTs as they have the capability to link all various ICT elements together (Macro Environment & Telecommunications, 2003).
Also, in a joint project aimed at investigating the role of ICTs in education in South Africa, the country's Departments of Communication and Education note that ICTs include various forms of electronic communication in both analogue and digital form with digital electronic devices including computers, compact disks (Cds) among others and analogue devices consisting of conventional radio broadcast technology such as tape recorders etc. In addition, Richard Heeks (1999: 3) defines ICTs as "electronic means of capturing, processing, storing and communicating information".

4. Global overview of the digital divide

The advent of information and communication technologies (ICTs) has indeed led to technological revolution across the globe and it continues to change the global social and economic milieus of countries making use of these technologies. It is interesting to note that developed countries have become knowledge societies because of this technological revolution and most developing countries are also putting strategies in place to bridge the digital divide by encouraging the use of ICTs (Stevenson, 1988; Osunkunle, 2008). It must however be pointed out that digital divide exits in these developing and most especially under-developed countries as most people still do not have access to ICTs. This is probably due to the fact that ICT facilities are not available in the area where they reside or because they cannot afford the use of such ICTs. The International Telecommunication Union (ITU) also attests to the fact that the availability, use and deployment of ICTs vary from country to country and also from rural to urban areas (ITU, 2003).
According to Lesame (2005: 3), the term "digital divide" refers to 'the gap between the access of individuals, households, organisations, countries and regions at different socio-economic levels of ICTs and Internet usage'. Also, media scholars like Beebe, Kouakou, Oyeyinka & Rao (2003) defined "digital divide" as the gap that exists between those who have access to and can also effectively use new information and communication tools, such as the internet, and those who cannot and do not have access. This shows that digital divide not only refers to the gap that exists between the impoverished, poor, rural "have-nots" and the affluent, rich, urban "haves", but it also points to the divide that exits between the underdeveloped and developed nations of the world (Osunkunle, 2008).
Globally, digital divide exists and this is evident in the fact that developed nations like U.S.A and Switzerland have significant access to ICT while under-developed nations in Africa like Mali, Ethiopia and Congo do not enjoy considerable access. For example in the U.S.A, 66 out of every 100 people have access to personal computers (PCs) while 71 out of

every 100 people have access to PCs in Switzerland. However, the rate of access to PCs in some African countries like Nigeria, Ethiopia, Congo is less than 1 out of every 100 people (Bridging the Digital Divide in Africa, 2003; World Telecommunications ICT Indicators, 2004).

5. Bridging the Divide in South Africa

The history of South Africa has been greatly affected by intense political conflict and socio-political divisions of the past, which have in turn affected the various sectors of the country's economy till today. However, like most developing and underdeveloped countries of the world, the South African government has also put mechanisms in place to address the issue of digital divide. The government, through the 1996 Telecommunication Act stressed the need to promote the universal and affordable provision of telecommunication services. This act set up the Universal Service Agency (USA) to promote access to telephony and other information and communication technologies (ICTs) throughout the country, particularly in the townships and rural areas (Literature Review for the Telecentres Study, 2000). Other initiatives include the Department of Communication's decision to give the Universal Service Agency the mandate to set up Telecentres that are to provide access to these information facilities. The telecentres are to provide telephone services to users, and also be equipped with computers, access to the internet, printers, copier, fax, scanner, television and video recorders with the aim of exposing people to exciting potential use of the various forms of information and communication technologies (The Universal Service Agency's Telecentre Programme, 2003; Current Research on Bridging the digital divide, 1999; Bussing past the digital divide, 2003).

In her extensive research into the impact of ICTs, Wright (2003) states that the telecentres are not the only innovative project aimed at addressing the issues of digital divide in South Africa but there are other innovative steps being taken by researchers and organisations towards bridging the divide. For example, Professor Peer Wentworth of Rhodes University worked on a project similar to India's "Hole in the wall project" in which a computer is installed, literally, into a hole in a wall near a derelict playground where street kids play. The aim is to install computers in secure locations in townships, such as shops, post offices, and community centers, to allow passers-by to access them through buildings' windows. Such access will be available for 24 hours a day since there is no physical or direct access to the computer itself. In essence, this project was to provide citizens with simple, cheap and secure access to computing facilities in underprivileged areas, thereby bridging the digital divide.

