TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF PHOTOGRAPHS

LIST OF APPENDICES

LIST OF ABBREVIATIONS

ACHAP	African Comprehensive HIV/AIDS Partnership
AISI	African Information Society Initiative
AMCOST	African Ministerial Conference on Science and Technology
ANC	African National Congress
APC	Association for Progressive Communication
AU	African Union
APF	Africa Partnership Forum
AXIS	African Internet Exchange Systems
BNLS	Botswana National Library Services
BOCRA	The Botswana Communications Regulatory Authority
BOPA	Botswana Press Agency
BOTEC	Botswana Technology Centre
BTA	Botswana Telecommunication Authority
CSO	Central Statistics Office
EASSy	The East Africa Submarine Cable
ECA	Economic Commission for Africa
EIFL	Electronic Information for Libraries
EU	European Union
FWT	Fixed Wireless Terminals

HAWKNet	Horn of Africa Regional Women's Knowledge Network
HEIST	Household Income and Expenditure Survey
HITD	Harnessing Information Technology for Development
ICT	Information and Communication Technology
ICT4D	ICT for Development
IDI	ICT Development Index
IDRC	International Development Research Centres
IP	Internet Protocol
ITU	International Telecommunications Union
LIS	Library and Information Sciences
KADO	Korea Agency for Digital Opportunity and Promotion
MDGs	Millennium Development Goals
MS&T	Ministry of Science and Technology
MT&C	Ministry of Transport and Communications
NCCK	The National Council of Churches of Kenya
NDP	National Development Plan
NEPAD	New Partnership for Africa's Development
NGO	Non-Governmental Organisation
NORAD	North American Aerospace Defence
PAV	Public Access Venue

PEND	Private Education Network
PTCM	Protocol on Transport Communication and Metrology
RCIP	Regional Communications Infrastructure Project
RIDMP	Regional Infrastructure Development Master Plan
RAC	Rural Administration Centres
SACMEQ	The Southern and Eastern African Consortium for Monitoring Education Quality
SADC	Southern African Development Community
SANGONeT	The Southern African NGO Network
SAT-C/WASC	South Atlantic/West Africa Submarine Cable
SME	Small and Medium Enterprises
UK	United Kingdom
UN	United Nations
UNESCO	United Nations Education, Scientific and Cultural Organization
UNDP	United Nations Development Programme
UNISA	University of South Africa
USA	United States of America
VDC	Village Development Committees
WOUGNET	Women of Uganda Network
WSIS	World Summit of the Information Society

CHAPTER ONE

INTRODUCTION

1.1 Background

Modern economics has propelled the world into an information society characterised by an information and communication technology (ICTs) driven economy. The advent of new technologies has impacted on all aspects of modern life from the division of wealth to the flow of investment, goods and services (Norris 2001: 4; Calderaro 2010: 21).There is a universal drive towards ensuring that all communities maximise the opportunities inherent in ICTs as enablers that can alleviate poverty; and increase access to health and social services. It is however regrettable that this noble drive continues to be hampered by variations in the availability, access and usage of ICTs. The apparent disparity, commonly referred to as the digital divide, is more distinct among rural and disadvantaged communities.

There are global efforts to bridge the digital divide. One of the most acclaimed strategies to enable disadvantaged communities' access to the technologies is through public access centres (Davison, Vogel, Harris, & Jones 2000:6; Akinsola, Herselman & Jacobs. 2005:37). In Botswana, such an approach has been made possible by a supportive ICT environment which many, including Dintoe (2010:55), Duncombe and Heeks (2002:3) and Mutula (2004:146) have singled out as one of the best in Africa. Despite the noted supportive context, access to and use of ICTs, particularly in rural communities continues to be relatively very low. This has been noted at country level by the Botswana Telecommunication Authority (BTA 2006:5) and also by Mogotlhwane, Khorshowshahi and Underwood (2013:1056). The concern has also been observed and reflected in the United Nations Development Plan (2005: 54)

Driven by the acknowledgement of the unacceptably low access and usage of ICTs across rural Botswana, this study aimed to explore the factors that enabled or inhibited access and usage of ICTs that were available to the Letlhakeng community through public access centres. Letlhakeng is a rural village in the Kweneng West District in Botswana, approximately 120 km outside the capital Gaborone.

The introductory chapter introduces the concept of the digital divide and highlights some of the regional, continental and global initiatives to address the observed divide. In ensuring a more contextual discussion, an overview of the Botswana context is also presented specifically to support justification for this study. This chapter also sets out the guiding research question and an overview of the method adopted to obtain the data needed to address these questions. The last section of the chapter presents an outline of the entire thesis.

1.2 Initiatives towards bridging the digital divide

The United Nations (UN), in its seminal report titled “The ICT Index Report” asserts the view that, regardless of how it is measured, there exists an immense ICT gap between developed and developing countries and that this inequality can be a cause of, or result from socioeconomic disparities (UN–ICT Task Force, 2005). The cited UN report gives examples of differences in ICT access and usage between those from low and high-income countries to show that a person in a high-income country is over 22 times more likely to be an Internet user than someone in a low-income country. The report further points out that relative to income, the cost of Internet access in a low-income country is 150 times the cost of a comparable service in a high-income country. These examples corroborate the United Nation’s ICT specialised agency, the International Telecommunications Union’s (ITU) (2013) assertion that 16% of the people in Africa are using Internet compared to 75% in Europe and 61% in the United States of America. Even the 2012 Southern African Development Community (SADC) ICT sector infrastructure development plan affirms that the high cost of access severely limits the development of local applications and services in especially rural and disadvantaged set ups.

A major challenge for policy-makers at the national and international level therefore, lies specifically in addressing the issue of the digital divide between the rich and the poor, and between rural and urban areas. The range of factors that inhibit or promote ICT usage have been studied with very limited agreement from study to study on the range of the concerned factors and most importantly how these factors are weighted in different populations (Corrocher & Raineri 2010; Dintoe 2010; Evusa 2005; Latchem &

Walker 2001). However the various studies are in general agreement that both lack of appropriate ICT hardware and the skills needed to drive these technologies are barriers to ICT access and usae. Developing a clear articulation of barriers to access is progressively more complex in cases where communities have access to the technologies but continue to have disproportionately low access rates.

Informed by this complexity and the paucity of related research in Botswana, the current study aims to specifically explore the factors that may inhibit or promote access and use of ICTs that are available through public access centres in a rural area within Botswana. ICTs are viewed as having the potential to assist developing countries to achieve exponential growth through the entire stages of development. The technologies offer unique opportunities for developing countries to narrow the development gap with industrialised countries. There is therefore a global commitment to help especially disadvantaged communities to cash in on the acclaimed opportunities of ICTs in order to alleviate poverty (Selwyn 2003:99; Mutula 2004: 144; UN-ICT 2005:3). This commitment is well evidenced in the ITU formation of the World Summit of the Information Society (WSIS) and charging it with advocacy in the promotion of ICT's for socio-economic development (WSIS 2003: Principle 33 & 43; Sahlfeld 2007:22). WSIS' primary goal is to establish a strong foundation for an information society with special focus on communities that run the risk of being left out. This commitment was further endorsed by African leaders and their development partners at 10th Meeting of the Africa Partnership Forum (APF) in Tokyo on 7-8 April 2008 (APF/TOKYO 2008: 17). WSIS is therefore critical to the inclusion of Africa in the information society because of its mandate on issues of finance and creating an enabling environment (Sahlfeld 2007:22).

As Ya'u (2002:5) and Sahlfeld (2007:7) note, most of Africa's frameworks are characterised by many action gaps and relatively low tangible results. This is a manifestation of Africa's multiple problems of weak infrastructure and a history of underdevelopment. For example, one of the greatest constraints in Africa and the developing world is that ICTs and telecommunication services are generally poor and also expensive for communities that are already poor, with low education levels, no

technology skills and low levels of computer ownership (Goulden & Msimang 2005:3; Mutula 2008:476).

Other commitments such as health care; housing, peace and basic education also limit Africa from fully allocating the needed resources to address the digital divide (Sitawa-Ogutu & Rege 2010: 1318). Efforts to redress the digital divide are therefore aligned to the already existing divide in demographic aspects of gender, geography, income, education, and occupation (Ya'u 2002:9; Fuchs & Horak 2008:101). The continent's digital divide therefore cannot be understood outside the dynamics of these other divides.

To address these intrinsic and interrelated challenges, there are concerted efforts to not only provide the technologies, but also to develop supportive policies, infrastructure and human resources. The primary foundation has been the African leaders' formation of a comprehensive framework "Building Africa's Information Highway" so as to support national information and communication infrastructure, policies and strategies (ECA 1996). The framework serves as a guide and commitment made by African leaders to collectively work towards bridging the observed digital divide.

In 2001 the 56th UN General Assembly also adopted a supportive approach towards the just stated framework as a critical aspect towards realisation of the Millennium Development Goals. The UN demonstrated commitment towards this end through the establishment and support of the biennial African Ministerial Conference on Science and Technology (AMCOST) as a specialised technical team that shares the developments of ICT's at country level. This was set in collaboration with the African Union (AU) as the body responsible for continental intergration. The AISI launch report also notes that AMCOST members who attended the Regional Symposium on Telematics for Development in 1997 (Addis Ababa), then tasked ITU, in collaboration with development partners, to facilitate establishment of national policies for information infrastructures (ECA 1997:1).

Some of the reported projects that collectively contribute towards the overall " Building Africa's Information Highway" include the EU - AU's establishment of Africa Internet Exchange Systems (AXIS) which was launched in 2011 and implemented in 2012 (IST-Africa 2014). There is continued capacity building in setting up, administering and operating these Internet Exchange Points. At the time of the just cited IST- Africa Conference (6th to 9th May 2014, Mauritius), the project was successfully implemented in 24 countries; and over 22 countries had had training on different aspects of the project. Equipment was reportedly delivered for setting up points in Burundi, Namibia and Swaziland (IST-Africa, 2014: 25). Even before this conference, progress in this front was also noted by Mutula (2008:480) who commended the exchange points and said they "obviate the need for traffic to be routed through Europe even when the communicating parties are in the same region or country'. This in a way will help speed up Internet communication and reduce costs in Africa.

The ITU has also been instrumental in championing projects related to Africa's connectivity by advocating for democratising access and developing national information infrastructures (Sahlfeld 2007:22). For example, at the Lisbon Summit in 2007 "Africa Connect" was initiated as the first 2008-2010 Africa-EU action plan (EU-Africa 2008: 14). Flagship projects under "Africa Connect" include the "Broadband for Africa" project. This was designed as a two-stage project which began with the submarine cable that connects African coastlines with fiber optics that are cheaper than the expensive satellite connectivity (Mutula 2008:481; Sahlfeld 2007:22). The East Africa Submarine Cable (EASSy) that runs between Sudan and South Africa is one example of these connections. The cable opened service in 2010 and was launched in Botswana in 2011.

Another example is the South Atlantic/West Africa Submarine Cable (SAT-C/WASC) that links South Africa, Spain and Portugal. The second stage of the "Africa Connect" project is the development of Regional Communications Infrastructure Project (RCIP), which taps from the submarine coastline access points (Sahlfeld 2007:22). Botswana participates in the development of these cable networks (Mutula et.al .2010: 18).

As noted earlier, developments on these policy and structural issues in Africa tend to be hampered by other socio-economic constraints that characterise the continent. For example, there is a concern that the just cited EASSy connection has been slowed down by contentions ranging from commercial to political debates on issues of the adopted connectivity model, ownership, funding, access and management (APC 2006). Despite the low progress on Africa's impasse, Sahlfeld (2007:24) and Ya'u (2002:7) point to a ray of hope in the continued arbitration and negotiations. These authors note that African countries have since agreed that primary governance of the telecommunication networks is best done through national governments in respective countries. This is highly supported by African-EU (2008) which also commends the resultant progress. For example, since then, African countries have developed infrastructure regulatory framework protocols; and have formulated key policy and legislative initiatives. A more specific example may be evidenced in the fact that most of the continent's ICT policy initiatives are now being mandated directly through the president's office in respective countries.

Initiatives like the New Partnership for Africa's Development's (NEPAD) e-Africa Commission and the Digital Solidarity Fund have also been instrumental in fostering successful "Africa-Connect" initiatives (Mutula et.al. 2010: i). These frameworks have also commendably pushed the liberalisation of markets in the telecommunications industry so as to enable cheaper connectivity and foster collaborative work of researchers and policy makers (Mutula 2008: 477; APF/Tokyo 2008:9; EU Africa 2013).

Continued commitment may also be evidenced in the African Union's adoption of the theme "ICT challenges and prospects for development" for the fourteenth ordinary session of the assembly in 2010 (AU, 2010:7). In 2013, the Union also celebrated ICT week (2nd – 6th December 2013) under the theme "Promoting Pan Africanism, African Renaissance through ICT towards AU 2063 Vision". This week was part of the celebration of the Union's 50th Anniversary. During this week, the AU Head of Information Society Division noted that one of the commission's priority areas of Vision

2063 is to have completed the AXIS project. As noted earlier, the AXIS project refers to the Africa Internet Exchange System that is cited as one of the success cases of the “Connect Africa Initiative” and the broader “Building Africa’s Information Highway". The AU Head of the Information Society Division further buttressed the success of this goal at the IST Africa 2014 conference held in Mauritius, by reporting that the project was successfully implemented in 24 African countries (IST-Africa 2014). IST-Africa is an ECA supported initiative to support African ministries responsible for science and technology.

At regional level, the Southern African Development Community (SADC) also has initiatives that contribute towards the global drive to bridge the digital gap. The SADC Regional Infrastructure Development Master Plan (RIDMP) of 2012 has been developed as a spring board for both long and short term interventions for the region. The strategies or projects in RIDMP were borne out of consultations and progress reports from the varied regional initiatives. For example, Mamelodi-Onyadile, SADC Senior Programme Manager, presented a summation of these initiatives at the United Nations Capacity Building workshop on Africa’s implementation of e-governance, services, policies and solutions held in Addis Ababa, Ethiopia on 17-19 February 2009. Key institutional frameworks at regional level include the adoption of the Protocol on Transport Communication and Metrology (PTCM). The adoption of the PTCM is highly commended as a worthy contribution towards reduced costs in access and use of ICT’s (Goulden & Msimang 2005:8; Mutula 2004:145). One of the milestones of this protocol is the development of regional policy and regulatory frameworks to speed up infrastructure development and facilitate regional trade (Mamelodi-Onyadile 2009; Mutula, Grand, Zulu & Sebina, 2010: i).

Mamelodi-Onyadile (2009) also reports that post the PTCM, specialised bodies were instituted to undertake tasks like harmonising regulatory issues; setting up radio, fiber and microwave backbones and accelerating transformation in the sector. The region has also developed an “intelligent nodes” project, which is an Internet protocol (IP) base platform for a better connection between member countries (AU 2010:37). All these e-SADC initiatives which collectively feed on to the RIDMP are part of the implementation

of the African Information Society Initiative (AISI) which is a product of the 1995, Addis Ababa African Regional Symposium on Telematics for Development (ECA 1997:1). The initiatives also reflect the region's ownership of the projects and the will to drive towards the acclaimed information society. At the SADC ICT Ministers Meeting of 8th November 2012 held in Mauritius, member countries were even urged to develop observatories at country level. The ICT observatory is to serve as a framework for monitoring and evaluating the progress of regional ICT programmes. Such a framework would be very helpful because, as will be seen in the discussion of the use of ICTs through public access centres, there is no standard measure for any best practice. The observatory will serve as point of reference for more reliable data and reports on measuring the digital divide and assessing intervention strategies like the use of ICT public access centres.

1.3 Intervention through ICT public access centres

One of the key thematic areas of AISI which is key to the ITU guidelines, has always been democratising access to information, especially by supporting accelerated use of ICTs for development of disadvantaged communities. Subsequently, ITU and AISI developed a roadmap under the broad theme of ICT for development (ICT4D). This framework has been instrumental in guiding the United Nations' promotion of ICT training and development of multipurpose community centres in Africa (Davison et.al. 2000:4).

Other initiatives aligned to ICT4D include projects meant to assess transition of Africa into the desired information society. One example is the Scan-ICT project whose main focus is to support development and standardisation of indicators that will enable collection and harmonisation of data on other projects like the multipurpose community centres (ECA 2012). The adopted indicators serve as a guiding framework for the assessment of access and use of especially Internet for development in Africa. This project is one of the AISI programmes, supported by NORAD and the EC. A total of eleven countries were covered in the first phase of the Scan-ICT project. Botswana was part of the second phase (Ajayi 2002; ECA 2012). The country also hosted phase two of workshop on ICT indicators which was supported by ECA/ITU in October 26- 29 2004.

It is worth noting that the Scan-ICT project feeds well into the observatory frameworks that have been proposed as a standardised guide for monitoring and evaluating the progress of regional and country specific ICT programmes.

The Scan-ICT project focuses on assessing and monitoring Africa's penetration or progress into the information highway (ECA 2003: 1; ECA2012) using indicators or data that has been harmonised through the country and /or regional ICT observatory framework. For example, Scan–ICT project had to run a workshop (November 2002, Addis Ababa, Ethiopia) to agree on key areas of assessment and on the indicators before the actual assessment of the selected pilot countries. The second leg of the workshop was held in Botswana, 2004, to review the pilot and initiate a roll out of the project to other countries. The advent of national observatories would be very useful in such standardization and review workshops.

The harmonising and monitoring of ICT indicators in Africa fall under the broader AISI goal of facilitating access to ICTs in Africa. The initiatives also fall under the "Democratisation of Access" component of the "Harnessing Information Technology for Development" (HITD) of the UN System-Wide Special Initiative on Africa (UNESCO, Telematics Unit, 1997). All these play a core role in Africa's strategies to bridge the digital divide. For example, in line with the "Democratization of Access" component and guided by the AISI framework, UNESCO, ITU and the IDRC initiated five rural multipurpose community tele-centre pilot projects in 1999. The pilot countries were Benin, Mali, Mozambique, Tanzania and Uganda. The centres were instituted to test both the technology application and the relevance of the available policy and structural issues in the provision of ICT to disadvantaged communities. The initial rollout of the UN and ITU multipurpose community centre projects in Africa was meant to support especially e-Health, e-Education and e-Governance. These established centres' main aim was to offer cheaper ICT access and usage, develop human capacity and encourage socio-economic development (Oestmann & Dymond 2001:3; Davison et.al. 2000:4; Mutula 2008: 481). The access points have since been widely adopted although they differ in name, structure, management and yield different results depending on context.

As noted by Mutula (2008:475) the track record of Africa's multi-purpose tele-centres has been intrinsically intertwined with a broad range of socio-economic challenges that hamper Africa's efforts to promote access and use ICT's. Nnafie (2002:12) also notes that in Africa, the "sequence from use to impact is complex and indirect". Although this author was referring to access and usage of especially Internet cafes in Tanzania, similar sentiments have been observed despite the significant investment in supportive ICT structures in Botswana (Mogotlhwane, Khosrowshahi & Underwood 2013: 1054).

1.4 The Botswana context

The 2011 Botswana national population census reflects a total population of just over two million (2 065 398) spread over an area of 582 000 square kilometres. Most of the population (41.9%) is concentrated along the more urban eastern side (UNDP 2001:185). Despite the country being commended for doing well in economic growth, it is predominantly rural with a high incidence of rural poverty (Preece & Mosweunyane 2004:24; Mutula et.al. 2008:4; CSO 2008:12). The country is characterised by high percentages of female headed households that are predominantly poorer than their male counterparts (Keitheile & Mokubung 2005:1; CSO 2008).

Although Botswana's economy is one of the strongest and amongst the best in the region, like most developing countries, it faces a broad array of factors that put the country on the adverse side of the digital divide. To address this challenge, the nation has adopted a long term development strategy, popularly termed Vision 2016, as a guiding framework on national development. The vision is built on seven collective pillars that guide the nation to be strategically positioned in the global economy by 2016, when the country attains fifty years of independence (Vision Council 2009:5).Two main complementary pillars of "an informed and educated nation" and "a prosperous, productive and innovative nation" have been acknowledged for the country's improved access to ICT and the drive towards being an information society (BNLS/ACHAP 2009: 44).

Some landmarks in Botswana's ICT landscape include the government's adoption of a national ICT policy in 2007 and the establishment of a dedicated Ministry of Science and Technology in 2004 (Botswana n.d). The ICT policy is commonly referred to as

"Maitlamo" which is a Setswana word meaning commitment. In the review of the 10th National Development Plan, the Permanent Secretary in the Ministry of Transport and Communications affirms this commitment by referring to the policy as government's promise to deliver on the identified national ICT developments (Kereteletswe, 2015).