In addition, Martindale (2002) noted that organisations and information technology (IT) industry players have also been involved in the drive to bridge the gap. For example, Microsoft South Africa has a number of projects aimed at providing real access and training to previously disadvantaged and rural communities in South Africa. These initiatives have over the years exposed many South Africans to the use of various forms of ICTs (Bridging the digital divide in South Africa, 2002). Other IT companies and companies like Dimension Data, Vodacom, MTN, just to mention a few have also been at the forefront of bridging the digital divide as they donate computers etc to schools, universities and organisations.

6. The Power of the Internet

Research has shown that the Internet is very central to the convergence of the various technologies such as broadcasting, audio and video, text and Internet telephony. The Internet has provided users with opportunities to conduct research online as researchers across the world are able to access huge database of information from around the globe. The Internet also offers opportunities for e-shopping and e-marketing as people shop and order for goods online, while they are also able to sell their products online. Governments and political parties are also able to use the Internet to reach out to citizens and party supporters especially for electioneering campaigns. This is made possible as there are a variety of political uses and applications of ICTs, ranging from creating political party websites to counting votes during national elections and these activities contribute to electronic government (e-governance) and electronic democracy (e-democracy). This therefore makes it very crucial that people should have access to the Internet and other forms of ICTs (Oyedemi, 2003; Lesame, 2005; Osunkunle, 2008).

7. Mobile phones in South Africa: A crucial component of ICTs

It is important to note that mobile phones have also been very helpful in bridging the rural-urban digital divide in most African countries. Interestingly, this form of technology is performing development functions beyond the expectations of cellular phone users across the continent. Lesame (2005: 9) notes that in most countries of the world, mobile phones usually outnumber fixed line connections and give much needed access to communication services and also improve a country's economy. Statistics has shown that 1.32 billion global mobile users and in Africa, 95.61 per cent of African users use global system for mobile (GSM). Interestingly, one of the biggest African networks is Vodacom, which is a South African cellular network and obviously makes South Africa to boast of the highest number of mobile phone users in Africa. It must be noted these cell phones are quite cheap and in various forms, which has made it possible for most people, including primary school pupils to have one. This has therefore made it possible for people to communicate in both rural and urban areas of South Africa and even across the world. Fortunately, one does not need to be educated to use a mobile phone as individuals, households and organizations are able to communicate (Osunkunle, 2008).

8. Telecentres in South Africa

The advent of telecentres has provided access to ICT facilities to people in the rural areas that wouldn't have thought of having access. Research has shown that in countries around the world like Tanzania, Philippines, Uganda, Australia, Mexico and South Africa where Telecentres have been introduced, community members have had access to or opportunities to use the various ICT facilities like facsimiles, telephones, photocopy facilities, printers and Internet. It is interesting to note that in developed nations of the world, these Telecentres are well managed and funded by government departments and agencies, which has in turn made these projects to be profitable, viable and sustainable. In some other cases, international donor agencies like the United Nations Development Programme (UNDP) amongst others have successfully established and funded telecentre development in many

developing countries. It is interesting to note that South Africa has also identified telecentres as one of the tools for addressing the problem of access to ICTs in the rural areas (Lesame, 2005: 24). In most cases, these Telecentres in South Africa like in most countries provide users with cheaper access to ICT facilities and are usually housed in containers or low-cost buildings. Sadly, most of them do not provide Internet facilities, and this is still a setback to the project when one looks at the fact the power of the Internet nowadays (Mmusi, 2005).