The policy serves as a road map for the effective utilisation of ICT for development because it is used as a tool to define and facilitate the adoption and implementation of the government's ICT programmes. It also aims at enabling communities to access and use ICTs for service delivery, public awareness, capacity building and development of local content (Mutula et.al. 2010:10). Through this policy, the universal access and service policy has also been developed to facilitate provision of communication services especially in underserved areas (UNDP 2005:54; Mutula et.al. 2010:10). The Ministry of Education has also introduced computer literacy from as early as primary schools (Mogotlhwane, Khosrowshahi & Underwood 2013: 1056).

The liberalisation of the telecommunication industry to accommodate especially the mobile telecommunication providers has also been commended for its positive contribution to the country's ICT landscape (Mutula et.al. 2010:11; BTA 2006).This has even enabled the use of wireless network for Internet connection. Kereteletswe (2015) cites this institutional reform, together with the privatization of the Botswana Telecommunications Cooperation in 2008, as milestones in the attainment of the national ICT development targets for the 2009- 2016 or the 10th National Development Plan (NDP 10) as commonly referred to.

In an endeavour to diversify the economy that is currently dependent on diamond mining, the country has shifted its focus towards the support of small and medium enterprises (SMME), particularly the service sector. The local ICT industry is therefore encouraged to support these enterprises to grow markets (Duncombe & Heeks 2002:61). Different programmes have since been developed to collectively strengthen the telephone and ICT infrastructure and to promote computer penetration in rural communities. For example, two complementary programmes of

rural electrification and rural telecommunications (Mutula 2004:148; Mutula et.al. 2010: 18; IST-Africa 2014) enabled the provision of essential ICT infrastructure services to people without access to the technologies in their homes through the "Connecting Communities" programme (BNLS/ACHAP 2009:45). These interrelated programmes also ushered in the establishment of community ICT access centres. For example, in 2004 it was possible for BOTEC to pilot three community user information systems in the villages of Letlhakeng, Hukuntsi and Gumare because the villages had the needed infrastructure. The pilot centres later took the brand name Kitsong Centres (i.e. the centre of knowledge).

These pilot centres aimed at using ICTs to link government, NGO's and the private sector with rural communities. The adoption of the Kitsong Centres' concept shows that Botswana as a predominantly rural country, has embraced the provision of ICTs through public access points as an enabling framework to bridge the digital divide. This strategy is used to promote access and use of ICT's in rural communities so as to help the communities to seize the acclaimed opportunities of ICTs to alleviate poverty; access social services and to facilitate the growth of an informed and educated nation.

As noted earlier, the Ministry of Education has introduced computers to schools. This programme, known as "Thuto Net" also draws benefits from the rural electrification and the connect communities programmes. The programme is intended to link all schools onto the Internet; have a computer per classroom and to equip teachers and students with the skills needed to navigate in the information society (Dintoe 2010:56). According to the review NDP 10 ICT initiatives as presented by Permanent Secretary, Ministry of Transport and Communications, out of the targeted 239 secondary schools, 80 had access to WIFI while the other 62 had upgraded computer labs (Kereteletswe, 2015).

Despite government investment in ICTs and electricity infrastructure, access and usage of the technologies continues to be low. For example, the country's Internet access and usage is reportedly below 5% of the nation's population with an estimated 2.5% or 40,

000 – 60 000 users and they being predominately in the corporate world (Mutula 2004:146; Mutula et.al. 2010: 14; Dintoe 2010:18). It is not clear why Botswana's "policy of universal access" is not yielding impressive results (UNDP 2005: 54). Batane (2013) also expresses concern that, although the literature shows a general trend that young people are the most connected to Internet, a study on Internet access among young people in Botswana presented a worrisome contradiction. Despite Kereteletswe's (2015) citation of Thuto-Net as one of the national accomplishments for the NDP 10, Batane (2013:18) observes that even within the education sector access and usage of Internet is still very low and that there are disparities in access and usage even between educational institutions.

There is need to find out the challenges related to usage of ICTs in Botswana and how they can be addressed. Some of these concerns are qualitatively assessed and described in this study using the case of Letlhakeng village.

1.5 Letlhakeng village

Letlhakeng Village is in the South Western part of Botswana in the Kweneng District, one of the poorest districts in the country. with unemployment rate of 17.4 % (Tsheko, Bainame, Odirile, & Segwabe. 2007:8) .The Botswana population census based poverty map of 2008 also showed the village as one of the poorest with a poverty head count of approximately 40% (UNDP & CSO 2008: 8 -11). The map further shows that in Letlhakeng, 2,506 people out of 5,982 were classified as poor. These observation were deduced from aggregated data from both the Population and Housing Census of 2001 and the 2002/2003 Household Income and Expenditure Survey (HEIS),.

The village lies within the Kgalagadi desert at 1000 metres above sea level and is characterised by sandveld. Although traditionally the villagers made a living from agriculture coupled with labour migration to South Africa, farming is now no longer attractive, especially to young people (Wikan 2003:2).The fact that many people did not return to agricultural activities after the 1981-1996 country wide drought also created a trend that is described as "split households" (Wikan2003:28). Wikan also describes such a household as one where family members having an "economic footing" in both

the urban market and the rural village. Some household members hold the fort in the villages to produce whatever may be gained from the villages to augment what comes in from the family members working in towns.

The split household may further be linked to the fact that this village has a population of about 7 229 (CSO 2011:63) spread over 1 297 households that are predominantly (62%) headed by females with very little or no reliable income (Mathangwane & Arua 2006; Wlkan 2003:30). The able-bodied, educated and employable members of the community work and stay in towns.

The village is also characterised by low educational attainments, high rates of absenteeism from school, limited access to electricity, school libraries and books (Dintoe 2010: 33). Despite females being in the majority of more than 55% (or 3 867 females to 3, 362 males), fewer females attend school. This explains the earlier observation by Mathangwane &Arua (2006) and Wlkan (2003:30) that the village is mainly headed by females with little or no education. One may further infer that due to the noted poverty in the community, most households depend on the government's poverty alleviation safety nets.

Despite the observed bleak characteristics, the village serves as a headquarters for the Letlhakeng sub-district. Residents from nearby villages visit the village for most basic social services. There is therefore a need for good ICT connectivity within the village and in other villages in the sub-district. The village needs to have good communication connections with especially organisations or entities that help the community to access social services and to reduce poverty.

The "split household" phenomenon also calls for affordable, clearer, efficient and reliable means of communication between household members that are geographically dispersed in pursuit of various economic activities. It is also imperative that community members have the needed skills to use the available technologies.

1.6. Research Problem

In rural villages like Letlhakeng, access to and usage of ICTs that are available through public access points is reportedly very low (UNDP 2005: 54; BTA 2006:5).This assertion necessitates the need to assess if the ICT public access centre indeed contributed towards bridging the digital divide in rural villages. There is need to assess what inhibits or promotes Botswana's rural communities to access and use these technologies to alleviate poverty; access social services; and to be an informed and educated citizens. It is not clear if the people have access to the technologies that are available.

This study intended to qualitatively assess how the rural community in Botswana access and use ICT's that are available through public access points to bridge the digital divide so as to enhance the services offered to the community. The focus in this case is on the ICT public access centre in Letlhakeng village.

1.6.1 Aim and objectives of the study

The present study specifically aimed at exploring the factors that promoted or hindered the Letlhakeng rural community to access and use ICTs available through public access centres. These factors were assessed so as to inform policy and practice on the provision of ICT in rural Botswana to enable the communities to access social services.

Four specific objectives were formulated to address this aim:

Objective 1: To find out what ICTs were available for access and use by the Letlhakeng community through public access points.

Objective 2: To find out who provided the Letlhakeng community access to ICTs through public access points.

Objective 3: To identify factors that promoted or hindered access to and usage of the ICTs that are available through public access points

Objective 4: To map the access and usage patterns of the Letlhakeng Community in line with both the global trends and attainment of national aspirations.

1.6.2 Research questions

What promotes or inhibits Letlhakeng rural community to access and use the ICTs that are available through public access points to alleviate poverty; access social services; and to be an informed and educated citizens?

The following research questions were explored to address the above stated research concern. These questions served to identify challenges in access and usage of the technologies and in identifying how the how the community can best be served.

I) What ICTs and related services are available for access and usage by the Letlhakeng community through public access points?

This research question was guided by the objective to find out what ICT's were available and accessible for use by the Letlhakeng community through public access points.

II) Who provides services to enable the Letlhakeng community to take advantage of the ICTs?

This question was driven by the desire to find out who provided these ICT services to the Letlhakeng community. The question further sought to find out what motivated the service providers to engage in the programmes they offered.

III) What promoted or hindered the Letlhakeng community to access and use the ICTs that are available through public access centres?

This sought to establish the enablers and inhibitors of access and usage of the technologies. The question called for identification of both users and non users; then establishing what motivated them to use or not use the available services.

IV) How does the Letlhakeng community access and use ICTs that are available through public access points?

The last question anchored on findings from all the other questions to map out the community's access and usage patterns so as to establish how the community can best be served.

1.7 Summary of literature review

The literature that was read for this study helped in contextualising the concept of the digital divide. The debates and theories from the reviewed literature informed and influenced the adopted research approach. The following discussion highlights some of the varied interpretations of the digital divide and the different thematic areas that emerged in the literature. This is done so as to help the reader situate the present study within the existing body of knowledge.

1.7.1 Interpreting the digital divide

The literature reviewed shows an array of intertwined factors that are used to interpret both the digital divide and the intervention strategies (Alampay 2006:6; Yu 2006 236; Calderaro 2010:21). It is for this reason that in the present study, the researcher strategically dedicated a chapter on what the digital divide constitutes and the broad examples of intervention strategies. The third chapter, which is also a literature review chapter, then focuses on the use of ICTs through public access centres as a strategy of interest.

The interpretation has since evolved from the divide being viewed as absence of technology in the 1990's (Barzilia-Nahon 2006:269; Sitawa-Ogutu & Rege 2010:1320) to a contemporary view that considers both availability and accessibility (Selwyn 2003:100; Talbot 2004:16; Jacobs & Herselman 2005; Barzilai-Nahon 2006:269; Calderaro 2010:25). Assessment of the divide from the new perspective is in terms of the technological and socio-economic factors that may influence the community's access and usage of ICTs (Barzilai-Nahon 2006; Corrocher & Raineri 2010: 62). The resultant trends are then seen to mirror the long existing patterns within the information society (Yu, 2006: 236; Norris' (2001:52) and to even worsen the already existing socio-economic disparities (Yu 2006:235; Sitawa-Ogutu & Rege 2010: 1319).

Qualitative and quantitative tools have been developed to guide both the interpretation of the digital divide and tracking of strategies to bridge the gap using both the technological and socio-economic factors. For example, the International ICT Development Index (IDI) as developed by the Telecommunication Union (ITU) (ITU 2009:1); the Standardised Media Indices **(**Norris 2001) or the Synthetic Index **(**Corrocher & Ordanini 2002). The reviewed literature presents contextual examples to demonstrate that the digital divide as a "relative concept" that varies with time and place (ITU 2009: 45; Corrocher & Ordanini 2002:13). Norris (2001) interprets the variations as the global divide; the social divide and the democratic divide. As Bates (2005) and Yu (2006: 236) observe, the observed interpretations show a broad conceptual integration that brings in experiences from other interrelated theories. Understanding these theoretical views also helped the researcher to appreciate the need to contextualise strategies to bridge the digital divide.

1.7.2 Digital divide interventions

Many interrelated theories point towards the adoption of ICT public access centres as one of the strategies to bridge the digital divide. Research within this developmental field, commonly referred to as community informatics (O'Neil 2002:76), shows such centres as a cheap and effective way to offer community access to ICTs (Davison et.al. 2000:4; Oestmann & Dymond 2001:3; Etta & Parvyn-Wamahiu 2003; Evusa 2005:67; Mutula 2008: 481; Akinsola, Herselman & Jacobs SJ 2005: 37; Elijah & Ogunlade 2006:55).

Although there is no definitive definition, the term ICT public access centres is generally used to refer to some space that serves a community's needs for access and use of integrated ICT services (Latchem& Walker 2001:3; UN-ICT 2005). There is a call for more research on these centres so that they become sustainable development vehicles (Prado 2009:12; Elijah & Ogunlade 2006:55; Duncombe & Heeks 2002: 66). The reviewed literature traces both the history of the centres from the 1980's in the Scandinavian countries to how the centres are used by various demographic groups. Some of the centres are owned and managed by individual entities (stand-alone centre)

while others are embedded into already existing social services (Evusa2005; Latchem & Walker 2001; Jacobs & Herselman 2005:58).

The cases discussed in the literature review section of this study also present diverse data collection techniques that are guided by equally broad range of interdisciplinary theoretical frameworks. The studies also present varied issues of the divide as it relates to different population groups. For example, Hernandez-Limon (2009) engaged in a participatory observation to gather data from Latino women at the Little Sisters of Assumption Community Technology Centre in New York. Duncombe and Heeks (2002) instead focused on rural entrepreneurs in Botswana while Kozmar and Wagner's (2006) concentrated on ICT usage by school drop outs. EIFL (2012) documents ICT youth services that are embedded in a community library in Uganda. In some cases the assessment could be longitudinal, global and cross country. For example, the just cited case of Kozmar and Wagner in (2006) involved ICT multiple projects for out-of-school youth in OECD countries. Etta & Parvyn-Wamahiu, (2003) also present findings from thirty-six centres across five countries in Africa while Akinsola, Herselman and Jacobs' (2005) comparative case study on the other hand only focuses on two countries: South Africa and Nigeria. All these cited cases differ from Yu's (2006) desk study.

The literature reviewed further shows that despite the varied intervention strategies and the different ways of studying or assessing any given intervention strategy, they are all guided by a common principle of 'Universal Access" (UNDP 2005:54, Alampay 2006:8; Mutula 2008:475) or the "Real Access/Real Impact" (Bridges 2005) or "real benefits for real people" (O'Neil 2002: 78). Strategies guided by this principle resonate with the already noted "people focused" interpretation of the digital divide.

1.7.3 Gaps in the literature reviewed

As Yu (2006:244) rightly notes even though some studies may seem similar, the absence of universally agreed upon indicators or assessment method complicates comparison and evaluation of the findings in community informatics. It is understandable that some gaps have been evidenced in the reviewed literature because of the multidimensional nature of both the concept and related research. Later

in this chapter, some of the gaps that are specific to the Botswana context are highlighted so as demonstrate how the present study contributes towards the needed research on community informatics. The concluding chapter also recommends more thematic research on this broad area.

The present study's concern is that although the indicators used in the diverse studies provide a solid research base, their application in the reviewed literature fail to reflect credible research methods as the authors tend to give project progress reports. For example, O'Neil (2002: 94) highlights valuable themes in thirty different studies but fails to show how such themes were identified. Kozma & Wagner (2006) also share best practices and policies on varied international projects for the disadvantaged communities without showing how the projects were assessed. The compilations of different case studies by Latchem & Walker's (2001) and the UN–ICT Task Force (2005) also emerge as more of organisational progress reports.

It also emerges in the reviewed literature that the valuable contribution of the community members who do not use the ICT public access centres is left out. For example, the case studies presented by Evusa (2005), Jacobs & Herselman (2005) and Hernandez-Limon (2009) excluded the non users. This flaw then gives findings that tend to underplay the role of the community and other social services in the strategic management or implementation of the adopted intervention strategies. This concern is even worsened by the observation that the noted centres are studied in isolation with little or no reference to other significant service entities that also serve the community to access ICTs.

Another observed limitation in the reviewed case studies is the tendency to focus research on projects or centres that are already fully funded by some external entity or are embedded into an already existing social service. For example, the e-Bario project as presented by (Songon et.al. 2008) was funded and managed by a community of researchers. It would be important to know how these projects related to other existing community services. The recommendations then tend to be more of what Talbot (2004:9) views as focusing on the system failures and not on individuals as both users and potential users. For example, Evusa (2005) and Jacobs & Herselman's (2005) give

policy recommendations towards improved delivery of services in Kenya and South Africa respectively.

Despite the noted limitations, the reviewed cases offered valuable lessons for conducting this study. The literature helped this research to adopt an inclusive guiding theoretical framework. This further translated into the adoption of a qualitative research that aimed and interpreting the context.

1.8 Summary of research method

This is a qualitative case study that draws from a multi-disciplinary theoretical framework of an interpretative approach with a critical realism stance (Dobson 2002) (i.e. interpretation of reality coupled with recommendations for change). The approach is discussed in detail in the second chapter of this study.

The adopted research method is based on the contention that although the primary intent is to assess or analyse usage of the technologies (i.e. an interpretivist approach), the researcher concurs with critical theorists' view that research has to help "find remedies to social ills" or have an "emancipatory interest" (Benoit 2007). This research approach brings on board elements of social constructivists that call for an understanding of social and technical factors of access and use of the technologies that are offered through public access centres (Evusa 2005: 137). It is important that the research approach considers these factors because as noted in the introduction of the thematic issues of the digital divide, it is a broad concept that calls for an eclectic approach.

This study is an information usage or end-user study which is within the realms of Library and Information Sciences (LIS). As Pickard (1998) attests, most end-user studies in this field focus on description of behaviour or performance on a particular set of task. The focus in this case is on user; non users as potential users and the infomidiaries as service providers. A purposive selection of these participants was adopted so as to get the information rich community members. Data was collected through interviews; formal and informal discussions; observations and a review of related documents. The continued purposive selection of the participants was guided by

the developing thematic sub-plots and not necessarily priory set themes. Some of the initial participants, or what Leedy and Ormrod (2005:206) and Heckathorn (2002:12) term “seed subjects”, were identified through a random walk-in at selected sites, while others were referrals from other participants

Three sets of interview guides were used for these participants. Although initially the researcher intended to gather data from non-users through focus group discussions, it was not possible to get this target group because if the participants were met in any formal and planned group, then they would expect some kind of payment. The planned focus group guide was then altered to an interview guide because a proper focus group discussion would have been costly and contradicting the research ethics. The flexibility to alter the research tools is accommodated in case studies of this nature where the focus is more on the phenomenon under examination rather than the methodology (Dobson 2002; Creswell 2007: 105; Mortari &Harcourt 2012: 235; Wang 2013: 769).

The complementary use of research tools and techniques, coupled with the concurrent running of research phases helped to positively validate data gathered from the different sources (Falconer & Mackay 1999). It also positively contributed towards the continued improvement of the research tools (Heckathorn 2002:14). For example, the feedback from preliminary visits and introductory discussions guided selection of participants for in-depth interviews. The continued analysis of pictures taken during the data collection and the re-play of the interview audio recordings also greatly aided the continued comparative analysis and the growth of the research processes. Some of the informal discussions were however not audio recorded because the researcher was avoiding to disrupt the natural flow of the discussion.

As will be seen in Chapter Five, the narrative of the data analysis overlaps with the description of data collection processes. This, as stated earlier, emerged as a result of continual comparative analysis of data as it kept emerging from the varied sources. The analysis chapter also adopted a descriptive narration of stories to demonstrate where the interview was conducted; who the participants were with and why the interview was conducted at that setting. Such a detailed description of the context will not only help

the reader in building a conceptual picture but it also serves in showing how transparent and ethical the research was conducted.

1.9 Ethical considerations

As Gomm (2008:13) notes, it is essential that the study be credible and authentic (i.e. validity) so that it yields dependable and credible results. Cresswell (1998:213) and Maxwell (2013: 128) also stress trustworthiness, credibility and authenticity as primary issues to be considered when assessing the validity of a qualitative case study. The present researcher confidently presents this study as having such qualities. This research adhered to basic academic ethical principles and that of "Botho" (i.e. A Setswana word that denotes respect for the next person).

The proposal to conduct the study was assessed by the UNISA Higher Degrees Committee and the approval was communicated by the supervisor via email dated 12th March 2012 (Appendix 1: supervisor's communication on accepted research approval). Appendix 2 is the ethical clearance form that was submitted together with the proposal.

Permission to conduct this study was sought from the Ministry of Transport and Communication and was issued on 13th November 2012 (Ref: MT&C 1/13/9 II (20) Appendix 4). The background to the study; research question and proposed method of inquiry were also presented to this Ministry and to the Botswana National Library Services.

As a way of validating the data, the researcher varied the sources and had continued collaboration with participants, stakeholders in different ministries; key people in the village and informal peer briefings with other professionals in the field. Leedy and Ormrod (2005:133) refer to this strategy as member checking and view it as a useful way of maintaining trustworthiness in research. It is a form of triangulation, or what Cresswell and Miller (2000: 125) refer to as the corroborative evidence collected from multiple sources and from different settings through varied techniques.The approach also enabled the researcher to gather comprehensive data and to increase consistency (reliability) in the interpretation of what the participants were saying or doing.

The present study concurs with Porter (2007) that trust in research includes a categorical statement of how the study was conducted and a detailed description of both the strengths and limitations of the study. Porter further cautions researchers to acknowledge such limitations because it is not possible for qualitative research to be absolutely rigorous and accurate. This view echoes the social constructivists' contention that reality is complex and has no distinct representation (Benoit 2007; Evusa 2005:137).

Throughout the study period there was respect for the participants with no physical or emotional harm posed to them. All the administered tools clearly articulate the research title, intent, guarantee confidentiality and request for voluntary participation. Although the interview guides recorded the participant's bio-data, it was clearly articulated in the consent form that the information was only for administrative purposes. Personal information was also sought to help construct the participants' profile so as to help the researcher to understand their stance and factors that may inhibit or promote the usage of the centres. Some participants, especially the non users, asked for assurance that their names would not be published in any media like radio or television. Some participants also opted not to sign the interview response sheet.

Continued collaboration with research participants, the research supervisor, relevant academics and professionals in the process of data gathering and analysis also helped validate and give credibility to the process and the findings. Ongoing discussions with participants also helped to avoid any bias towards any authorities, agencies, institutions or persons. Alterations or developments made on both research tools and the methodology were documented to enable tracking data to the source and even open inspection by anyone concerned.

During the data analysis, the researcher engaged with stakeholders in the national ICT landscape and the research community for further input and validation before final presentation of the thesis. Such discussions adopted the "Delphi technique" in a way, where the authorities or experts were not brought together but were consulted as and

when there was a need and an opportunity to do so. The triangulation of these experts and authorities helped gain more in-depth information from different sources.

The preliminary findings were also presented in an international conference hosted by Botho University, Gaborone, Botswana in 2014. The researcher also participated in two Internet Governance Forums where she met experts and civil society members who were involved in various activities geared towards an inclusive Internet community. All these interactions helped in broadening the researcher's awareness of the broad issues of ICTs in rural communities.

1.10 Scope and limitations

This study was limited to Letlhakeng village in Botswana. The researcher thus out-rightly acknowledges that the findings may not necessarily be applicable to other settings. Although an ideal situation would be a countrywide study, this particular study was limited to access and usage of the technologies that were available to the Letlhakeng community through public access points at the time of study. A multiple case study approach or a country wide study was avoided not only because of resource constraints, but also to enable in-depth focus on the community. The researcher wanted to maximise investigation of this specific case. The researcher therefore acknowledges that the findings may not necessarily be applicable to some settings

As noted when introducing the research method, and as is typical of most qualitative studies, consistency tended to be compromised by the continued alteration of research tools and approaches on multiple sources and settings (Cresswell & Miller 2000: 125; Porter 2007; Benoit 2007; Evusa 2005:137). The researcher accepted the need for such a compromise because the focus was to gather as much comprehensive data as possible and not to test any research tools.

1.11 Justification for the study

Botswana's investment in policy and regulatory frameworks as well as the needed telecommunication infrastructure shows the country's commitment to the drive towards an inclusive information society as called for in global agendas like WSIS, AISI and e-

SADC. Although these are clear indicators of government's commitment, it is not clear how the ordinary citizens are taking on these global, regional and national initiatives. As noted in the summary of the literature review, there is a gap on documentation on how the communities respond to the strategies put in place to create an enabling environment. Although Botswana has been commended for its ICT supportive environment, the researcher is not aware of a study in which the voice of the rural communities was well articulated. This study therefore finds it timely to assess how rural communities, as an essential component of the information society, relate to the varied issues of access and use of the available ICT services.

There is a global call for research and benchmarking of the various disparate under-takings that drive towards building an information society. Mutula (2004:144 & 151) specifically calls for such research in a Botswana context. Mutula (2005:151) further calls for a survey to determine how many such initiatives to bridge the divide are available for access and use by the communities and how the services are managed and used. The need for such knowledge is further reflected in one of the goals of the regional ICT discussion forums, called the Botswana Theta ICT4D forum which discusses how ICT's are being applied to improve service delivery and alleviate poverty (Mutula et.al. 2010). The present study contributes to the needed knowledge for such discussions and for actual service improvement. Such knowledge is needed not only to build on the theories of the digital divide but also for continued development of practical strategies towards closing the gap. This research output will hopefully contribute towards the strategic map in the digital divide research agenda.

Although the Botswana Telecommunications Authority (BTA) conducted a survey that partly addressed Mutula's (2004) and (2005) calls for research, the BTA focuses on the market and regulatory or policy issues related to universal access (BTA 2006:6). The present study's primary concern is the community. For example, how the "market and regulatory issues" as set by the BTA translate into how the community's access and usage of the ICTs.

Even though Sebusang and Masupe (2003) motivate the need to explore factors that contribute to poor access and usage in especially rural communities, they do not bring

in the user and non user community's perspective. These authors instead focus more on issues of technology or infrastructure and policy. The present study anchors on the people's views and their observed patterns of using the available technologies.

Another related research contribution by BNLS/ACHAP (2009) was also limited to assessing access and usage of ICTs in line with the needs of a BNLS specific project that aimed to promote free access and use of ICTs in libraries. The focus was further narrowed by Lekoko et.al (2011) in their assessment of the project's impact. Another study by Totolo and Renken (2012) also focused on access centres that were within public and community libraries. The latter rightly points out that impact assessment is a building block that can best be related to access and usage patterns. Hence the present study is important as it presents that foundation block of access and usage patterns.

Mutula, Grand, Zulu and Sebina (2010) rightly admit that their desk research was mainly informed by the commissioned reports of the Botswana Telecommunications Corporation (BTC) and BTA. The findings from the desk review was then validated and updated by interviews and discussions with experts in academia and civil society at the Thetha March 2010 Forum that was referred to earlier on. This still leaves out the community of users and non-users as critical players in the development of both practice and policy related to access and use of ICTs.

It is also important to get to an understanding of how the Letlhakeng community embraced, accessed and used the available technologies because as the headquarters of the sub-district, this community's uptake of these technologies and related social services is likely to influence that of the neighbouring villages. The researcher is not aware of any study that addresses this need from a specific community.

1.11 Study outline

The just concluded chapter presents an introduction of the study. The second and third chapters present thematic issues that emerged from the literature reviewed. The second chapter broadly introduces theories and debates that are key to conceptualising and contextualising both the digital divide and the adopted intervention strategies. The third chapter then zeroes in on the use of ICTs through public access points as one of the

highly acclaimed strategies for rural communities like Letlhakeng village. This area is yet another “thicket” or dense network of broad inter-related thematic sub-plots However, the chapter focuses on building an understanding of public access centres by discussing the structure, management and services offered. Both chapters two and three highlight “gaps in documentation on the divide and also in the strategies to include disadvantaged communities into the global information economy.

Chapter four then discusses the research method while chapter five gives a detailed descriptive analysis and interpretation of the data gathered to address the set research question. Based on the learning curve from the studied literature and the knowledge generated throughout the study, the final chapter presents conclusions and recommendations for service provision, for the community and for the research community.

Each of the subsequent chapters closes with a summary of key points that emerged in the chapter. The concluding summary also serves as a link to issues that are discussed in the subsequent chapter.

CHAPTER TWO

UNDERSTANDING THE DIGITAL DIVIDE

2.1 Introduction

Despite the universal lamentation over the digital divide, and that it is a broadly discussed phenomenon, its complexities leave it with no universally accepted definition (Alampay 2006:6; Yu 2006 236). This lack of consensus in definition has resulted in different interpretations, hypotheses and theories on its cause, trends and impact. These complexities also hamper development of a sound theoretical framework to guide strategies needed to assess and to bridge the digital divide (Yu 2006:244; Calderaro 2010:21).

As Boote and Beile (2005:7) note, a broad topical issue like the digital divide is best dealt with "by handling a smaller number of key conceptual pieces". The focal conceptual item in this study is access and usage of ICT's through public access points. There is particular interest in this strategy because it has been applauded as the most effective digital divide intervention in rural communities (Davison et.al. 2000:4; Oestmann & Dymond 2001:3; Evusa 2005:67; Akinsola, Herselman & Jacobs. 2005: 37; Elijah & Ogunlade 2006:55 Mutula 2008: 481).

It is important to understand the digital divide so as to best assess the strategies adopted to mitigate the problem. However, due to the multiple interpretation of this concept, one needs to first build an understanding of the various phases of the divide so as to be able to operationalize the definition to fit the context of interest. Barzilai-Nahon (2006:269) applauds such an approach and notes that it helps to systematically conceptualise the digital divide before any data collection.

This chapter highlights some of the diverse definitions and varied interpretations of the nature and impact of the divide. The discussion also includes some of the theories that are relevant to some of the strategies to bridge the divide. These different theoretical perspectives are presented so as to usher in the adopted theoretical framework that is

anchored in the basic assumption that ICTs can be development enablers if applied and used appropriately. The chapter winds up with a discussion of the adopted theoretical framework and a summative conclusion on the discussed interpretations; approaches and theories related to assessment, mapping and even strategies to mitigate the digital divide.

2.2 Shifting interpretations of the digital divide

In the 1990s the definitions of digital divide adopted a more traditional focus which mainly dealt with issues of infrastructural access or gaps in ownership and access to a computer. Questions then related to measures such as ownership, availability and affordability of infrastructure (Barzilia-Nahon 2006:269; Sitawa-Ogutu & Rege 2010:1320). This initial interpretation of the digital divide translated into policies that assumed that the gap can be bridged by a fix of delivering computers to wired schools (Norris 2001:52).The application of such a view for Africa is limited because in the continent, the divide is not just related to the availability of the technologies or access to Internet but includes a litany of other socio-economic issues. In some cases, even if the technologies are made available through public access centres, access and use still remains low because most members of rural communities are not aware of the professed benefits or lack the skills to use the technologies (Selwyn 2003:100; Talbot 2004:16; Jacobs & Herselman 2005).

Recognition of other factors and concerns that generate digital inequality has shifted the interpretation of the divide to a contemporary stance that looks beyond a “techno-focus” to the users (Barzilai-Nahon 2006:269; Calderaro 2010:25). The general definition has grown to embrace services and structures that enable access and use of ICTs as tools with great potential for enhancing people’s daily lives (Duncombe & Heeks 2002:66; Elijah & Ogunlade 2006:55). Researchers and policy makers are now concerned with the benefits derived from the access to ICTs (Sitawa-Ogutu & Rege 2010:1318).

Although proponents of this new approach of interpreting the digital divide tend to be more slanted towards disparities in access to Internet, for this study the definition is

extended to embrace even the lack of access to basic ICTs. Such an extension is deemed valid because the Internet cannot be accessed if there is no access to the needed basic technologies. This stance concurs with Hernandez-Limon's (2009:40) study which posits that the lack of access to the technologies is core to the digital divide.

Even if the "techno focused" traditional interpretation and the contemporary "people focused" one are seemingly different approaches; one may also perceive them as different views of the multi faceted divide. Efforts to understand the concept should therefore adopt both view points. Yu (2006: 231) and Alampay (2006:4) support the combination of the two approaches as it incorporates primary elements of access, skills, content, values and context. The adopted stance of understanding the digital divide considers availability and accessibility of both information and the needed ICTs while also addressing ICT structures, applications and services. There is also interest in the users and non-users as members of the information society.

This inclusive approach is also reflected in the general definition from the Organization for Economic Cooperation and Development (OECD). This organisation, which has been involved in several studies on the digital divide over a long time, views the divide as a gap between individual entities at different socio-economic levels with regard to opportunities to access ICT for a wide variety of activities (OECD, 2001:5). The Internet may therefore be viewed as one of the varied uses of the technologies. The individual entities could be continents, countries, communities within or between countries or even the various members of such communities.

The all-encompassing view is also further reflected in Norris' (2001:52) contention that the global patterns of inequality in Internet use mirror the broader patterns of access to ICTs as tools in the information society. The contention here is that there are disparities in Internet use because there are differences in the needed hardware, software, mode of Internet connection, amount of relevance and accessible content. This perspective reflects the knowledge management debate that the information divide and the digital divide should not be conceptualised as divergent entities but as variant dimensions

within the continuum (Yu, 2006: 236). For example, as Sitawa-Ogutu & Rege 2010: 1319) note, even before the debates on the digital divide began, rich nations always had the ability to access or procure books, journals and any other resources in the library and information services. This was not the case with their poor counterparts. The disparity is multi-dimensional, multi-staged and goes beyond just access and use of either information or the technologies.

The inclusive definition is in this case constructed to suit the African context where most communities are still struggling with creating access and use opportunities for all in the information society. Adopting this "Africa relevant" perspective is applauded by Barzilai-Nahon (2006:269) who posits that the digital divide has to be "explored, comprehended and explicated within a given context".

2.3 Quantitative interpretation of the digital divide

The contemporary, all inclusive definition of the digital divide includes quantitative approaches that use indices to assess the digital divide. These quantitative measures consider availability, access and use in terms of time and location. Diverse models have been used to measure the divide. These use different variables depending on the phase or type of the gap that is being addressed. All the models discussed here reflect and support optimistic contentions that the divide can be bridged.

2.3.1 ICT Development index (IDI)

The need for quantification of the divide has been notably expressed by the World Summit on the Information Society (WSIS) in both the 2003 Geneva Plan of Action and the 2005 Tunis Agenda documents. As a follow up to these forums, the International Telecommunication Union (ITU) was then tasked to develop an assessment tool with quantitative indicators. The ICT Development Index (IDI) was then developed to guide the benchmarking and tracking of strategies to bridge the digital divide in the information society (ITU 2009:1). It was developed borrowing from other ITU indices like the Digital Access Index and Digital Opportunity Access, which equally regard availability, access

and opportunity as key to the use of the technologies as a means of bridging the existing gap.

The IDI illustrates the different levels of ICT access and use while also reflecting the extent and growth of the divide over time (ITU 2009:45). The IDI considers individual countries over a specified time. It uses several indicators to build a global comparison, (i.e. context in time and geographic location). This is supportive of the contention that the divide has to be contextualised because it is a "relative concept" that varies with time and place and assumes significance only if it is evaluated within specific geographical context (ITU 2009: 45; Corrocher & Ordanini 2002:13).

The IDI uses indicators that fall into three broader themes of infrastructure, ICT use and the people's skills or capacity to use it (ITU 2009:14). Based on these variables, the index presents an overall trend of developed countries as having higher IDI values while developing countries are ranked lower. There are however variations in the indicators even within the developed world. For example, according to the Measuring of Information Society (ITU, 2014), an ITU publication which identifies key ICT development at global level, even in developed countries like Denmark, the urban rural divide was still evident. The disparities within countries is further corroborated by the Economist Intelligent Unit (2013:22) which notes that in the US 14.5 million of the 19 million that does not have Internet access are in rural areas.

An analysis of the IDI shows that countries' uptake of technologies develops in a sequential progression through different stages. The variables within each stage also differ with context. The sequential stage model shows that the information societies go through ICT readiness stage; ICT intensity in society stage; and the ICT impact and effective use stage (ITU 2009:12). This sequential model would be very useful in a contextual assessment of a country or community with intentions to develop policies and strategies to bridge the divide. The recommended approach would take into consideration the historical development of the ICT landscape in the area being assessed.

The cyclic nature is further reflected in both the Standardized Media Indices (Norris 2001) and the synthetic index (Corrocher & Ordanini 2002) as discussed below. The cyclic interrelated nature of the variables in these quantitative models further reflects interrelated development theories that will be referred to later on in the discussion of the theories related to the digital divide and use of ICTs.

2.3.2 Standardised media indices

Norris (2001) uses the standardised 100 point new media index and the standardised 100 point old media index to elaborate that the digital divide is linked to the already existing global information divide. The model echoes the knowledge management school contention that these technologies have exacerbated the disparities from just an information divide to a digital divide (Yu 2006:235; Sitawa-Ogutu & Rege 2010: 1319). The model is further reflected upon in this chapter in the discussion of different approaches to map the digital divide where disparities are seen to be aligned to the already existing socio-economic trends.

The standardised 100 point new media index was calculated combining the proportion of Internet users or those online within each country in the study. This was then compared to the country's per capita distribution of Internet hosts and personal computers. The standardized 100 point old media index on the other hand was used to compare compatible per capita data in each country by measuring the distribution of daily newspapers, radios, television and mainline telephone lines. These two indices were then used to compute a compatible 100 point information society index (Norris 2001: 53).The formula below summarises the computation.

$$\frac{100\ pointnewmediaindex X \quad 100\ pointoldmediaindex}{2} = \text{compatible100 point information society index}$$

Detailed analysis of this information society index shows that in most cases, the use of old media tallies with use of new media The societies excluded from information flows emerged as largely cut off from all forms of information technology.

2.3.3 The synthetic index

Corrocher & Ordanini's (2002) express a concern that most indices fail to guide the users on methodological computations that could be applied to different contexts. Barzilai-Nahon (2006) shares similar sentiments and further cautions against complete adoption of international and ready to use indices. The later advices that when using such indices there is need to alter them so as to construct a contextual assessment framework that takes into consideration the dynamics between variables or the factors of digitisation. The Synthetic Index emerged as a way of addressing the methodological concerns observed from most quantitative measures of the digital divide. The Index considers factors like infrastructure, markets and human resources. It specifically looks at how each country's ICT landscape develops in each of these factors.

Both Barzilai-Nahon (2006) and Corrocher & Raineri (2010: 62) stress that a starting point for the empirical investigation of the nature of the divide should consider two broad groups of variables: technological indicators and structural socio-economic variables. According to this index, the indicators are subsequently aggregated as factors of the index. These authors contend that assessors of the digital divide need not rely on simplistic measures of the digital divide but a comprehensive index which factors in context.

The Synthetic Index emerges as not only composite and inclusive but also flexible and transferable to different contexts. Its composite nature is seen from the fact that it acknowledges layers in the digital economy and aggregates elementary indicators to build "factors of digitization". As observed by Corrocher & Ordanini (2002:12) the aggregation, ranking and comparison of data from these indicators give the model a synthetic nature that enables comparison and attribution of weights.

According to the Measuring the Information Society Report (2015), ITU flagship annual publication, these quantitative models reflect the top thirty countries as the most developed high income countries, with South Korea in the lead followed Nordic countries Denmark and Sweden. Although the report reflects a global incease in both

quantities of the technologies and people having skills to access and use the ICTs, there is a notable low uptake of the technologies in less developed countries. This reiterates the the link between progress in ICT developments and income.

2.4 Interpretations of the digital divide

Inter-related qualitative and quantitative efforts to understand or measure the digital divide have helped many scholars and institutions to categorise it (Corrocher & Raineri 2010:60). It is however important to note that the seemingly different categories are mainly because of the varied interpretations of the divide. As Yu (2006: 231) notes, the seemingly emerging typologies of the digital divide are but one concept with different interpretations that are consciously or unconsciously driven by the assessor's theoretical stance.

The following discussion looks at these varied interpretations of the divide so as to heighten its understanding and to buttress the fact that it has to be understood as multidimensional. The different interpretations also serve as building blocks that strategically usher in the present researcher's adopted theoretical stance.

2.4.1 Vertical and horizontal divide

The contemporary shift from the "strict techno-concerns" to include the people as users or non-users has pointed towards two broad views of the divide: the gap between the ICT users and non users and the gap among users. Cho (2004) refers to the former as a vertical divide or a first level divide that primarily relates to issues of equal opportunity. This refers to the simple distinction of those who have access to the technologies and those who do not have such access; or the users and the non users.

Even among users there are differences. The gap within users, which emanates from issues of social integration, is then seen as the second level, the horizontal divide. The ITU (2009:45) acknowledges interpretation from this perspective and adds that the horizontal divide manifests itself in different demographic characteristics of the population. It is therefore imperative that this context of the divide is well understood.

Sitawa-Ogututo & Rege's (2010: 137) observe that the debates on horizontal divide tend to be in the context of "socioeconomic (rich/poor); racial (majority / minority); generational (young/old) or geographical (urban /rural). Etta & Parvyn-Wamahiu (2003) further add in their executive summary that the information rich countries have the heaviest and most sophisticated ICT use.

Analysis of the first and second level digital divide shows that access and utilisation of the ICTs is influenced by technological concentration, socio-economic development, concentration in telecommunications industry and trade openness. These elements, broadly grouped as factors of digitisation, emerge as key in all efforts to interpret, categorise and address the digital divide. The factors are also helpful in mapping out the technology leaders and slow movers as they reflect variations between society's adoption, access and use of the technologies (Norris 2001:12; Corrocher & Raineri 2010: 68). Such mapping may be considered from either a global perspective or a country specific level. The mapping may be assessed qualitatively or quantitatively.

Although Cho (2004) regards the horizontal divide as a modern day hot issue, one may argue that for most of developing countries, where most factors of digitisation are still lagging behind, the struggle is still to close the first level horizontal divide. The Economist Intelligent Unit (2013: 4) also notes that the current debates on the digital divide focus on access to "higher broad band; society's up take or what is referred to as "useful usage". This however does not mean that the horizontal divide is not relevant in discussions of the digital divide in the African context. It is more of an extension of the vertical divide because the continent still grapples with not just access but also the ability and application of the technologies.