9. Digital villages in South Africa

The establishment of digital villages (DVs) is another way that ICTs have contributed to development in South Africa. DVs are ICT resource centres that are managed by members of the community who have been well trained to manage the project. The DVs are different from Telecentres in that they are sponsored and provided with all the needed ICT facilities by the private sector. Another distinguishing feature of DVs is that they have better ICT resources, stable electricity and also offer basic ICT skills training. Wessie (2001) and Lesame (2005) note that the South African private sector is also contributing to bridging the digital divide by empowering citizens and also making a big difference to people's lives as citizens are given access to different forms of technology through projects like DV. Over the years, many digital villages (DVs) had been established in different parts of South Africa like The Cape Flats, Paarl, Khayelitsha and Mannenberg townships and Rabie Ridge in the Western Cape Province.

As further noted by Lesame (2005), other Provinces also have their share of digital villages as highlighted in some examples below:

North West Province: Hebron College of Education
Northern Cape Province: Galeshewe township in Kimberley and Kgalagadi rural area
Free State Province: Manguang in Bloemfontein
KwaZulu-Natal Province: KwaDukuza in Stanger, Mpuluzi and Springfield in Burban
Gauteng Province: Chiawelo, Mamelodi, Soweto and Alexandra
Eastern Cape Province: Tsolo and Engcobo villages in the rural areas of old Transkei
Mpumalanga: Kwena Moloto in Seshego and Mbombela in Nelspruit

Since it is not possible for the government shoulder the responsibility of bridging the digital divide alone, the private sector and most importantly, IT giants like Microsoft and HP have since come on board to support and contribute to the growth and development of South Africa by providing ICT resources where necessary (Osunkunle, 2007).

10. Information and communication technology and e-government

Kibuuka (2001: 1) defines e-government as "the use of information and communication technology in government and is supposed to bring about an efficient interaction and service delivery to the citizens of the country". E-government is available in most developed and developing countries. Interestingly, South Africa has also embraced electronic government, having moved from economy government that was organised around bureaucracies and agencies to the one that is citizen-centred, with ICT as a key enabler. This has in some cases led to a greater level of interactivity as users are able to conduct transactions and also obtain services online through interactive government websites.

Most government Departments and Agencies and both Provincial and Local governments have introduced better service delivery model through deployment of ICTs and e-commerce with the aim of serving the citizens better. This has in turn enabled government to benefit tremendously from the impact of the various forms of ICTs as there is better procurement, efficient working relationships, citizen-oriented service delivery and better communication with citizens, stakeholders and businesses. This is evident in the fact without technology, public services and government working hours would have been confined to physical office locations. However, the advent of various forms of technology has now made it possible for the government to render services to citizens on a 24-hour basis. E-government also allows citizens to participate in decision and policy making. ICTs have therefore become a very important tool towards ensuring effective socio-economic development. The e-government policy of the South African Department of Public Service and Administration (DPSA) of 2001also explains the various components of e-government, which includes customers, e-business and e-commerce (Shilubane & Mokolo, 2005).

11. ICT's role in education

ICT also play a prominent role in the education sector. In fact, there is general agreement from media analysts on the crucial developmental role of ICT. Media scholars, Nulens (2003) & Jensen (2003) state that in education, ICTs holds the promise of transforming learning in new and powerful ways with the internet playing a very prominent role. Also, Stevenson (1988), Braman (1993) and Tettey (2001) noted that ICT is the infrastructure that brings people together in different places and time zones, with multimedia tools for data, information, communication and knowledge management in order to expand the range of human capabilities. Various studies have shown that there is a global trend towards quality education for all. The growth of ICTs in education is a global phenomenon. Countries in both the developed and developing worlds have expressed visions of participating in and shaping the global information society. Education is therefore the primary way for ICTs to produce competent learners, suitably qualified and skilled to contribute to economic growth. Bonfadelli (2002) & Gordon (2003) also note that the general notion worldwide now is that ICTs are a fact, a way of life and societies; countries and individuals need to be familiar with and work with ICTs in order to avoid being left out. This means that in education, this translates into a call for all learners to be familiar with ICTs. Failure to achieve this is understood as leaving learners ill-equipped in a modern world of technological advancement.