Selwyn (2003: 99) acknowledges the significance of the horizontal divide and further condemns the general misconception that non-users of the technologies are purely the "have-nots". The author asserts that in some cases, technologies may be available and accessible, but people may not use them due to a lack of "cognitive and intellectual ability" or ideological refusal (opposing the technology use); or technophobia. Selwyn

further highlights the fact that some people with access may not necessarily be drawn into the “effective user” category because of lack of awareness of the potential benefits. It is seemingly in line with this argument that the Economist Intelligence Unit (2013:6) points out that defining the digital divide has to be broadened to include “underpinning divides such as quality of access; the speed, and the ability to use the technologies”. Such a broadened interpretation would enable development of more appropriate strategies to bridge the existing gap.

The vertical divide on the other hand is reflected in most quantitative interpretations of the divide. For example, the IDI, the compatible 100 point information society index and the synthetic index show that countries that are advanced in the development of digitisation factors are on the upper or favorable side of the divide. In such mature information societies, ICT access and use becomes flattened out thus creating mostly vertical variations (ITU 2009:72).

2.4.2 Global, social and democratic divide

The distinction between the vertical and horizontal divide further translate into what Norris (2001) refers to as the global divide; the social divide and the democratic divide. The global divide is more of a horizontal distinction between information rich and information poor nations or countries while the social divide relates to the vertical variations in the users or online community. The democratic divide emerges as variations of the horizontal divide because, according to Norris (2001: 4), it is the “differences between those who use and those who do not use the digital resources to engage, mobilize and participate in public life online”. It is the variations between the users. Discussions of the digital divide from the vertical -horizontal perspective or as the global, social and democratic divide bring up issues of access, availability and actual participation.

This interpretation of the digital divide also relate to the sequential stages referred to earlier in the discussion of the IDI three stages model (ITU 2009:12). For example, a community without the technologies may be globally divided or excluded. As the

technology diffuses or spreads among users, variations among users may be seen as the horizontal divide. The online community in the mature information societies exhibit elements of both the social and the democratic divides. Members of such communities have access to the technologies and are characterized by advanced developments in technological indicators and structural socio-economic variables (Barzilai-Nahon 2006; Corrocher & Raineri 2010: 62). The main concern in the mature communities is the variations in how the people use the technologies which in most cases is aligned to the democratic and socio-economic power struggles that characterise these communities (Corrocher & Raineri 2010:59; Norris 2001:12). The discussions on bridging the divide then tend to be discussed with reference to addressing the already existing distribution of power in the political and economic system. For example, according to the Economist Intelligence Unit (2013:6) Denmark, which ranks amongst the highest in the ICT Development Index, has made online government services delivery mandatory by 2015. The publication further reports that in the UK, government services are "electronically by default". This means that for most government services, the first efforts are made electronically before one resort to an actual visit to a service provider. Such an e-service is possible because of the e-maturity state.

2.5 Theories related to the digital divide

Policies to bridge the digital gap are commonly defined in line with the three pillars of accessibility, affordability and quality of services. The pillars are guided by a common principle of 'Universal Access" (UNDP 2005:54; Alampay 2006: 8; Mutula 2008:475) or the "Real Access/Real Impact" (Bridges 2005) or "real benefits for real people" (O'Neil 2002: 78). This translates into the global goal of bridging the digital divide so as to ensure that all people are benefiting from the technology. The development of interventions therefore calls for an in-depth understanding of the nature of the divide. Based on earlier discussions on interpretation and mapping of the digital divide, it is vital that the intervention strategy should spell out which aspect of the divide is being addressed and how progress of the intervention is to be assessed. Barzilia-Nahon (2006; 271) views that as contextualising both the divide and the intervention strategies.

The broad and diverse interpretations of the digital divide further call for equally broad and interrelated intervention strategies. The adopted interpretations and the resultant interventions also vary with the assessor's theoretical standpoint. Such theoretical viewpoints are many and interrelated. The following discussion will focus on some of the theoretical positions that guide interpretation; bridging strategies and mapping the divide.

2.5.1 Development theories related to the digital divide

The broad interpretations of the digital divide and the divergent viewpoints that guide categorisation of the types and trends of the gap are symbolic of developmental phases of the information society. These also reflect the ongoing stages of modernisation and globalisation as technological innovations change production processes (Alampay 2006:5 Yu 2006: 238). The debates on these phases anchor on different developments that range from the most optimistic to the least pessimistic.

For example, optimistic arguments on modernization and globalization theories of development hold on to the hope that technologies are a good enabler that can help developing countries to "leap frog" into the level of the developed world. While these two perspectives recognise the positive impact of ICTs in the information society, the perspective from the dependency paradigm argue that the digital divide cannot be bridged because all efforts to do so make the poorer countries to be continually dependent on the rich ones.The dependency theorists believe such optimism is nothing but a myth because the technology is widening the gap between the developed and the developing world resulting in the latter being continually dependent on the rich developed world (Alampay 2006: 7).

2.5.2 Theories guiding strategies to bridge the digital divide

As noted earlier, the different strategies adopted to address the different phases of the digital divide vary with the assessor's theoretical stance. As Sitawa-Ogutu & Reje (2010: 1320) opine, an intervention strategy should be cognisant of the type of the divide to be addressed; theories guiding interpretation of the gap and all other intervention possibilities. The authors further caution those developing quantitative measures on the

availability of the digital infrastructure, computer hardware and software to note issues related to both ICT specialists and the community as users and non-users. The assessment and development of an appropriate intervention strategy further tend to be driven by the assessor's ideologies. Yu (2006); Corrocher & Raineri (2010) and Norris (2010) argue that these ideologies are driven by ones' cognitive science; ethical; political and economic or social constructivist orientations.

Although the following discussion highlights some of the noted theoretical perspectives, it is important to stress the fact that there is no special support for any one over the others because the present study advocates for interrelated perspectives in addressing the digital divide.

2.5.2.1 The cognitive science perspective

This perspective is guided by theories of individual differences that posit that personal interest, interpersonal skills and one's communication abilities influence the individual's access and usage of the technologies (Yu 2006:235). Scholars from this stance acknowledge that over and above the socio-economic factors that play a role in the digital gap, there is also a need to realise the fact that individuals' information needs, and ways of accessing and processing the information differ. This dimension becomes more relevant where the disparity in access is assessed along differences in skills, literacy, mental access and types of usage. Typical assessment elements would be how the information is accessed, retrieved, for what reason (leisure, education or business) and how it is communicated or even stored by the individual. O'Neil (2007:77) however acknowledges that due to the relatively newness of ICTs in most communities, there has not been much substantive research measuring impact or outcome related factors.

Strategies developed from the cognitive science stance emerge as more ideal in addressing especially the horizontal (Cho 2004; Corrocher &Raineri 2010); the social and democratic divides (Norris 2001). The adopted strategies mainly target the observed differences in users and non-users as units within the information society. Selwyn (2003:100) strongly supports such individualistic programmes as they promote

effective use. He further highlights the fact that such services are also needed even in communities where technologies are readily available and accessible because there will always be a difference in how they are used or not used. It is however important to note that in the developing countries strategies that are narrowed down to specific individual needs may be too strenuous on the already limited budgets. As Songon et.al. (2008:87) note, it is usually not economically attractive for commercial operators to reach such individuals due to the costly infrastructure and connectivity. One may then view intervention strategies from the cognitive science perspective as likely to spark political debates.

2.5.2.2 The political economy debates

This is the most common interpretation of the digital divide at macro level, and it is mostly anchored in various theories of development. The debates from this perspective tend to concentrate more on societies with access to ICTs (Yu 2006; 243).The proponents of this stance link the logic of the gap with power theories evidenced in the larger struggle and societal power that controls the information (Corrocher & Raineri 2010; Norris 2001:14). From this perspective, the divide is intrinsically related to institutional economic and political power which allocates information resources and benefits according to powers structures. Information resources and the ICTs or Internet as tools to process the information are seen as power tools. For example, those with power or at powerful stages of development continue to maximise the benefits of the resources.

Strategies that are influenced by this ideological position mainly address the divide commonly associated with the IDI maturity stage (ITU 2009: 42) or the social and democratic divides (Corrocher & Raineri 2010:68). Developmental theorists from this orientation bring into perspective the call for strategies along the concept of information markets or corporate principles, such as paying for access to information. Sitawa-Ogutu and Rege (2010:1319) also observe that because the rich have access to finance and trained personnel, they benefit most from the continuously rolled out innovations in the digital frontier. Although this observation was made with specific reference to agriculture and rural livelihoods in Kenya, it is applicable to most rural communities in Africa. These

authors observed that the technological developers tend to focus on creating solutions that specifically work for the affluent while ignoring the poor because market forces assume that designing solutions for the poor will not be profitable. Yu (2006:233) out-rightly condemns such strategies because they exacerbate the divide in contemporary society

Calderaro (2010:26) however does not wholly condemn this economic dimension but instead presents the perspective of two broad antagonistic viewpoints. One positively views the technologies as potential instruments for solving the problems that created the divide. According to this view the growth in the market and its trickle down effects will help bridge the disparity in people's access and use of the ICT. The pessimistic one view the interventions as facilitating the already rich societies to use the ICTs to access more new sources and riches while the disadvantaged communities are left out. In such cases the intervention strategies fail to bridge the divide but instead promote unequal access which in turn compartmentalises society into horizontal divides of the information rich and the information poor (Yu, 2006: 230).

Both of Calderaro's (2010:26) arguments acknowledge that there is growth or spread of ICTs. A worrisome element is that there may be a very unclear distinction between those using the concept for hidden agendas of market expansion for their own economic gains and those fighting for increasing access. It is because of such politically laden and at times highly deceptive positioning of the concept that theorists with this view tend to politicise the digital divide and inevitably drift away from the said information divide debates. Yu (2006: 243) observes that scholars from this stance tend to be radical or threaten the existing structures. The author also rightly notes that this could be the reason why scholars guided by ethical and moral ideologies prefer to distance themselves from such debates.

2.5.2.3 The ethical perspective

Proponents of the theories argue that it is a moral responsibility for all to strive towards an inclusive information society (Alampay 2006:8). Proponents of the ethical stance stress that the digital divide is more than just a developmental gap, but that it is rather

symptomatic of deeper social injustices. These scholars argue that unfair access to ICT's accounts to inhuman treatment of the disadvantaged societies.

Intervention strategies guided by the ethical stance predominantly embody social responsibility and ethical concerns. The strategies are guided by debates for fairness in resource distribution and with less emphasis on the economic implications (Yu 2006: 242). An example of strategies guided by this belief may be evidenced in the case reported by Songon et.al. (2008) who present lessons gained from establishing the e-Bario project in rural Malaysia. The project was conceptualised by a team of researchers to demonstrate to this rural community of Bario the benefits of ICT's. The technologies were made available through public access centres. The case study affirmed that the installation of the equipment to secure access to effective use of ICTs in such communities is usually beyond the community's financial means. The researchers, as people already in the mature stage of using ICT's, depict an ethical or moral gesture of cascading the benefits to the less privileged community.

Selwyn (2003) encourages communities at an advanced stage of ICT usage to exercise such good will and even at times observe "Techno-Sabbath" as an act of solidarity with those without access. A "Techno Sabbath" is a day on which communities that "over engage" in Internet and ICTs in general spend time without using ICTs. A techno-Sabbath is then viewed as a moral or an ethical strategy to reduce over indulgence in the technologies and empathize with those without access.

The ethical perspective has since emerged as a major bone of contention in developed world economic and civil right issues (NTIA 1999). Economic giants who in most cases are also at an advanced stage of ICT usage are seen to extend a helping hand to the not so privileged societies. O'Neil (2002: 76) also reports that the White House, as the principal of USA administration, is also setting ways to measure and assess ICT projects' impact on communities. The participation of global bodies like the International Development Research Centres (IDRC) and ITU may also be seen to be guided by this ethical stance. UNESCO also funds some ICT access centres in Africa (Evusa 2005: 124). Although these interventions may be for a good course, if they are "imported"

without cognition of the contextual nature of the divide, then they create more harm than good. It is seemingly in line with the need for a constructive ethical view that there is also a call for social constructivism as a build up to the moral responsibility.

2.5.2.4 Social constructivism theorists

Social constructivists contend that all efforts to bridge the digital divide should consider the people's culture and inherent boundaries as other inevitable factors of the divide (Yu 2006:235). An example of strategies recommended from the social constructivists would be continued education programmes while also affording the disadvantaged communities free access to the technologies. The strategies also include packaging information on the web for the intended audience.

Proponents of this school of thought are in agreement with those of the ethical perspective in their argument for social inclusion. The two camps however have variations on the recommended strategies towards the attainment of an inclusive society. For example, while the ethical theorists urge governments to increase expenditure on education and promote access to human knowledge, the social constructivists on the other hand want strategies that start off from addressing the barriers between the rich and poor. They want education strategies that would address the structures that build the existing inequalities first. This is because the social constructivists relate the being of the digital divide to the already existing socially constructed divides.

Corrocher & Rainer's (2010) analysis of the roles of both the socio-economic and technological indicators in the evolution of the digital divide strongly presents the shift towards the social constructivists' perspective. These authors contend that in addition to assessing the usage patterns of the ICTs, there is need to study the community's "choice of exclusion boundaries". This is a call for assessment of non-usage patterns and the development of policies and strategies that go beyond increasing hardware provision. It is within this line of thought that Selwyn (2003) proposes a varied interpretation of what was discussed earlier in this chapter as the vertical and horizontal

divide between and within the communities. The contention is that non-users are not uniform, hence the need to distinguish the “exclusion boundaries”.

Corrocher & Rainer (2010: 59) further observe that most assessments of the digital divide ignore the diffusion patterns and the rate of usage growth between the developed and developing countries. These authors condemn the tendency to assess the digital divide in line with the economic and technological developments between the communities. The concern is that the policies adopted from such assessments tend to focus on reducing the differences between the compared communities while ignoring the diffusion patterns that are unique to each setting. There is a call for policies that address the socio-economic challenges of the less developed communities without necessarily comparing such communities with the advanced or mature ICT user communities.

The preceding argument shows how the social constructivists and the ethical theorists tend to be in agreement with the political economy debate in pointing out that there has always been an information divide prior to the digital divide. Both camps contend that those in “information power stages” continue to grow at the expense of the information poor (Doctor 1994: 10; ITU 2009:73; Calderaro 2010:27). Despite the fact that ethical theorists and those from the political economy line of thought are noted to have done more audible research, Yu (2006: 236) laments that their recommended policies are mostly ignored and fail to get the needed support from the business community as they tend to discourage private sector control of the information market. It is also evident that intervention strategies from this perspective are likely to be long and complex as they involve cultural observations and possible alterations.

2.5.3 Theories related to mapping the digital divide

As a result of the varied interpretations of the nature of the digital divide, there are also different ways of mapping the divide. The mapping may be in terms of the trends in transition in ownership or management from a restricted communication system of the American Defense Department, to a more flexible transnational network (Calderaro

2010: 22; Gromov n.d). The ownership or management mapping bring on board a geographic element and time frames that show that that different countries joined into the technology web at different historic stages and for different reasons. For example, Europe, Japan and Australia joined the web in 1989, while China only became part of the network in 1994. Although the technologies began in North America, most users are in Asia, even though she is a late entrant (Calderaro 2010:24). This staggered entry into the adoption, access and use of ICT's has inadvertently resulted in disparities in world wide access and use of the technologies.

Discussions on the mapping of the digital divide tend to fall into thematic groups of research and technological development from packet switches; operation and management of the Internet as a new complex global structure; the social aspect and the commercialisation of Internet (Gromov n.d). The arguments in all the thematic areas bring up two main theoretical positions of normalization and the diffusion theory to explain the trends (Calderaro2010:28). Both theories acknowledge the growth, and are in agreement about the strong correlation between trends in ICT development and the responsive economic growth. The perspectives however differ on strategies needed to manage the growth so as to bridge the digital divide.

2.5.3.1 Normalisation theory

This view point is characterized by an optimistic expectation that access and usage of ICT's will broaden and become more ubiquitous over time. The assumption is deduced from the historical mapping of the growth witnessed in previous technologies like radio and television. In the review of literature on ICTs in agriculture and rural livelihoods, Sitawa-Ogutu & Rege (2010:1319) observes, as does Corrocher and Rainer (2010:60) that scholars from this line of thought posit that the new technologies will follow the tracks of the old ones which have always affected the technology transfer programmes and also created disparities between the rich and poor. It is therefore assumed that both the ICTs (especially Internet) and the related infrastructure and expertise will adopt the already existing information divide landscape. This implies that the information rich communities will be ICT rich and flood the market. This theory contends that as the

technologies become popular, market forces will lead to reduced prices and affordability of the technologies will help ease the digital divide (Calderaro 2010:26).

Conservative political ideologists recommend policies that discourage a drive towards bridging the gap based on the argument that the divide will fade away with natural market forces. Although they believe in market forces, they advocate for strong government intervention coupled with the business sector, civil society and international aid. They recommend governments to promote an open market, deregulate telecommunication sectors and open direct foreign investments. There is a call for policies that promote competition, copyright protection, tax incentives and reduced tariffs on ICT goods while opposing the commercialisation of information (Doctor 1994: 9; Yu 2006:241)

Those in this camp argue that giving other sectors of the population special treatment is continuing injustice (Yu 2006; 238). The subscribers to this stance believe that natural markets will prevail as the producers of the ICTs will want to produce more in their endeavour to broaden the market. They argue that eventually the prices of the technologies will go down and be affordable to many.

The growth trend of Internet in China may be seen to be in line with the normalisation theory. As reported by Norris (2001: 52), ITU (2009:32) and Calderaro (2010:22), the country's tremendous Interventions through increased fixed telephone line penetration, amplified penetration of mobile cellular and better international Internet bandwidth has positively improved its economy, raised incomes and enabled more people to afford ICT services. The development of content in local languages has also positively contributed to increased usage of the Internet with the country reporting over 1.5 million local websites.

2.5.3.2 Diffusion theory

This theory contends that for all technological developments there are always early adopters and followers. It argues that successful penetration or spreading of any given

technology is dependent on observations of the positive effects as seen from the early adopters (Calderaro2010:28). The assumption is that as non-users see the benefits and the vast economic opportunities of the new technologies from early starters, then they will be drawn into use. This optimistic analysis therefore predicts that at some point in life, all societies will converge on a saturation point of technology use. In line with this theoretical stance, one may argue that it is critical that the existing digital divide is bridged or else, as Corrocher & Raineri (2010: 58) points out, opportunities may never be realised. Although Norris (2001) supports efforts to close the gap, the author expresses concern that given the already existing unbalanced social structure, the use of technologies to close the gap tends to increase advantages for the information rich, thus increasing stratification. This author's greatest concern however is the underlying social, economic and political factors driving diffusion and she calls for appropriate intervention to manage the diffusion path. One may view this argument as guided by a broad range of interpretations of the digital divide as influenced by the cognitive, ethical and even social constructivist theories.

Corrocher & Raineri (2010:60) and ITU (2009:14) demonstrate the spread of ICT's through different but related three stage diffusion models that show the technology life cycle. The models show that different countries, regions or individuals adopt the technologies at different speeds. The model also shows variations in adoption by using a sequential order that reflects the optimists' contention on growth in use of technologies. These stages can further be identified and analysed at the level of introduction of ICT to the market; access to ICT by users (individuals or firms) and the actual use of technologies.

In the initial stage of use or application of technologies, the concern is mostly on quantifying ICTs in terms of who has access to what technologies. The trend in this case is explained in terms of speed of adoption. As the usage increases and the technology reach a critical mass of users it becomes an accepted common standard (i.e. second stage). The state of infrastructure then becomes an increasingly important measurement variable as it affects the speed and intensity of adoption. At the final

stage, when the technology is seen as more mature, the assessment priorities become more directed towards qualitative aspects. The concern at the mature stage is on the role of ICTs in generating knowledge; the impact of digitisation on social economic activities, and especially on structure of production or consumption and on employment (Corrocher & Raineri 2010: 61). Although the just discussed progress is in terms of technology uptake, Selwyn (2003) argues for a vigilant recognition of the hierarchy of those excluded at the different stages. It is important to note that even within the community of matured technology users; there is a divide amongst both users and non users.

Norris (2001:67) attests to the reality of these models, and further adds that the divide is not a new concept because the diffusion trends fit into the existing global economic inequalities. For example, in the U.S.A, the growth of previous technologies have been noted to have followed a sigmoid (S–shape) time path that is characterised by an initial slow pace of adoption followed by a significant advance (Norris 2001:31). Given that the flood of Internet users since the 1990s has also taken a similar growth path, the diffusion positivists view the trend as hopeful evidence of a move towards the desired knowledge economy (Corrocher & Ordanini 2002:11; ITU 2009:12).

It is worth noting that throughout the stages, even if some indicators may change over time or some can be “leap frogged”, the basic stages will still remain. For example, in some cases the fixed telephones may be substituted by mobile ones and thus changing the role of fixed telephones as an essential variable in the diffusion of Internet. Therefore, as per these models, the continued penetration of technologies creates a continually moving saturation level as the technology also continues to evolve.

2.6 The adopted theoretical and conceptual framework

Earlier discussions of the definition of the digital divide; categorisation of the concept and the diverse ways of mapping trends in the growth or reduction of the divide show that there is no distinct theoretical framework to address the digital divide. This study however observed a key element in the array of debates on the divide: a universal call

for socially inclusive strategies to increase access and usage of ICTs so as to bridge the digital divide. There is a drive towards services that offer communities accessibility and affordability of quality services (Alampay 2006:7; Narayan & Nerurkar 2006: 33-34; Yu 2006:245).

As Howie (2010:508) notes, ICT supportive policies and programmes are essential in the acceptance and use of the technologies. The policies and programmes have to be cognisant of even the unwritten or implied cultural tendencies and practices of the community. The AU 2010 assembly of heads of states also noted the need for a policy framework that would ensure a collective effectiveness; efficacy and sustainability of the intervention programmes (AU 2010: 48). Such programmes are attained through triangulation of interrelated and complementary theories to build a framework that is flexible enough to accommodate the divergent interpretations and mappings of the digital divide. Such a framework is also guided by the adopted stance in defining the type of the divide that is to be addressed and how the extent of the divide is assessed.

The present study concurs with the observed need to clearly articulate how the divide is interpreted and mapped before the actual intervention policies and programmes are developed. The presentation of the adopted theoretical stance also serves as a useful process in the identification and constructive placement of the “blocks” needed to address the digital divide. It is also in line with this observation that the next discussion zeros in on the present researcher’s theoretical stance.

The adopted position is deduced from earlier discussions on how the divide is interpreted and mapped. For example, the study notes that the definition of the concept has shifted to a contemporary people focus that can be assessed both qualitatively and quantitatively. This study also acknowledges that besides the global, social and the democratic divides, there are also vertical and horizontal differences in access and usage of the technologies. These broad thematic areas that emerged in the discourse of the digital divide have been very instrumental in ushering in the present study’s theoretical stance.

The figure below presents the key operational components that this study argues are needed to work collectively towards improving access and usage of ICTs through public centres as a strategy towards the distant output of bridging the digital divide.

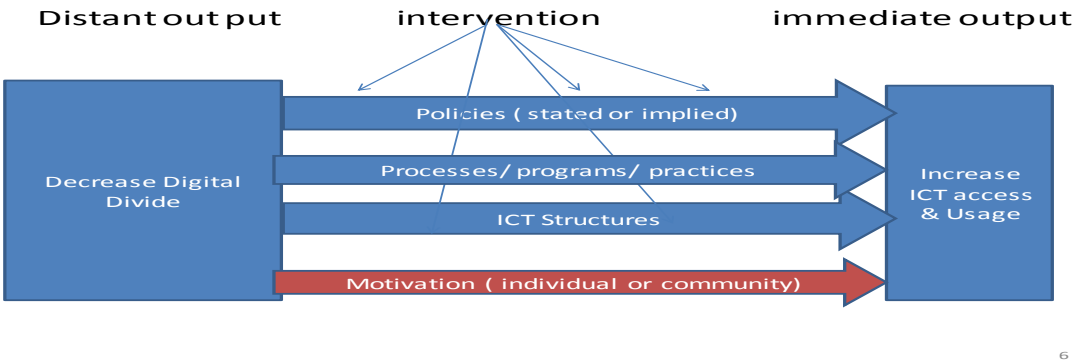


Figure 1: Broad conceptual framework guiding the research

In the figure above, motivation is highlighted in red because the researcher views this as the cornerstone of the research question. The primary interest is on what positively or negatively motivates access and use of the technologies. Supportive policies, programmes and the available ICT structures are deemed as key elements that motivate or inhibit access and use of the available ICT's. Selwyn (2003:100) also sees motivation as an essential component of building the needed knowledge because the communities' motivation to access and use of the available technologies has been seen to be strongly related to the contextual policies and programmes.

The interaction of these conceptual pillars connects different disciplines and theories that link people, technologies and processes. Such inter-connectivity is inevitable because as Fowler (2006:44-46) notes, society or any organisation is characterised by inter-related arenas which can best be understood through a triangulation of different theories, approaches and techniques. This calls for a conceptual integration which crosses boundaries to embrace learning from interrelated disciplines (Bates 2005; Yu 2006: 236). For example, as will be seen in both the methodology and the data analysis chapters, the study was characterized by flexible application of complementary tools

and techniques to gather and analyse data related to policies, practices and ICT structures. The conclusions and recommendations drawn from this study also emerge as inter-related because of the contention that the divide can best be addressed through inter-related strategies from different theoretical positions.

It is important to stress that for this study such a triangulation of related theories is in no way done to argue for specificity of any theory, but is instead done to reconcile the interpretation of the emerging findings in line with the already existing theoretical knowledge. Drawing from such a triangulated theoretical framework is also in line with the observed research trends that have progressively shifted from a mere understanding of the concept to assessments aimed at developing practical strategies of addressing the problem (Davisonet.al.2000:6; Evusa 2005:67; Akinsola, Herselman & Jacobs 2005: 37; Elijah & Ogunlade 2006: 55).

Although the research aim was to assess or analyse what promotes or inhibits access and usage of the technologies (i.e. an interpretivist approach), the researcher concurs with critical theorists' views that research has to help "find remedies to social ills" or have an "emancipatory interest" (Benoit 2007). Dobson (2002) describes this as an interpretative approach with a critical realism (i.e. interpretation of reality coupled with recommendations for change). The approach also brings on board viewpoints of social constructivists that call for an understanding of social and technical factors of access and use of the technologies that are offered through the public access centres (Evusa 2005: 137).

While all efforts were made to present an objective presentation of the context, it is important to disclose that the processes were influenced by the researcher's professional locale as both an educationist and library and information worker; and the commitment towards the national vision of an informed and educated nation. This stance affirms Fuchs' (2005:3) contention that the knowledge that the researcher presents comes from both one's "reasoning (understanding and conception) and experience (sensibility and perception).

Bryman (1984) further asserts that although the identified research problem guides adoption of a given research technique, prior intellectual commitment to a philosophical position plays an equally critical role. Therefore, there cannot be complete passive data collection from the context because meaningful interpretation is mutually constructed through the lens of both subjects and the researcher (Leedy & Ormrood 2005:94; Mottier 2005:5). This constructivist view, which Dobson (2002) terms an "interpretative paradigm with a critical realism", is preferred over the positivist approach which argues that the object being studied is independent of the researcher.

2.7 Conclusion

This chapter serves the multiple roles of presenting a comprehensive definition of the digital divide as it relates specifically to the African context while also ushering in the researcher's theoretical stance. The reviewed literature shows that despite the fact that there is neither a distinct definition of the digital divide nor any perfect fit strategies to address the divide, there is a need to understand and contextually define the concept before any meaningful intervention.

It is however important to note that in a real life intervention, the strategies cannot be distinctly catalogued by a specific ideology. This study therefore argues that proponents of the diverse ideologies must first bridge the gap between their lines of thought as a move towards bridging the digital divide. The adopted strategies do not necessarily have to be any compartmentalised theory but should focus on the attainment of an all inclusive ICT led society. For example, those with faith in the market need not have a blind eye on the reality of what happens to those who do not reach the market. On a similar note, those for ethical or social constructivism have to acknowledge the positives of what trickles down from the market.

The divergent perspectives are discussed in this chapter to support the present researcher's contention that there is need for a broad and flexible application of interrelated theories to address the observed digital divide factors at a given time and place. The adopted theoretical framework that triangulates various theories further translates into a qualitative research approach that triangulates data collection

techniques and data sources to build a contextual picture of the digital divide intervention in Letlhakeng village.

CHAPTER THREE

INTERVENTION THROUGH ICT PUBLIC ACCESS CENTRES

3.1 Introduction

Studies on the use of ICT's through public access centres fall under a broad subject category commonly referred to as Community Informatics which is defined as research on the use of ICT's for community development efforts (O'Neil 2002:76). This includes studies on a wide range of issues on ICTs and social inclusion. Some topical areas within this thematic area embrace issues of community development; information relevance and the provision of the needed ICTs (Walker 2008:1). Within community informatics there is consensus that ICT public access centres are a cheap and effective way to offer disadvantaged communities (especially rural communities) opportunities to access and use telecommunications and information resources (Davison et.al. 2000:4; Oestmann & Dymond 2001:3; Mutula 2008: 481; Evusa 2005:67; Akinsola, Herselman & Jacobs 2005: 37; Elijah & Ogunlade 2006:55).

Community informatics, or even specifically the provision of ICT's through public access centres, is a broad area that cannot be adequately covered in a single study of this nature. The focus in this case is narrowed down to how rural communities access and use of ICTs that are available through public access centres. As noted in the previous chapter, strategies to bridge the digital divide are mostly discussed in terms of broad thematic areas of technological and socio-economic issues of ICTs. It is within this vein that ICT public access centres are commonly defined in terms of the nature of the technologies in the centre, location of the centre, management of the centre and the demographics of either the hosting community or the user community.

This chapter presents the different definitions, interpretations and categorizations of ICT public access centres. Although the chapter does not present any authoritative definition or characteristics of public access centres, it assembles salient themes in this area. The discussion brings up thematic research areas like factors of access and usage of the

centres; how the centres are managed and the types of centres. The chapter then concludes with a highlight of the observed gaps in the literature and how the present research fits into the already existing literature.

3.2 What is an ICT public access centre?

The first two chapters of this study showed the digital divide has two broad trends: the gap resulting from the absence of the technologies in the community; and the difference or gap in how the community uses or fails to use the available ICTs. It is from these two divergent observations that the ongoing debates within community informatics call for services that do not only offer disadvantaged communities access to the technologies but also impart skills needed to use ICTs for educational, personal and socio-economic development (Latchem & Walker 2001:3;Evusa 2005:123; Jacobs & Herselman 2005:58). These public access centres are therefore expected to offer communities access to ICTs so as "to take control of their educational, social and financial interest" (Hernandez-Limon 2009:37; Evusa 2005:25).

The history of the provision of ICTs through public centres dates back to the 1980's in the Scandinavian countries and, with facilitation of the International Telecommunication Union (ITU), it grew into a global concept characterised by broad thematic interpretations (Latchem& Walker 2001:3). Although there is no definitive definition, ICT public access centres share common characteristics as a physical space that serves a community's needs for access and use of integrated ICT services. The description is commonly presented in reference to issues of access in terms of availability, affordability, relevance of both the technology and information. Public access centres are viewed as a strategy towards inclusion of all communities into the ICT led information society. Discussions of the varied themes on access and use of ICTs through public access centres inadvertently bring into focus concerns on the centre's history, management, infrastructure, funding and services. Any discussion of the centres also calls in the need to find out more about the users and the non users in the community.

The diverse, complex and broad elements in the fluid definition of ICT public access centres leave the concept with diverse names in different contexts. For example, O'Neil's (2002) review of over thirty USA based community informatics related projects between 1994 and 2001 identified names like community technology centres, community access centre or tele-centre. In some quarters the centres are called community service centre, community information centre, community resource centre, community computer centre (Jacobs & Herselman 2005:58) or Public Internet Access Points (Talbot, 2004:4). In the fourteen Common Wealth of Learning case studies, compiled and edited by Latchem and Walker (2001), the names that feature include tele-cottages, info-centres, digital clubhouses, phone shops and some in native languages. These case studies present valuable lessons on the use of ICT public access centres in supporting both education and community development in Commonwealth countries.

With all due respect to these varied names, this study prefers to address these centres as ICT public access centres. In this case the centres are viewed as shared premises where the public can access and use ICT's for free or on payment basis. The present study purposely avoids appending the word community because the centres need not be owned by the community; and usage is not only restricted to members of any given community. The name is also cognisant of the fact that centres can be used by the general public, including people on transit or short term visitors who may not necessarily be considered as part of the Letlhakeng community. This definition is also in line with the UN–ICT Task Force, which was set in 2001 to serve as a catalyst in generating global ideas and partnerships towards an information society (UN-ICT 2005).

3.3 Research on access and use of ICT's through public access points

Research on ICT public access centres broadly covers what Walker (2008) rightfully terms the "socio- technical interaction" issues of access and use of the technologies. A picture emerging from the discourse presents the centres as enabling the community access to the technologies, while also promoting delivery of other social services (e.g. health, education or civic engagement); job searches and skills development (Talbot

2004: 20; Hernandez-Limon 2009:46; Kozma & Wagner.2006:4).These services differ within and between communities in line with prevailing demographic and socio-economic conditions.

Although different research outputs meticulously present a global acclamation on the positive impacts of such public access centres (Davison et.al. 2000:6; O'Neil 2002: 94; Evusa, 2005:67; Akinsola, Herselman & Jacobs 2005: 37; Elijah & Ogunlade 2006: 55) there is a concern that there is not sufficient empirical evidence to support the suppositions. For example, Duncombe & Heeks (2002: 66) note that there is lack of empirical evidence to support the assumption that Botswana's rural entrepreneurs have economic benefits from telephone usage. Elijah & Ogunlade (2006:55) also observe the paucity of research that proves the "great potentials of ICTs as tools for enhancing people's daily lives". There is also a worrisome observation that there is lack of a comprehensive body of empirical research that analyses performance and adoption of ICTs public access centres (Prado 2009:12; Elijah & Ogunlade 2006:55; Duncombe & Heeks 2002: 66). These authors rightly point out that if these centres are to become sustainable development vehicles, then the research community is challenged to document progress so as to inform policy and practice.

Even though the present study does not solely focus on economic benefits of such centres, the endeavour to establish how the Letlhakeng community uses the technologies would serve as a good foundation for any future study on possible economic benefits of such centres. Assessing the usage patterns is deemed as good ground breaking research especially in Africa where the assumed or actual benefits are still more subjective and less demonstrable (Latchem & Walker 2001:4; Evusa 2005: 125).These authors attribute the observed paucity to the fact that the concept is relatively new in Africa. Not withstanding the observed paucity, the emerging research trends point to global thematic areas related to management, financial aspects, services provided, structure of the centre demographics of users and other community related factors (O'Neil 2002:84; Jacobs & Herselman 2005: 58).

The present researcher is however concerned that, seemingly in the bid to bridge the just noted knowledge gap, some of the emerging research output on this subject at

times fails to meet the scholarly criteria of evaluative studies. The reports or studies then tend to be not as informative as one would expect. For example, the compilation of different case studies by Latchem and Walker's (2001) and the UN–ICT Task Force (2005) emerge as more of organizational reports than scholarly works with adequate empirical evidence. It it is also imperative that research in this area meets scholarly criteria so as to yield objective findings. O'Neil (2002: 94) further stresses the need for quantification and use of indices like ICT Development Index (ITU 2009); the synthetic index (Corrocher & Ordanini 2002) and even the simple Standardized Media Index as presented by Norris (2001).

Despite the noted limitations that most of the reviewed case studies were not very scholarly, they are worth being reviewed for this study as they present critical insight into ICT public access centres. For example, it emerges from the literature that the assessment of most strategies to bridge the digital divide, including ICT public access centres, is mostly in terms of accessibility, affordability and quality of services. The scope, method and intent of assessment may vary with the researcher's perspective on the definitions, causes and impacts of the digital divide (Roman & Blattman 2001). For example, in the review of thirty different literary items on community informatics, O'Neil (2002: 94) identified surveys, focus groups, document reviews, content analysis, electronic discussion, ethnographic filed work, case study, stakeholders analysis, site visits, participant observation, help desk log, usage statistics, existing publications, pre and post-testing's. Sitawa-Ogutu & Rege (2010:1318) express the concern that, it is this wide range of assessment criteria that maybe blamed for the fact that the exact nature of the concept is contextual and debatable. One may also repeal this argument and posit that the fact that the concept is contextual calls for varied assessment criteria.

The examined literature also shows prominent featuring of varied case studies that are characterised by interdisciplinary theoretical frameworks and varied research methods. Within these studies the research methods and findings vary according to the researcher's intent and scope. For example, Chatman (1996); Roman & Blattman (2001) and Duncombe and Heeks (2002) began their different but related studies with gathering qualitative knowledge on the community's information needs and community's

information patterns. Hernandez-Limon (2009) also set the scene by a participatory observation of a centre for Latino women (Little Sisters of Assumption Community Technology Centre) in New York. The observation was a research strategy to gather information about the centre. Data collection at this centre was then narrowed down to only eight information rich cases that were further observed and interviewed. A similar trend of building an understanding of the community that is being studied may also be seen in the case of Duncombe and Heeks (2002) who began with categorising the rural entrepreneurs in Botswana before in depth data collection. Kozmar and Wagner's (2006: 2) study also started with the identification of different types of school drop outs before delving into how ICTs can be used to reach out to these disadvantaged young people.

As will be seen in chapter four of the study, the research processes engaged by the researchers cited in the preceding paragraph guided the adoption of strategies used to gather data on how the Letlhakeng community accesses and uses the technologies that are available through public access centres. In the next chapter of this study, the researcher shows calculated steps (e.g. the preliminary visit) to get to understand the Letlhakeng community before the actual assessment of ICT access and usage patterns. This approach also links to the knowledge management theorists' contention that people's behaviour is the best frame of reference for understanding both business processes and the related knowledge flows (Newman & Conrad 1999:4).

Some of the case studies that emerge in the reviewed literature are longitudinal, global, cross country or focused on a specific population group or geographic location. For example, Jacobs and Herselman (2005) conducted a two and half-year in-depth case study focusing on "what works" for South Africa using the Ikageng Centre in a rural village of South Africa. Kozmar & Wagner (2006) on the other hand highlight a framework of "what works" best as seen in multiple projects in the provision of ICT's to out-of-school youth in OECD countries. The time frames for different projects in the later compilation are as such varied.

Still in the quest to find out "what works", Akinsola, Herselman and Jacobs (2005) present a comparative case study of South Africa and Nigeria while Duncombe and

Heeks's (2002) focus on rural entrepreneurs in Botswana. Yu's (2006) study of "what works" instead differs from the just noted cases because it is not presenting learning curves from a specific case study as is the case with other studies. It is a desk study aimed at identifying "what works" as argued by scholars from the information divide and the digital divide camps.

It also emerges in the literature reviewed that the focus of the case study may be on a specific population or an observed thematic area. For example, Hernandez-Limon (2009) presents experiences of disadvantaged Latino women in specific geographic location in New York. Another population specific case study is that of young people at the Kawampe Youth Centre in Kampala, Uganda (EIFL 2012). This study assessed how these young people learned ICT applications and other abilities like entrepreneurship and finance skills. Latchem and Walker's (2001) also present a summary of the experiences of such public access centres with a thematic focus on distance education. In the latter example there is no geographic concentration like the ones discussed before.

The reviewed literature had a wide range of case studies with diverse and enlightening presentation styles. For example, the UN-ICT task force publication grouped cases according to thematic groupings or learning curves. The compilation has a section that shares commendable lessons on how to set up an ICT public access centre. There is also a section that focuses on case studies that highlight common characteristics of an ICT public access centre while the other section discusses issues related to the evaluation of such centres. Latchem and Walker's (2001) presentation is also very commendable because the assessed variables are presented in the same order for all the cases in the compilation. This approach gives a holistic picture of the assessed centre and eases systematic comparison. O'Neil (2002: 84) applauds such a systematic presentation as it is more of benchmarking so as to improve operations of ICT public access centres. Walker (2008) also presents very informative thematic areas as a guide for field work conducted as part of Practical Design for Social Action Project (PDSA). This project, under the UK Arts and Humanities Research Council, sought to "develop digital design practices in civil society settings". The presentations from these varied

cases also afforded the present researcher with good insight on thematic areas that are worthy of detailed analysis. For example, what issues emerge in setting up of the ICT public access centres in Letlhakeng? What are the common characteristics of the centres in the village? And most importantly how do these affects access and use of the ICT's in these centres?

It however comes out in the disparate research approaches that are used to assess and categorize public access centres are guided by a common principle of 'Universal Access" (UNDP 2005:54, Alampay 2006:8; Mutula 2008:475) or the "Real Access/Real Impact" (Bridges 2005) or "real benefits for real people" (O'Neil 2002: 78). Despite the researcher's or the assessor's ideological variances, most assessments focus on the service's inclusiveness and if there is equitable access to the technologies. This echoes the knowledge management theorists' advocacy for social inclusion in information society (Castells & Himanen 2004:3).