12. Bridging the digital divide among South African Universities

A lot of studies have been carried out worldwide and in South Africa, in the area of digital divide to establish the great disparity that exists between the haves and have-nots. In one of her studies, Wright (2003) established that there is a huge disparity in the technical levels of the students who flock to the Universities and Technikons in South Africa. She notes that many of these students have never seen a computer, let alone use it or connected to the internet (South Africa & the Digital Divide, 2002; Bridging the Digital Divide in Africa, 2002; Wright, 2003). It is interesting to note that digital divide exists also among South African Universities as students in historically white universities (HWUs) like Wits, Rhodes and

Stellenbosch Universities enjoy unlimited access to ICT facilities like computers and the Internet (Jacot, 2004; Chambers 2005 and Kassa, 2004; Dreijer, 2005: Email from Rhodes & Stellenbosch). However, reverse is the case in historically black universities (HBUs) where access rate is very limited and personal observation bears this out.

It must also be noted that the HWUs have been able to achieve breakthroughs in the various areas of ICT because of their sound policies and commitment to bridging the digital divide. These universities have fully embraced e-learning, which is higher institution learning through the use of the internet and other computer facilities and soft wares. However, most HBUs like the University of Fort Hare (UFH), the University of Limpopo (UNIL), Turfloop Campus, and University of Zululand (UZULU) do not have complete access. It is however interesting to note these HBUs like the University of Fort Hare (UFH), University of Limpopo and University of Zululand as typical examples of HBUs are doing everything possible to attain a high ICT capacity and leapfrog towards bridging the digital divide. For example, the University of Fort Hare (UFH) took some steps to leapfrog into a new knowledge society as highlighted in the University's Strategic Plan 2000 (UFH's SP 2000 Document). In his views, the UFH's IT Director, Mickey Moodley, noted that the University has enjoyed partnership and sponsorships from the DoE, DBSA and Thintana Group towards beefing up its ICT capacity. For example, from year 2001 to 2005, a total of 797 new computers have been acquired by the University through various fundings received. From these, 527 computers in 8 computer laboratories have been set up for student use on campus and 270 computers have been set up for staff members use - all having internet access. Other HBUs have taken similar steps towards improving their ICT status

It must be noted that the problem of access in HBUs is partly due to the past legacies of apartheid, which strategically funded and favoured the HWUs while the HBUs suffered gross neglect and lack of essential learning facilities. However, with the advent of democracy, the South African government through the Ministry of Education issued the Education White Paper 3 (Notice 1196 of 1997) with the aim of correcting inequalities of the past. The aim was to lay solid foundations for the development of a learning society, which can stimulate, direct, and mobilize the creative and intellectual energies of all people especially students towards meeting the challenge of reconstruction and development (Government White Paper 3: Notice 1196 of 1997). The focus was on the transformation of South African Higher Education with emphasis on the effective use of ICTs. This is inspired by the fact that ICT plays a very significant role in every facet of human endeavour like e-government, e-learning, ICT-improved healthcare (e-health), e-commerce and other areas (Technology- Enhanced Learning in South Africa: A Strategic Plan, 2000).

13. Further analysis of ICT usage among HWUs and HBUs in South Africa

For the purpose of this Chapter and to throw more light on ICT usage among South African universities, three HBUs namely the University of Fort Hare in the Eastern Cape Province, University of Zululand in the KwaZulu Natal Province and University of Limpopo (formerly University of the North) in the Limpopo (Northern) Province were picked for investigation and comparison. Also, three HWUs namely Rhodes University in the Eastern Cape Province, Stellenbosch University in the Western Cape Province and Wits University in the Gauteng Province were picked for investigation and comparison. The student: Pc ratio in these Universities over a period of two years, are compared below:

14. Student / Pc Ratio in HWUs and HWUs (2004 – 2005)

HBUs	2004	2005
University of Fort Hare	21 : 1	10 : 1
University of Zululand	18 : 1	23 : 1
University of Limpopo	15 : 1	17 : 1

HWUs	2004	2005
Rhodes University	2 : 1	5 : 1
Stellenbosch University	1 : 1	3 : 1
Wits University	No Available Statistics (All Students have full ICT Access)	No Available Statistics (All Students have full ICT Access)

15. Historically Black Universities (HBU's)

15.1 University of Zululand

A similar situation exists at the University of Zululand (UZULU). In 2004, UZULU had an access ratio of 18 students to a Pc (18:1) with some of the Pcs not connected to the internet and without a 24 hour access (Canhan, 2004).
In 2005, the UZULU's student enrollment was 9,000 with 400 pcs available for their use. This gives an access ratio of approximately 23:1 with day time access to Pcs and the internet (Maphanga, 2005).