The diverse universal access assessment models have common thematic areas that address demographics of users; types of access point and nature of services provided. Most assessments also include analysis of supportive factors like ICT infrastructure; management of the public access points and government policies (O'Neil 2002:86). The indicators are also reflected in Green's (2003) study on the extent of global gender disparities in access and use of ICTs in public access. Akinsola, Herselman and Jacobs (2005) also feature these indicators in their comparative study on the ICT challenges amongst urban disadvantaged communities in South Africa and Nigeria. The observed thematic indicators also feature in internationally used and recommended models like "The Global Partnership on Measuring ICT for Development". This model embodies a core list of indicators that guide the comparison of global statistics on the information society (UN 2005).The indicators also feature in the UNESCO's meta-survey on the use of technologies in education (UN-ICT 2005). These examples show that, although the approach or focus may differ, the disparate works relate to each other in a developmental way. For example, the indicators used in the cited publications relate well with the ICT Development Index (ITU 2009); the synthetic index (Corrocher & Ordanini 2002) and even the simple Standardized Media Index as presented by Norris

(2001). As reflected in the previous chapter, all these indices contend that assessment of any digital divide intervention strategy should construct a framework that considers several variables or factors of digitization.

Interestingly the literature is not prescriptive, or cast on stone to imply “a one size fits all” research method or data presentation. Researchers and practitioners in informatics are primarily concerned with describing workable research approaches in the adoption of public access centres as a means of affording disadvantaged communities’ access and use of ICTs. None of the described approaches carry a dictating voice. The flexibility in the research approaches is further dictated upon by the fact that there is neither distinctive definition of the digital divide nor a clear cut description of ICT public access centres. As noted earlier in chapter two of this study, researchers in this area acknowledge that the broad factors are also weighted differently for different populations (Latchem & Walker 2001; Evusa 2005 Corrocher & Raineri 2010 and Dintoe 2010). The need for flexibility in research on ICT public access centres is further supported by Barzilai-Nahon (2006) who cautions against complete adoption of “ready to use assessment models with set variable” because the ICT public access centres are governed by an array of interrelated factors which call for wider interrelated and flexible assessment styles.

3.4 Community’s demographics influence usage of ICT in public access centres.

As noted in earlier chapters, the interpretation of the nature of the digital divide is very broad and the needed intervention varies from one community to another. The demographics of the community affect ICTs service flows. Alampay (2006:16) presents a very interesting model that shows that the situation in which people find themselves in affect their freedom. Freedom in this case is inclusive of ability and capacity to access and use ICTs. In this context, one’s situation refers to issues of age, wealth, gender, education and geographic location. Interestingly, these demographic factors of the community at large and that of the user community affect and influence the structure of the centre, how it is managed and the subsequent services that are offered.

Throughout the reviewed literature, there is also a consensus that issues of gender disparities, urban-rural divide, low education and lack of skills levels affect and influence access and usage of these centres. For example, access and usage of ICT's is highly uneven with almost no access in rural communities as compared to urban areas (Hernandez-Limon 2009:40).This has been blamed on common rural constraints of poverty, low literacy, poor infrastructure and utility services (Duncombe & Heeks 2002: 63; Akinsola,Herselman & Jacobs 2005; Evusa 2005: 24;Prado 2009:25; AU 2010:7).

There are also disparities in the types of technologies available in rural and urban areas. For example, Elijah and Ogunlade (2006:55) note that in Nigeria telephones and radios are reportedly common amongst the rural poor while computers and Internet are restricted to urban centres. Duncombeand Heeks (2002:63) observe a similar trend in Botswana. The observed patterns resonates with the social and democratic divide as noted by Corrocher and Raineri (2010) and Norris (2001) while also bringing to fore the political economy stance as discussed in the previous chapter. it is also observed that in some cases, even if the technologies are made available through public access centres, access and usage still remain low because most members of rural communities are not aware of the professed benefits or lack the skills to use the technologies (Selwyn 2003:100; Talbot 2004:16; Jacobs & Herselman 2005). This shows that the technologies cannot bridge the divide unless they are coupled with appropriate information, education and skills development.

Other pertinent rural challenges include infrastructure, gender differences in education, income and most importantly, cultural norms and practices. The literature shows that due to various factors such as education levels and income inequalities, men are seen to access and use the technologies that are available through public access points more than their female counterparts (Fuchs & Horak 2006:110; Prado 2009:88; Gillwald, Milek & Stork 2010:29). This may be blamed on the existing social structures that are correlated with cultural norms and practices that give men more social and economic power over women (Chatman 1996; Green & Trevor-Deutsch 2002). Gillwald, Milek & Stork (2010:19) observe such gender disparities from the data on ICT access and usage survey conducted across 17 African countries, including Botswana.

As noted earlier, strategies to bridge the digital divide, especially in rural communities, have to be cognisant of the fact that for such communities, challenges related to technological structures are in most cases worsened by the lack of skills to navigate the available and accessible technologies. The literature recommends and applauds strategies that comprehensively address these challenges. For example, Evusa (2005:24) cites the case of South Africa where telecom operators intervened by promoting telephony and other information projects of reasonable quality in unprofitable areas. Talbot (2004: 8) also reports about a project where Derwenside District Council in North East England intervened in the development of an advanced ICT infrastructure and maximising the benefits of the technologies. This local council provided for the people living in poorer neighbourhoods with the needed technologies so as to ensure the critical mass needed by telecommunication service providers to upgrade the infrastructure. The council also e-trained these community members to access social services online.

The e-Bario project of researchers in Malaysia is also another example of researchers' collaboration to help by easing the cost of connectivity to the rural Bario community (Songon et.al. 2008). Another example from Botswana, is the adoption of the rural electrification programme (Mutula 2004:148; IST-Africa 2014) and the provision of technologies in the homes through the Connecting Communities Programme (BNLS/ACHAP 2009:45). By easing the costs associated with the structures needed to access the technologies, these operators, researchers and administrators acknowledge the fact that the market fails to meet demand in rural and deprived areas. The projects may also be viewed as influenced by what was discussed in the previous chapter as an ethical theoretical stance to bridge the digital divide (Alampay 2006:8). These examples show intervention that is cognisant of the unique demographic challenges in rural communities. It demonstrates commitment to address inter-related and interdependent demographic factors. Talbot (2004:20) commends such strategic collaborations because they bridge both the digital divide and the social exclusion.

3.5 Management of ICT's public access centres

Discussions on management of ICT public access centres brings in broad issues that are related to the physical structure of the centre; funding of the centre and the varied demographic characteristics of the community being served. The management can be addressed in terms of how the services are organized or it could focus on a specific time frame in the "project life". For example, the e-Bario project (Songan et.al. 2008: 86) demonstrates how a team of researchers in Malaysia engaged and empowered different stakeholders in the village from the conception of the idea to the actual running and sustenance of the ICT access centre.

Research on management of community informatics projects is also likely to differ from one project to the other. For example, although Hernandez-Limon's (2009) case study and the e-Bario project were both participatory studies, they differ in terms of scope; data collection techniques and the research output. The e-Bario project was set up as a pilot project to demonstrate the socio-economic challenges of setting up and managing a sustainable ICT access centre. The researchers, who were also project implementers, focused on management issues relevant to their course. This differs from Hernandez-Limon's (2009) case study where the focus on management was more in line with how management supported Latino women and the data was gathered from the selected Latino women. The latter researcher participated as a user while in e-Bario case the researchers were project managers.

Narayan and Nerurkar (2006: 46) also illustrate a unique management style in the case of Bhoom online record system in the state of Kamakata, India. These authors use this case to demonstrate application of their proposed multi-staged model for the development and management of e-government service provision to rural communities. One of the components of the model, the enabling phase, includes provision of ICTs through public access centres. This case study therefore emphasises the role of the government as both the source of the service and the manager at all the phases of the model. This echoes the call for intervention strategies guided by an ethical and social responsibility that is underpinned by the social justice principle of information as a public

good (Yu 2006:235). The Kamakata case study therefore shows the government's roles in management from the stage of providing access to the usage phase. The management style proposed by Narayan and Nerurkar (2006) also tallies with O'Neil's (2002: 78) observation that some of the cases that are analysed emphasise strong democracy and individual empowerment because it calls for government intervention in the provision of the technologies and ensuring that the community is equipped with the needed skills. Alampay (2006: 7) also points out that governments should play a leading role in providing "universal access/ universal services" that is defined and based on the three pillars of accessibility, affordability and quality of services.

Despite the observed differences on how ICT public access centres are managed; and the varied research on how the centres are managed, there is a general condemnation of the "techno-centric approach" that is commonly associated with the drive for economic gains by those who provide the technologies (Duncombe & Heeks 2002; (Akinsola, Herselman &Jacobs 2005:20; Selwyn 2003:110; Fuchs & Horak 2006:113). Such an approach is condemned because it focuses on providing technology to disadvantaged communities, with less consideration of the social issues that surround the technology divide.

The management style characterised by the "techno centric approach" is seen as more of "dumping" of technology on the recipient community. It is also blamed for the emergence of what Selwyn (2003: 111) views as "theoretical access" as opposed to "meaningful access" of ICTs. This author defines "theoretical access" as one that makes technologies available, but fails to consider the broad range of contextual constraints that hinder the community to fruitfully or meaningfully access and utilise the technologies. Evusa (2005:126) cites a Uganda baseline survey of public access centres which revealed that in some cases access and usage of the centres was almost none because the community was not well informed of the services. The survey also notes that in some cases the community failed to use the services because they were discouraged by the lack of local information at the centres. These examples are also viewed as demonstrating poor management of how the concept of ICT public access

centre was introduced to the community. It shows that poor management at the introduction phase creates what has earlier on been referred to as theoretical access. Such a challenge can be mitigated by in-depth contextual research on communities' needs.

As Akinsola, Herselman and Jacobs (2005:23) notes, researchers, policy makers and practitioners in community informatics have to avoid speculating about the community's needs. The authors strongly condemn such speculations because they are bound to yield interventions that are not grounded on the actual information flows and use of the community. Duncombe & Heeks (2002; 64) and Akinsola, Herselman and Jacobs (2005:22) further observe that both the management of ICT public access centres and the related research have to adopt a broader systematic approach that looks at processes or systems of providing the technologies. These authors' line of thought stems from the understanding that the ICTs support information processes and practices that have always been within a given community. The management of the centres therefore has to be aligned with the already existing information or knowledge management systems.

The factors that motivate the conception of the ICT public access centre also have a bearing on how both the centre is managed and how e-ICTs in public access centre are used. O'Neil (2002: 77) particularly stresses that researchers need to understand the history surrounding the advent of such services in the community being studied. This observation is further stressed by Jacobs and Herselam (2005: 90) who note that the mix of services that a given centre offers is highly influenced by the factors that motivated the establishment of the centre. Benjamin (2001) also shows how the historical background interrelates with funding and management of the Gaseleke centre, South Africa, which was initiated by respected bodies in the ruling party in the post apartheid South Africa, the .African National Congress. The centre is hosted and managed by this politically affiliated community group. In addition to bridging the digital divide, the managing body is also concerned with bridging the democratic gap created by the apartheid system. These historical issues, especially racial poverty and

disparities in structural developments between urban–rural areas, influence the management and the continued growth of the services.

Traces of historical influences also emerge in Jacobs and Herselman's (2005) and Kozmar and Waganer's (2006) guidelines on "what works" for ICT public access centres as presented in the South African; The United States and OECD countries respectively. Both guidelines stress the need for a comprehensive policy that involves good management of the processes within the multiple arenas in the community.

Narayan and Nerurkar (2006:35) present a model that shows how community participation in the management processes at the conception and delivery of an ICT project affect use. The model, which is built from processes of e-government adoption in India, has two key sequential stages called "time–to–public" and "time-in-public" phases. The former refers to processes and procedures carried out from the point of conceptualising and planning to the actual implementation of the e-government services. According to this model, the "time-in–public" phase is the stage when the services are already offered. The "time-in-public" will be characterised by high diffusion if the community was involved in the management of the "time-to-public" stage. Such a high sense of ownership by the users emerges as a good factor in reducing the "theoretical access" that was referred to earlier. Although the model is specific to e-government projects it can be applicable in assessing "time-to-public" and "time-in-public" phases of an ICT public access centre. These management phases are inevitably bound to differ with type of public access centre in question. The Malaysian e-Bario project (Songan et.al. 2008) presents a management case at both the "time –to –public" and the "time-in –public phases" because it discusses activities from conception of the project up to how the centre functioned and continued to evolve as more needs from the community kept on growing.

Some management style may focus more on provision of service specific user population in the community. For example, most call centres in Nigeria are predominantly operated by young women so as to empower them (Elijah & Ogunlade 2006). These women therefore manage the centre with intent to make profit for

themselves. A similar trend is observed in Ghana, where the community learning centres appointed women as managers (Fontaine 2001:143). In India young men have a franchise from the state to access and distribute daily crop prices and the commonly needed state records for a small fee (Oestmann & Dymond 2001:12). Talbot (2004:8) also reports that some access centres attract youth by running home work clubs, installing game machines, training them in web design and digital photography, which in turn helps in building a vibrant website for the centre. In these examples, the researchers then made concerted efforts to assess the management of the centres in promoting these special target groups.

3.6 Types of public access centres

The diverse ways of defining, managing and conducting research on ICT public access centres inadvertently result in different ways of categorizing the centres. Earlier discussions showed that centres have no distinct definition because they are assessed or described differently according to the researcher's or assessor's perspective. The description may be in terms of the structure of the centre (e.g. phone tuck-shop, Internet kiosk. Reference to "tuck shop" or "kiosk" denotes a smaller cabin or a single room. In some cases description may be in terms of management style (e.g. as government funded / community driven). Those centres that are commonly referred to as community information centres are those mainly managed or owned by the community. A centre may also be described in terms of the target user community or even the type of services offered. For example, a centre may be called farmer's information centre because it serves farmers.

Evusa (2005:124) identifies four distinctive types of ICT public access centres that are common to Africa: basic tele-centres, private telephone shops, cyber-cafes and larger community multipurpose centres Analysis of the literature on this concept broadly identifies two broad categories: "stand-alone" and "embedded" ICT access centres In terms of this broad classification, the first three of Evusa's (2005) groupings fall into the "stand-alone" category. These are mostly independent ICT public access centres that are predominantly founded and managed by individual entities. The embedded ICT public access centres on the other hand are mostly community managed; and are

pinned to other existing programmes or services (Latchem & Walker 2001; Jacobs & Herselman 2005:58).This description or grouping is accommodative of Evusa's (2005) "community multipurpose centre" category. Etta and Parvyn-Wamahiu (2003:14) refer to indipently owned stand-alone cetres as simple tele-centres and the embedded ones as multi-purpose or community telecentres.

The literature reviewed for this study however shows preference for and development success stories of services that are embedded into the already existing community services (O'Neil 2002:86; Jacobs & Herselman 2005; Yu 2006). Despite acknowledgment of the complexities of establishing and operating an embedded ICT public access centre Benjamin (2001:82) and O'Neil (2002: 84) register preference for these centres. Both authors note that stand-alone centres have the tendency of collapsing. Etta and Parvyn-Wamahiu (2003:15) further add that although these privately owned centres are mushorroming, they are characterized by failure and collapse.

The O'Neil commends libraries for hosting embedded centres. The library's commendable contribution is also buttressed in Kozmar and Wagener's (2006:10) project report on access and usage of ICT public access centre by learners in disadvantaged environments. Another good example is the Kawempe Youth Centre in Kampala, Uganda, which is registered as a community library and serves as a good ICT public access centre (EIFL 2012).

The embedded ICT public access centres differ in forms, management and services offered. For example, a centre may be initiated by government, a development agency, local NGOs or any other already existing organization. As in Evusa's (2005) case study, the centre was established by government and other stakeholders as a unit within the compound of the already existing National Council of Churches of Kenya. In this case, both the services and the actual structure are appended to the mother body. In the case of Gaseleke, in South Africa (Benjamin2001), the centre is located within the grounds of the sports stadium but the services are not linked to the stadium. The management is

instead embedded to the ANC community development structure but not that of the stadium.

Elijah and Ogunlade (2006), Latchem and Walker (2001), Kozma and Wagner (2006) also present success stories of embedded typologies in supporting educational needs of the communities they serve. Kozma & Wagner (2006:14) specifically note that, embedding coordinated academic and social services is a worthy investment to support improved learning for school drop outs. Hermandez-Limon's (2009) case study also shows how an embedded service at the Little Sisters of the Assumption Community Technology Centre in New York managed to make the technologies available and to also equip disadvantaged Latino women with the skills needed to effectively use ICTs.

A bothersome limitation with the embedded services is the tendency to be biased towards the organization's ethical, political or sociological perspectives (Jacobs & Herselman 2005). The situation is likely to occur mostly when the centre is a "top down" project with guidelines drawn by external funders (Evusa 2005: 127).This may be evidenced in the cases of gender specific centres as presented by Green (2003). This author shows how the projects "Horn of Africa Regional Women's Knowledge Network" (HAWKNet) and "Women of Uganda Network" (WOUGNET) are aligned to the founders' gender development agenda. Walker (2008:11) also rightly points out that in such cases, the drivers of the projects emphasise different values and services as per their agenda.

For example, the founding body, which in most cases is the managing body, may introduce add-on services depending on organizational goals or as per the needs observed in the community. This may be seen in the case of Nigeria, as reported by Akinsola, Herselman and Jacobs (2005) where additional community tailored micro-credits finance and cooperative marketing services for farmers have been added to basic services of the ICT public access centre. .A similar trend of a needs based added service may be seen in the case of Kawampe Youth Centre, in Kampala, Uganda. The centre is supported by a powerful youth empowerment NGO called Private Education Network (PEDN) (EIFL2012). Through the support of PEDN, the centre has been

nominated as the award winner of the 2012 Electronic Information for Libraries (EIFL) contribution to economic wellbeing of the community because of its continued development and growth in youth services that are aligned to the EIFL goals.

Another example that shows the influence of the founding body in shaping the nature of ICT public access centre is the Gaseleke centre in South Africa. Initially the centre only offered access to equipment, but now it has developed various services according to "need and opportunity" (Benjamin 2001: 77). Such services include computer training, a postal service point and at times a place for community members to hang out and chat. The centre has also arranged with the Ministry of Home Affairs to have weekly visits to assist the community in matters of civil registration. This initiative, coupled with good management and strong connections in government, has spiralled into initiatives that enable the centre to have operating profit through income generating services like taking national identification photos, laminating and photocopying. These examples further buttress Latchem and Walker's (2001:1) contention that issues of management, ownership, especially funding, also manifest themselves in the type of public access centre. The Gaseleke centre has evolved from a simple centre where the community could access technologies like telephone or printers to a centre with a broad range of social services.

It is however important to stress, as does Etta & Parvyn-Wamahiu stress (2003:166) that despite the categorization of the centres in terms of geographical location; services it offers it is incontestable that, these centres are vital development tools.

3.7 Observed limitations in literature reviewed

A run-down of the list of issues that can hinder or promote access and use of ICT through public access centres presents a picture with broad interrelated variables. The greatest challenge is that the concept is as flux as the very problem it is meant to address (i.e. the digital divide). These complexities also make it impossible to "dish out" the entire menu of ICT public access centres in one research output. This section highlights what emerged as some of the overlooked but significant "menu items" in the reviewed literature. Although these bypassed issues may not be fully addressed in this

study, they are highlighted as areas for continued consideration in community informatics work-in-progress.

3.7.1 No defined method

A key limitation with most of the reviewed studies on ICT public access centres is that the indicators used in various studies are not authoritative, not standardised and as such bound to vary in interpretation. As Yu (2006:244) rightly notes, the absence of universally agreed upon indicators, coupled with the use of varied assessment models, complicate comparison and evaluation of the findings of research on these centres.

Another related concern is that although the indicators used in the diverse studies provide a solid research base, their application in the reviewed literature fail to reflect credible research methods as the authors do not explicitly show how the variables were assessed to attain the presented results. For example, although O'Neil (2002: 94) highlights valuable insight on various thematic areas as they emerge in thirty different works, it is not clear how such conclusions were reached. Kozma and Wagner (2006) also cite a number of international projects that show practices, policies and research on ICTs in disadvantaged communities. However these authors fail to clearly articulate how these noble initiatives were measured or benchmarked. Walker (2008:11) notes that in cases where the methodology is clearly articulated, researchers then tend to focus more on praising their theoretical stance or methodological credibility and not the "method in the wild". By this the author is concerned that researchers fail to present reality of the experiences of the community being served (i.e. the processes in the context). For example, what are the observed patterns or actual practicalities in the way the community accesses and uses the ICTs that are available in these centres? The researchers seem to be more interested in how they trace the patterns while compromising information about the patterns.

3.7.2 Limited theoretical stance

A common thread that runs throughout the literature is the call for provision of ICT services for inclusion of disadvantaged communities. The proposed strategies that emerge in the presented case studies recommend policies and strategies that seem to

be pinned to a social constructivist theoretical framework. This approach is characterised by a move from just understanding the concept, to assessments aimed at developing practical strategies of addressing issues that hinder or promote use of the centres (Davison et.al. 2000:6; Evusa 2005:67; Akinsola, Herselman & Jacobs (2005: 37; Elijah & Ogunlade 2006: 55). The cases reviewed as part of the present study paint an over optimistic picture that the technologies will bridge the gap. The reviewed studies are limited in showing any other alternate view on the concept.

The present researcher also observes that the reviewed research or debates are more inclined towards the economic-political theoretical framework. There is a lot of concentration on issues that relate more to “information power stages” (Yu 2006: 235; ITU 2009:73; Calderaro 2010:27). Such a focus may over look the plight of the information poor communities. For example, the role of politics clearly emerges in the case presented by Benjamin (2001) in South Africa where the Gaseleke Centre is doing extremely well because it enjoys support from the political arena. One may also view the centre as an intervention strategy that is linked to institutional economic and political powers which allocate information resources and benefits according to powers structures (Norris 2001:14; Evusa 2005: 77; Corrocher & Raineri 2010). The present study argues that debates from political dimensions have to be unmasked so as to learn more of “what works”. As Etta and Parvyn-Wamahiu (2003:168) argue, the guiding theoretical stance has to be unpacked to the community at entry point so that they understand that intended goal and they are able strategically contribute towards the attainment of the social goal. According to these authors, bringing in all stakeholders, which includes researchers, will help in developing many other theoretical positions. This is important because as Norris (2001:4) points out, the digital divide is characterised by other divides like the social divide and the democratic divide. It is within this vein that the present researcher recommends adoption of a stance that embraces other views from the ethical and the political-economic augments. Etta and Parvyn-Wamahiu (2003:34) further calls for more research and education on theories that explain the relationship between telecentres and development. This would help the communies to visualize and appreciate the role of the centres.

The present study also observes that although the reviewed literature generally called for universal access on ethical concerns of information for all, the underlying factor seems to be more of what Yu (2006:243) refers to as political-economy. This may be seen in Evusa's (2005: 75) discussion which hinges on the market and the states. This author notes that Africa has been drawn into the digital revolution as the direct result of the globalization of trade. The contention here is that the world is not guided by ethical concerns to include Africa into the information society, but instead it's driven by the need to expand the developed world's trade or market. This in a way is a direct call for those in the ethical camp to present their case. (I.e. is the interest in Africa from an ethical concern or it is an economic drive).The general tendency is for researchers to address this from a social structural perspective. To avoid by-passing these other view points, the present study digs into factors that motivated the establishment of the ICT public access centre so as to find out the guiding theoretical stance. It is important to establish if the motive was purely from an ethical perspective or if it was driven by the founder's economic needs. There is also a need to assess how both motives work interrelatedly in the provision of ICTs through public access centres.

3.7.3 Research limited to defined users

While Walker (2008:1) points out that the users can no longer be treated as passive consumers of the technologies, one can rightly add that neither can non-users be seen from that perspective. The non-user community is very diverse and characterized by many other factors that impact on how the identified user communities perceive and use the available technologies (Etta & Parvyn-Wamahiu stress 2003:40).The present study is however apprehensive that most of the studies on the topic tend to downplay the role of non-users. For example, although Evusa (2005), Jacobs and Herselman (2005) and Hernandez-Limon(2009) present very informative in-depth case studies on access and use of ICTs offered through public access centres, non users are excluded in all the cited case studies. Talbot (2004) also presents a case of how the Derwentside District Council in the UK made technologies available to the poorer members of the community and even trained them on how to access social services that were offered online. The paper leaves out the non user community members.

Most of the cases that emerged in the reviewed literature presented experiences of specific community centres. The concern here is that the cases are presented in isolation. For example, The National Council of Churches of Kenya's Huruma Community Centre; the Ikageng Multi-Purpose Community Centre in Itsoseng village in South Africa; and the Little Sisters of the Assumption Community Technology Centre in East Harlem, New York respectively. Talbot's (2004) working paper on community informatics is also based on a single in-depth case study in the Derwentside District Council, North East England. This case study leaves out any other users of any other centre that might be available in the village or city. There is also not much reference to why other people are not using the centres at all. The present study is of the view that non-users can also be a good source of information that relates to the centre being studied.

Another limitation with the just discussed cases is that they tend to target well-funded, well established resource centres and which in most cases usually have already developed user communities. Hernandez-Limon (2009:44) also expresses a similar concern and further cautions against too much focus on pilot projects. The author is concerned that at pilot stages, the project funders manage the centre and document the cases as evidence of the funding bodies' noble contribution to society. For example, the cases presented earlier were on a project managed by local authority council Talbot (2004); the e-Bario project of researchers as presented by (Songon et.al. 2008). In their executive summary of the experiences of community telecentres in selected African countries, Etta and Parvyn-Wamahiu (2003) urge, governments and donor agencies need to support both establishement and suatainance of the centres . this relates to an earlier observation of the tendency to focus on pilot projects that are embedded in already existing community services.

3.7.4 The community's role is not presented

As just noted in the preceding paragraph, the reviewed literature tends to present findings from the centres that are relatively well established and well funded by influential entities. This creates another slant of research that focuses more on policy issues than the actual happenings at the centre. This relates to an earlier observation

that there is a gap in documentation on the non-users of ICT public access centres. Most of the reviewed studies focus more on the role of supportive agents than on the users. For example, the earlier example of the role of researchers; the local council authority or even government fails to show the role of the community. There is concentration on how the services are delivered and recommendations for policy interventions at both national and organizational levels. Talbot (2004:9) refers to these as “relational issues” where the focus is especially on the system failures and not on individuals as both users and potential users. The author further notes that researchers tend to see less need to focus on individual community members’ contributions in successful access and use of the provided services but rather focus on policy and policy makers as they control relational issues. The focus on such relational issues is mainly because the issues are seen as core factors of poor, or an absence of services, poor community participation, undemocratic processes and disempowerment. Evusa (2005) and Jacobs and Herselman’s (2005) show that policy can be developed to guide delivery of services in Kenya and South Africa respectively. Evusa (2005: 220) specifically calls for policies that would enable the women at the centre to access health and education services. Alampay (2006:15) further commends such a focus on policy makers because the application of ICT’s in the absence of an informed strategy development will not yield desired outcomes.

However, one can still argue, as does the present study, that too much focus on policy makers leaves out other areas in the cycle of the development of the community (users and non users); development of the information; and application of the needed technologies. Although Alampay (2006) is noted as encouraging a focus on policy, the author further notes, as does Howie (2010:508), that researchers need to be cognizant of the fact that good policies do not necessarily translate into good practice. It is essential that assessment extends beyond just the centre, but also to other influential bodies or entities that can even influence national policy. This further relates to Etta & Parvyn-Wamahiu (2003:168) recommendation that donors and governments should invest in selling the guiding conceptual framework and the supportive policies so that all entities involved in the being of the centre work towards a common goal.

Another interesting observation is by Kozma and Wagner (2006:15) who note that in some cases emphasis on such “relational issues” may also be linked to the tendency for most studies to focus more on the examination of the implementation of the projects at these centres at the expense of the impact or the outcomes of the centre. For example, Latchem and Walker (2001: vii) specifically note, in their introductory chapter of their compilation of experiences from different centres, that the book is designed to help “international agencies, governments, NGO’s, educational institutions to establish, extend or improve the centres. The cases presented in the just cited compilation focus on processes from the implementing body’s position with less concentration on the views of the recipient community. Another example is in Narayan and Nerurkar’s (2006) model of e-governance implementation in India. The model’s “time to public” and ‘time in public” phases also focus on processes that implementing bodies do, but not on the receiving community. Evusa (2005) and Jacobs and Herselman (2005) from Kenya and South Africa respectively also focus on how policy can be developed to guide delivery of services. Evusa (2005: 220) specifically calls for policies that would enable the women at the centre to access health and education services.

The tendency to focus on policy may also be related to another observation that, in most cases, even though the centres are community managed they began as “top-down projects” by government and other NGO’s (Jacobs & Herselman’s 2005:68; Evusa 2005:25). In some cases, even if the community is involved, the role of the different stakeholders is not well defined. For example, Etta & Parvyn-Wamahiu (2003:53) cite this as one of the factors that contributed to the management challenge in the case of Timbuktu, Mali where the project was conceived from elsewhere and introduced to the community. These authors use this case to to demonstrate the benefits of partnerships with international development agencies; national telecommunication industry; political power and the end user community.

Due to the concerns about the implementing bodies, researchers then find it important to direct investigations directly on theimplementation approaches. The argument posited in this case is that the policy makers and bodies that carry out the projects are crucial to

the success or failures of ICT projects. This concern even buttresses the earlier call for researchers to robe in the political-economic dimension into the research on access and use of ICT through public access centres.

Another reason of the observed research slant towards implementing bodies could also be due to, yet another worrisome awareness that much of the cases emerge as top-down community centres (i.e. the need for ICT public access centres and at times the conception of the project originates from some external entities). This limitation relates to the observation cited earlier that researchers tend to focus more on “embedded” ICT public access centres than on “stand-alone” ones. Targeting the “embedded” centres therefore tends to afford the researchers an opportunity to address government and NGO’s because these bodies are usually involved in the cases that are embedded.

The present research stresses the need to look beyond the implementing bodies or policy makers. This study contends that the community at large has a strong influence on the ICT public access centres. It is on this premise that the study primarily targets users and non-users as key informants. This is because the focus is mainly on how the community accesses and uses the services and not how they are supposed to.

The present study pays special attention to the community so as to avoid what Walker (2008:11) terms the tendency for researchers and service providers to theorize their own interventions, with less focus on documenting “methods used in the wild”. However, the focus on members of the community does not imply a neglect of other contributing game players from within and outside the community.

Another observed limitation is that, although there is concentration on management and policy issues, there is a research gap on management issues that relate to funding of the ICT public access centres. Issues of funding are intertwined with the management of these centres and the resultant access and usage patterns. Evusa (2005:126) points out that although this is a critical area of concern, researchers have not given it much attention. The author laments that in some cases the flaws in the management of these

centres may lead to the projects eventually acting as “ground for global capitalism” or some economic giants exploiting the desperate communities.

3.7.5 ICT Public access centres are studied in isolation

In the reviewed literature, the discussed ICT public centers are presented in isolation. The discussions fail to show how the assessed centres link to other ICT public access centres or other related projects within the community. Jacobs and Herselman (2005:69) specifically note that at the time of their study, the Ikageng Centre had no linkages with any other centre in the village. Although Evusa (2005) Jacobs and Herselman (2005) and Hernandez-Limon (2009) acknowledge the importance of linkages with other ICT access centres these researchers fail to demonstrate the role of such connections in their studies. This is worrisome because such linkages have “far reaching spin-offs on the centre being studied” (Jacobs & Herselman 2005:69). The importance of such linkages is further stressed by Hernandez-Limon (2009:39) who reports that the Latino women who participated in his/her study reported growth, identity and family bonding through interaction with other communities online. Kozma and Wagner (2006:10) also note that “no one centre can effectively meet the information and social needs of the disadvantaged communities”.

Talbot (2004:4) shows connections “between community centres, Internet access points, libraries, schools and scout halls”. These entities collaborated to help the local council build and maintain a local ICT public access centre which hosts a central website that offers free access and communication with the libraries and schools. This study however over emphasizes on the role of the local authority and not other centres in the community. It is important to assess if any such relation between services or centres bears any relation of the community’s access and use of the ICTs that are available through public access centres.

The present study’s inclusion of all the other centres in the village therefore looks into any such linkages. Although Talbot’s (2004) inclusion of the entire community and related administrative bodies is commendable, it is essential to acknowledge that some

of the strategies adopted by this community may not be applicable to the poorer rural context in Africa. For example, the Letlhakeng local authorities would not have the capacity for private home access for selected community members or enhance the needed basic infrastructure as was the case presented by Talbot (2004: 4- 8). A similarly stronger community leadership is observed in the case of Timbuktu, Mali where it is able to mobilize resources towards the actual construction of a centre (Etta & Parvyn-Wamahiu 2003:53) As noted earlier, this case demonstrates community ownership of the centres and strong political support.

A case that may be closer to the Letlhakeng community is the one presented by Kozma and Wagner (2006:10) who studied ICT access and usage amongst disadvantaged students from a French school near Parris. The students of the School are reported to have used an ICT public access centre to link up with students in another project in Paris to gather information, write documents (even diaries of their eventual trip to Paris), and create websites that linked to the school site and other disadvantaged young people. Another example in the same compilation of cases by Kozma and Wagner (2006) is tfrom the United States of ASmerica, where Seatle Community Technology Alliance that provides funding, technical support, leadership, professional development and opportunities for communication and collaboration to the seven centres it supports.

3.7.6 The prescriptive voice in "best practices"

Although the presented cases of good practice are meant for guidance and benchmarking, it is worrisome that in some instances they emerge more as prescriptive or model testing. For example, Jacobs and Herselman's (2005) in-depth case study may be construed as "model testing" because the findings pose only best experiences with no cited flaws in the presented models. Despite Latchemand Walker's (2001) commendable outline in their compilation of different cases, the first chapter emerges more as model based. The chapter presents a summation of common characteristics, development trends, expectations and recommended approaches to operations of public access centres. Walker's (2008) presentation of guidelines to inform research for

the practical implementation of the “Design for the 21st Century Country Program” under the UK Arts and Humanities Research Council also resonate such a prescriptive voice.

3.7 Conclusion

The present researcher observes that it is not possible to have one conclusive definition what “ICT public access centre” are. There is also no standard index of elements of a typical centre. As a result there is no definite way of researching on the broad range of related factors. The centres also have different names that reflect either the structure (e.g. Tele-Kiosk); type of users (e.g. farmer’s information centre): or even management style (e.g. Community Information Centre). This study refers to these centres as ICT public access centre. As Etta & Parvyn-Wamahiu (2003) rightly note that despite the classification of these centres, most of the related research addresses issues of access; relevance; sustainability and enevironment. These authors further unpack sustainability issues to include issues of ownership or management while environmental ones include both socio-economic and technological factoctors. Two broad types of centres emerge: “stand-alone” and “embedded” centres. The centres differ in structure; management and usage. The centres enable disadvantaged community’s to use the ICTs while also promoting delivery of other social services like education; health or participation in global economy.

The literature reviewed shows that the access and usage of the different centres varies from one community to the other. Even within any given community, there are variations in access and usage of the available technologies. There is a need for research on the different aspects of ICT public access centres. Such research is needed to inform the development of policies that promote development of the centres and to share best practices. The reviewed literature shows a more pressing need for such research in Africa, where the concept is relatively new.

This chapter brought in various case studies characterised by interdisciplinary theoretical frameworks and research methods. The strengths and gaps in the reviewed cases informed the adopted approach for subsequent chapters of methodology, data analysis the concluding one.

CHAPTER FOUR
RESEARCH METHODOLOGY

4.1 Introduction

This descriptive qualitative case study on how the Letlhakeng rural community accessed and used ICTs that were available through public access points was conducted in four critical and sequential stages: designing the study; conducting the study; analysing evidence from the study; and then developing conclusions and recommendations (Yin1981: 59). The study drew from a multi-disciplinary theoretical framework with an interpretative approach and critical realism (Dobson 2002) (i.e. interpretation of reality coupled with recommendations for change). The adopted theoretical stance and the set research goals evoked both an exploratory and descriptive approach.

This chapter discusses the data collection processes in three broad sub-plots that anchor on users, non-non users and infomidiaries. A brief re-affirmation of the adopted philosophical stance is given to pre-set the research approach. Falconer and Mackay (1999: 287) simplify the philosophical stance as the belief regarding the nature of the phenomenon under study. The rest of the discussion then presents an in-depth description of where the data was collected and how it was gathered. As Pickard (1998) notes, it is important to present "sufficient detail and precision to allow judgements about transferability". Therefore, the present chapter and the data analysis chapter are characterised by a narrative voice that presents stories meant to enable the understanding of how the community uses the available ICTs.

A description of the population of study and the research participants is also covered in this chapter. This is also in line with Falconer & Mackay's (1999: 287) contention that the description should also show how the adopted data collection approach connects with not only who and what is being studied, but also the guiding paradigm and the data analysis.

The last part of this methodology chapter summarises key observations from the research method and how these relate to the data analysis as presented in the next chapter.

4.2 Philosophical approach and paradigm

Discussions on the concept of digital divide fall in to two broad views: disparities in the availability of the tools and the people's inability to access and/or manipulate the tools. An earlier discussion in the second chapter of this study described how these two concerns translate into the differences in access and use between the users (vertical divide) and variations in how the users apply the technologies into their daily lives (i.e. horizontal divide). The study's collection of data on what ICTs are accessible to the community helps to assess the vertical divide. Data on how the available technologies are used also helps address questions on the horizontal divide. The focus on how people access and use the technologies is premised on the appreciation of the fact that the global concern of factors that generate this inequality have shifted to a contemporary stance that looks beyond "techno-focus" to the "people focus" (OECD, 2001:5Barzilai-Nahon 2006:269; Calderaro 2010 :25).

As Falconer and Mackay (1999: 287) and Maxwell (2013:39 rightly assert, the philosophical position shapes the researcher's paradigm and in turn guide the adopted research approach. This means that the researcher's belief about the concept play a key part in the designing of the research process. The present study therefore emanated from the point that the ICT public access centres in Letlhakeng village were some of the strategies to bridge the digital divide. The researcher also acknowledges that intervention strategies have to be aligned with the needs as observed in the community. These beliefs bring an interpretivist approach coupled with the critical theorists' view that research has to help "find remedies to social ills" or have an "emancipatory interest" (Benoit 2007). This study then adopted a theoretical framework that brought in an interpretative approach with a critical realism (Dobson 2002; Maxwell 2013:43). The adopted stance also brings on board elements of social constructivists that call for an understanding of social and technical factors of access and use of the technologies that are offered through the public access centres (Evusa 2005:137).

The earlier discussion of both the digital divide and the use of public access centres showed equally broad and interrelated theoretical positions that guided the interpretation; bridging strategies and mapping the divide. Therefore, the present study also adopted an approach that Mingers (2001) refers to as triangulation of theories or perspectives that link people and technologies. According to Mingers, such a triangulation of theories enables the researcher an opportunity to view the same concept from the different perspectives. This is helpful in assessing conflicting or challenging observations from the varied viewpoints. Mortari and Harcourt (2012: 235) and Wang (2013: 769) contend that a research from a social constructivist perspective should be able to flexibly triangulate guidelines or codes from the different theories as supportive tools but not as hindarenece to obtaining data. The just cited two publications demonstrate flexible mordification of medical or posistivist theory to gather data from children through participatory research.

Mingers (2001) further notes that in some cases there may be other types of triangulations like methodological triangulation: triangulation of analysts or triangulation of sources. Yin (1981:58) adds that there may also be triangulation of analysts and / or triangulation of investigators (i.e. researchers). However, the present study only opted for triangulation at two levels: theoretical triangulation at the conceptualisation stage and the triangulation of research tools and data sources at the data collection phase.

Triangulation at the data collection phase is characterised by the use of different but complementary techniques and tools to gather data from different participants or any other elements in the environment. It is however important to note, as does Yin (1981) and Cresswell and Miller (2000: 126), that such a triangulation does not in any way qualify this as a mixed method study. There was no methodological triangulation but instead triangulation of data gathering techniques and data sources. There was also no triangulation of investigators or analysts because data was solely gathered and interpreted by the researcher.

Yin (1981:58), Cresswell & Miller (2000: 126) and Maxwell (2013: 128) further applaud triangulation of research tools and of data sources as an ethical way of constructing validity of both the data and the data collection processes. These authors suggest that

the researcher may add value to the credibility of the data by extending triangulation through peer review or peer checking; using external audits and / or triangulation of data sources. In the present study, although there was no systematic peer review of the data collected, the Librarian at Letlhakeng Public Library and the research team from the Department of Telecommunications and Postal Services served in a way as such peers. Continued collaboration and informal discussions of preliminary findings with these parties also helped in validating the findings and in guiding continued development of research procedures.

As Porter (2007: 85) attests, the noted collaborative approach does not only ensure validity of the data but also helps in pertinent issues of ethics and accessibility. For example, the librarian helped the researcher with cultural background and insight on issues that are not culturally acceptable in the community. Working with the government research team was also a great bonus especially in accessing to Kaudwane and Sorilatholo villages in the Letlhakeng Sub-district.

4.3 Methodological approach

This study adopted a qualitative methodological approach that triangulated data collection techniques and data sources within a case study. Each data source was addressed in terms of its uniqueness and mainly to support further understanding of the environment. The study explored what Yin (1981:59) and Creswell (1998:61) refer to as a “bounded system” in research because the research strategy (case study) was systematically delimited to select setting in terms of location and time. The data collection was also bound to the use of interviews, focus group discussions, observations and documentary analysis as data collection was underataken within a qualitative case study.

The systematic procedure of obtaining a research permit; gaining access to the study site; participant selection; data collection and analysis further buttress the systematic nature of this study. The following discussion outlines how these activities were carried out.