15.2 University of Limpopo (Turfloop Campus)

University of Limpopo (UNIL), Turfloop Campus had 11,000 students in 2004 with access to 750 Pcs, which gives an access ratio of approximately 15:1 (Rahimi, 2004).
In 2005, the student population increased to 12,500 with the same 750 Pcs available for student use. This gives an access ratio of approximately 17:1 and with a 16 hour daily access to Pcs and the internet (Rahimi, 2005).

15.3 University of Fort Hare

The University of Fort Hare (UFH) for example had 7,818 students in 2004 with just 380 computers (Pcs) for their use. This gives an approximate access ratio of 21 students to a computer (21:1).
However, in 2005, UFH had a reduced number of 4,777 students (compared to 7,818 in 2004) with an improved access to 527 Pcs. This gives an approximate access ratio of 10:1. This was largely due to a huge drop in number of registered students and an increase in the number of available Pcs.
Only few of these computers were not connected to the internet and students had a 14 hour access (8 am - 10pm) from Monday to Friday (Moodley, 2004, 2005).

16. Historically White Universities (HWU's)

16.1 Stellenbosch University

Kassa (2004) confirmed that students at Stellenbosch University had full access to Pcs and internet with a ratio of a Pc to a student (1:1).
But with an increased number of students rising to 16,000 in 2005 and with 5,319 computers available in computer laboratories and various Departments, the access ratio was approximately 3:1 (Dreijer, 2005).

16.2 Wits University (University of Witwatersrand)

Wits University is the foremost historically white university in South Africa and largely funded and well developed than any other South African University.
The University occupies a huge expanse of land mass with various Departments and Schools strategically placed on the campus.
It was therefore very difficult to get a detailed statistics of ICT usage at Wits. Pillay (2005) confirmed that it will be very difficult to get an accurate statistics because there is no real central body that controls all IT facilities at Wits.
He however asserts that all students have a 24 hour access to a Pc and the internet.

16.3 Rhodes University

According to Jacot (2004), students enjoy a 24 hour access to Pcs and the internet with a student / Pc access ratio of 2:1. However with an increased number of students in 2005, Chambers (2005) confirmed that the access ratio was 5:1.

17. Concluding Remarks

Over the years, various theorists and communication researchers have written about the positive effect and contributions of ICTs to development (Stevenson, R, 1988; Van Audenhove, 1999; Nxasana, 2001; Kouakou, 2003; Nwuke, 2003; Lesame, 2005; Osunkunle, 2008) as highlighted in this Chapter. Interestingly, there is still a continuous discourse among technology users and development specialists on the role of ICTs as a tool to facilitate socio-economic development in the society. As discussed in this Chapter, the advent of information and communication technologies has led to new ways of transacting business (e-commerce), new ways of teaching and learning (e-learning), new of providing health facilities (e-health) among others. However, the availability of technological infrastructure cannot just guarantee development and economic benefits unless these facilities are used effectively. In South Africa for example, the government and the concerned private sector organizations have continuously put strategies in place to bridge the digital divide that exists between the "haves" and the "have-nots" with the aim of having an informed society that will be able to contribute effectively to national development. This is imperative considering the fact that ICTs are invaluable to the development of the communities, the citizens and the various sectors of the country's economy as evident in the contribution of the various forms of ICTs such as telecentres and digital villages. Conclusively and as noted by Mansell (1999), the inability of underdeveloped and developing countries to acquire the capabilities for using ICT

applications will make them to be increasingly disadvantaged in many ways and also cut off from being part of the global information society.

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