4.4 Research permit

Acquiring a research permit was done in phases or sub plots that were helpful and very informative on issues related to the national ICT environment. The initial introductions were made through email and telephone communications. For example, email (dated 30/ 10/ 2012; Appendix 3) was sent to the Ministry of Science and Technology. A similar e-mail was sent to, the Botswana National Library (30/ 10/ 2012) as a follow up of telephone consultation with the Director. The procedure for acquiring a research permit seemed very unclear to all the ministries or departments that the researcher sought assistance from. The initial introductory communications therefore included an inquiry on how to get a research permit.

The second phase of getting the research permit was characterised by several informal but very informative discussions with different officers at different departments and organisations. Due to what seemed to be unclear procedures of getting a research permit, the researcher visited several offices related to ICT access and usage in Botswana. The research permit was ultimately issued by the Ministry of Transport and Communication on 13th November 2012.

Before the permit was issued the researcher was invited to present the research proposal in a meeting with both the Director in the Department of Telecommunications and Postal Services and the National Coordinator, Information and Communications Technology. From this meeting the researcher was motivated to collaborate with the team that was set to assess the ICT public access centres under the second phase of the government rural connectivity programme popularly referred to as *Nteletsa II*. The word Nteletsa is a Setswana word that literally translates as “call me” to denote that there is telecommunication connectivity in the area. Nteletsa is part of the rural connectivity programme that was cited earlier in the introductory chapter as some of the ICT initiatives in Botswana.

The researcher also had two follow up meetings with the Deputy Director and another with the Chief Communications Officer, who served as the leader of the team that was

tasked to assess the Nteletsa II. Although the objective and scope of the just stated assessment differed with those of the present research, they were complementary. Establishing a working relationship with the ministry also helped in easing access to both the study site and more data sources. This collaboration also played an important role as part of what was referred to earlier as informal “peer reviewers”.

In the process of getting a research permit, the researcher built a strong working relationship with the Botswana National Library Services (BNLS) under the Ministry of Youth, Sports and Culture. In one of the meetings at BNLS, the researcher presented and discussed the research goal and objectives. The Head of Projects and the Head of Public Libraries attended this meeting. As a result of the cultivated working relationship, the Letlhakeng Public Library then served as the main host at the study site.

Dispite the good relationship that the researcher had built with both the Ministry of Transport and Communication and the department of national library services, the researcher embraced Wang’s (2013: 763) advice to be attentive to the relationship between the researcher and all other people who play different roles in the study. As part of the desire to present an authentic and credible study, the researchers ensured impartiality by independently collecting and analysing data. For example, the researcher identified an information rich case while sitting in as an observer i the meeting between the government research team and the informdiary at Kaudwane. This identified participant was not part of the just noted discussion. The researcher then independently followed up this user at a later date for an interview.

The researcher also independently identified the stand-alone centres in the village, although the librarian did not know about them. These examples demonstrate the researcher’s commitment to ethical objectivity that was pledged in the first chapter.

4.5 Research method

Before a detailed discussion of the data collection processes, it is important to recall that the second chapter of this study explained the researcher’s choice of an interpretivist approach and why the researcher adopted what Dobson (2002) describes

as an interpretative approach with a critical realism. As Bryman (1984) asserts, the adopted theoretical framework, coupled with the research question, as stated in the first chapter of this study played an important role in both the data collection and how it was analysed. In the second chapter, it is explained that the adopted approach brought in elements of social constructivists that call for an understanding of social and technical factors of access and use of the technologies that are offered through the public access centres (Evusa 2005: 137). It also important to reiterate Mortari and Harcourt (2012: 235) and Wang (2013: 769) observation that at times there is a need to step outside the confines of the already set codes or frameworks so as to obtain data as it emerges. For example, data was gathered from non-users through individual interviews or discussions that were guided by a research tool that was designed for a focus group discussion. In some cases the participants' ages were not stated and in some cases impromptu discussions were held with minors without the gaurdian's consent.

This also study contends, as does Leedy and Ormrod (2005:94) and Mottier (2005:5), that reality is constructed through the lens of both the community being studied and the researcher. The study therefore sourced information from the infomidiaries, users and non-users as members of the information society. It therefor took the form of an end-user study, which as Pickard (1998) notes, is a common trend within Library and Information Science (LIS). Pickard attests that such end user studies assess experiences of a community as it interacts with the different ICT public access centres. The discussion that follows shows how the data collection was made with minimal alteration of the participant's programmes or what Hernandez-Limon (2009: 4) and Kalusopa (2011:144) observe as the naturalistic approach or the "real world setting".

4.6 Data collection

The following discussion focuses on the actual data collection in terms of how the participants were selected and how the data was sourced from the various sources. Although the approach was predominantly a naturalistic inquiry that rolled out as and when data emerged, the overall field work was in strategic phases or within the "bounded system" as stated by Yin (1981:59) and Creswell (1998:61).

4.6.1 Broad data collection phases

During the different phases of the data collection, there was also what Pickard and Dixon (2004) and (Evusa 2005) refer to as a constant comparative data from the multiple sub-cases. As shall be seen in the next chapter, the broad data collection phases had many other interrelated sub plots that called for a very flexible triangulation of research techniques.

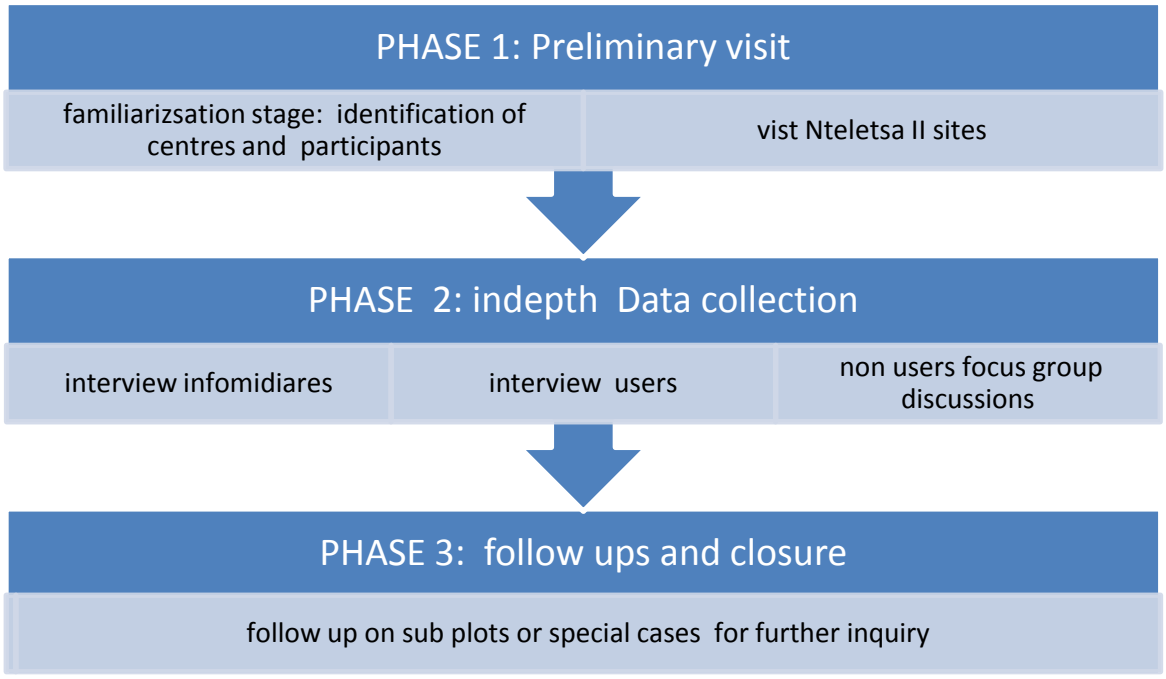


Figure 2: Data collection phases

The field work, which mainly borrowed from Pickard's (1998) guide, was also in line with Tellis's (1997); Creswell's (1998:61) and Yin's (1981:59) idea of a "bounded system" in research. A structured segmentation of the field study is also illustrated in Hernandez-Limon (2009: 48) where the first phase entailed observation of Latino women as they used computers at a studied community ICT access centre followed by an in-depth interviews and discussions with only eight selected participants. Wang (2013:764) also follows a similarly structured approach in a case study of international students in a

school in China. The author even goes into detailing the sub-phases within the process of getting consent to observe the participants over a period of six weeks. Pickard's (1998) guide recommends the maintenance of such a structured field work and use of a research diary throughout all phases.

4.6.2 Phase 1: Preliminary visits

The first phase of the data collection (i.e. familiarisation phase) was also characterised by sub-plots with different actors. The two main sub-plots were the visits to Nteletsa II villages in the district and the visit to the actual study site. As noted earlier, the discussions with different officers in various ministries during the process of obtaining a research permit led to collaboration with the team that was assessing the public access centres under Nteletsa II. The visit to the four villages under this project then became an important sub-plot within the familiarisation phase of the study.

4.6.2.1 Nteletsa II Kitsong Centres

Kaudwane and Sorilatholo villages are respectively about 230 km and 180 km north-west of Gaborone. Both villages are in the Letlhakeng Sub-district and are part of the Kalahari Desert. Two other villages that were visited during this phase were Mmokolodi and Tloaneng which are both within close proximity to Gaborone and are not part of the desert. All the four villages and Letlhakeng are under the same administrative district of Kweneng.

The discussion that follows discusses briefly the sub plot of Nteletsa II to help the reader to have an understanding of the programme and the relevance of the departmental audit to the present study.

As noted in the first chapter, the Nteletsa project began in 1999 as a component within the national Rural Infrastructure Development Programme that aimed to bring services to the previously underserved areas. It was part of government's strategies to connect especially rural communities into the national information and communication highway. The programme was initially a partnership of the Botswana Government and Botswana Telecommunication Corporation (BTC). Phase one of the project was officially

commissioned in 2004 and, as reported in the local newspaper *Mmegi*, on 29th February 2012, covered about 127 villages spread over the Kweneng, Southern and the North East Districts using Fixed Wireless Terminals (FWT).

On the second leg of this connectivity programme, Nteletsa II, 190 villages were connected to electricity and communication networks. The villages were in the Chobe, Ghanzi, Kgalagadi, Central, Kgatleng, Kweneng and North West Districts. In the programme roll out phase telecommunication providers (Mascom Wireless and beMobile of BTC) were to establish connectivity towers and set up one stop ICT centres commonly called Kitsong Centres which had Internet, photocopying, laminating, faxing, typing, printing and scanning facilities. This information was gathered in one of the meetings with the Chief Communications officer in the Department of Telecommunications and Postal Services and the National Coordinator, Information and Communications Technology, It was also reported that the service providers were also to equip four members of the community with the skills needed to effectively operate these centres.

A slight variation in the number of villages was however reported by the Permanent Secretary in the Ministry of Transport and Communication, Dr OC Kereteletswe who indicated that under the Nteletsa II project, new Kitsong centres were set up in 197 villages (Kereteletswe 2015).

The Kweneng District was solely served by the BTC as per the agreement reached by all parties concerned at the tendering stage. At the time of data collection, Letlhakeng and the other four villages that the present researcher visited during the preliminary stage were all served by the BTC.

The government research team that the present researcher collaborated with was then assessing the emerging challenges in the project. In line with the contemporary people inclusive approach towards bridging the digital divide, the team was to assess and interpret the extent of the concerns so as to strategise the needed interventions. It assessed challenges from both the community and the technologies. For example, the

trained community members left for greener pastures; and in some cases equipment was stolen from some centres. The continued interpretation of data from this sub plot informed the present study's indepth data collection phase. It also helped in drawing some conclusions on how the community used the ICT public access centres in Letlhakeng. Despite what emerged as more of operational challenges, both the Nteletsa II and the Sesigo Project under libraries, were cited by Kereteletswe (2015) in the NDP 10 review as some of the key achievements in the national ICT sector.

4.6.2.2 Preliminary visit to Letlhakeng

Another stage, still within the familiarisation phase, was a preliminary visit to Letlhakeng from 19th – 22nd November 2013. As Pickard (1998) notes, gaining access to both the site and the participants is not just restricted to signing the consent form. It extends beyond participants signing the consent form to broadly cover building a working relationship with them and the social structures that they operate within. Wang (2013) also emphasizes that in a qualitative study of this nature, this stage should also include building a strong foundation of "researcher-researched" relationship. In the present study, the initial visit was useful in establishing a working relationship with the library staff, who then became very instrumental in building other links with the village leaders (i.e. sub- district administrative offices, Member of Parliament's office and the Kgosi (ie Chief). Introductions were also made at the post office, which had just taken over the management of Kitsong Centre in the village. From these introductory visits, the researcher was able to deduce that the users were predominantly young people; and that the village leaders were not as active users as observed in the case of Timbuktu, Mali as reported by Etta and Parvyn-Wamahiu (2003).These early observations informed the continued development of the data collection tools and techniques.

The library staff also briefed the researcher on the village culture and customs; and also showed the researcher strategic places like the shopping complexes, clinic, police station and schools. Interaction with the library staff also helped in the reshaping of the research tools and the interaction of the researcher with the environment. For example,

the interview guide for infomidiaries was tried out on the librarian on the very first day of the preliminary visit.

These pre-visits were also instrumental in exchanging ideas and concerns between the researcher and the participants. For example, during the Letlhakeng pre-visit, the researcher learned from an informal discussion with some local teachers met at the supermarket that most members of the community may be reluctant to be recorded and photographed for fear of being placed in unpleasant public domains. This community, which is predominantly of Bakgalagadi or Basarwa origin, has relations with the controversial negative publicity over government's remote area relocation programme from especially the Central Kgalagadi Game Reserve. There has been a lot of debate on this issue at both national and international levels. It was therefore understandable that the participants were not comfortable with any form of public media publication.

At the time of this visit, the librarian was only aware of the Kitsong Centre as the only ICT public access centre in the village. The researcher then had a general tour of the village with the gentleman who served as the grounds man at the library. It is from this exploration that the researcher identified five (5) other operational stand-alone centres in the village. It also emerged that some government offices offered the community access to the technologies. For example, during an informal self introductory visit at the Parliamentarian's Office, there was some staff from a local bakery that came in to send and receive faxes. A local supermarket and hardware store also offered Internet access, photocopying and faxing services at a cost. However, these "hidden" ICT access centre (the retail outlets) declined to participate in the study.

4.6.3 In-depth data collection

The second phase of the data collection was characterised by in-depth interviews, focus group discussions, observations and document analysis. This was then followed by collection of data from what was noted as data rich cases. The following discussion on participant selection covers both phases because of the inter-relatedness of the sub-plots and the emerging themes.

4.7 Study population and participant selection

For this study, “participants” solely refers to Letlhakeng community members who participated in the in-depth data collection as discussed above. Although at the data analysis stage reference may be made to data that was collected during the preliminary visit the people who participated in informal discussions at that stage were not classified as participants for this study. This however excludes the librarian because even though she was interviewed during the preliminary visit, there was continued interaction with her throughout the study.

Participant selection was guided by the type of data needed to address a specific research question. The researcher employed a purposive participant selection that borrowed some elements of snowball sampling techniques. For example, in some cases participants ushered in other participants while some cases the researcher approached some participants guided by a lead from other participants. The librarian at Letlhakeng Public Library also assisted in scheduling an interview with two free lance reporters who were information rich cases. Two other professional expatriate workers were interviewed at the hospital as a link that was introduced by another participant.

The entire participant selection approach was more of a convenience or availability selection from the readily available members of the community. This comes up in line with Hernandez-Limon’s (2009:48) observation that every individual has to be considered as a key informant because they know the community and are citing their personal views or experiences. The selection of participants to address the different questions was therefore not done by any prior criteria, but was done inductively in line with the developing conceptual requirements or in response to data needed as the research plot unfolded. As a result, there was no pre-determined number of participants but instead continued addition of participants guided by the need to capture knowledge on how the community accesses and uses the available ICTs. Participants were therefore added until data saturation (i.e. when no new information emerges) was reached and not necessarily at statistical confidence level.

The purposive selection of readily available information rich participants was also evidenced in the case study of Latino women who used at the Little Sisters of Assumption Community Technology Centre in New York. (Hernandez-Limon's, 2009) Sossion, Ndirangu and Wambugu's (2015) case study also gathered data from only twenty-nine mathematics and science teachers in a selected school in Kenya.

The adopted approach of selecting participants also borrowed some elements that emerged in the approaches used in the reviewed literature. For example, Lesame (2008) used a strategy one may term a "walk in at the centre approach". Pickard (1998) and Hernandez-Limon (2009:48) on the other hand selected participants based on a "referral approach" where the management of the centres or other participants pointed to more participants. In the former strategy, the participants were identified as they come in to use the centres.

The present study engaged both the "walk in" and referral approaches. For example, all but two of the user participants were identified and interviewed at the centres as they came in for services. In some cases the data was collected as the researcher walked into the centre and found the users already interacting with the technologies. For example, although the researcher had not planned for a focus group discussion with users, a discussion ensued at one of the centres, Photozone, becauses the users were many and were willing to engage in the discussion while they queued for the services. Hernandez-Limon (2009:48) also used a similar approach and commends it for helping the researcher to select participants with desired attributes or character profiles.

It is also important to note that at times the researcher was guided by participants' enthusiasm for both the research and the ICT centre. For example, the young male infomidiary at Jeirah Internet café' showed such enthusiasm although he was very new. The four young men that participated in a group interview at Photozone were just curious to know what the researcher had just been discussing with a group of users noted earlier. The three adults who were interviewed as non- users at the local primary school were especially interested in participating in the study because they were curious about the use of Internet.

Exceptional participants identified as special cases or information rich cases, were followed up and interviewed (i.e. referral approach). Through the referral method, the researcher was directed to the "right person" for the specific information needed. For example, the librarian guided the researcher to two special users who worked for Botswana Press Agency (BOPA). Two other special cases of unique users (one hospital staff member and a unique user from Kaudwane) were identified following a lead from other participants.

The present study therefore attests that the combined use of "walk in at the centre", referrals and observations for participant selection was very good for collecting exploratory information.

4.8 Research participants

Data was gathered from a total of fifty one (51) participants. These were in three categories of infomidiaries (9), users (29) and none users (13). The table below shows that infomidiaries were from both the stand-alone centre and the embedded ones.

Table 1: Participating Infomidiaries

Name of centre	**Type of centre**	**No. Of participants**	**Male**	**Female**
Letlhakeng Public Library	Embedded	3	1	2
Letlhakeng Kitsong Centre	Embedded	1	1	-
Jeirah Internet Cafe'	Stand-alone	2	2	-
Photozone Studio	Stand-alone	1	1	-
3G Holdings	Stand-alone	1	-	1
Fraser's Photo Studio	Stand-alone	1	1	
Total		**9**	**6**	**3**

As seen in the table above, there were three female infomidiaries: two from the public library and the other one from an individually owned stand-alone public access centre called 3G Holdings.

At Jeirah Internet Cafe' data was gathered from the newly appointed infomidiary and the outgoing one. The researcher chose to follow up and interview the infomidiary who had terminated his services at this public access centre because he was eager to participate and was considered as an information rich case..

The user population was the largest with a total of 29 members. These were mostly met at their respective centres. Some of the users were interviewed individually while others were conveniently grouped for interviews that were also more like community workshops because there were cases where participants shared experiences. The table below shows a distribution of the user participants.

Although the researcher made an effort to vary age categories of users, ten (10) participants preferred not to indicate their age. The researcher was accommodative of this because of the awareness of the general cultural tendency for people not to disclose their age. As noted in the table below, some participants were minors or children. Due to multiple factors that charaectersied this study, the researcher failed to seek a parental conscent to have these participants. For example, a discussion developed into an interview when the researcher was helping the three nine year old boys at the library. Introducing parent's consent would have disrupted the flow of data as it emerged from these users. The researcher accommodated this anomally because as Mortari &Harcourt (2012: 236) rightly point out, in some cases the need to promote positive experimental possibilities to the participants may push the researcher outside the boundaries of the positivist's ethical codes. These authours further encourage that is such a situation, the researcher must adopt an ethical posture that is cultivated by a caring, respectful posistive mood. As noted earlier, the present researcher drew the participants into the study after a developmental discussion with them. in another case, a girl child was co-interviwed with her adult sibling who filled the conscent form. The interview was conduvted in a safe and friebly environment (ie library office).

Table 2: Participating Users

TYPE OF INTERVIEW	NO. OF PARTICIPANTS	VENUE	COMMENTS
Individual interview	7	Photozone Studio	males and females; young and old with no age indicated
Individual interviews	5	Library	4 males 1 female aged 10-20 years
Individual interview	2	Frazer's Studio	21 and 30 years (5 males and 2 females
Individual Interview	1	Ga Mosotho Investment.	1 male (young , but age not indicated)
Individual interview	1	Jeirah Internet Cafe'	Female between 45 and 50 years old
Group interview	2	Beauty Saloon at Kitsong Centre complex	Aged 31- 40 years
Group Interview	2	Library	Siblings; 1 female in secondary school and male young professional.
Group Interview	4	Photozone	3 out of school male youth and 1 secondary school male
Group Interview	3	Library	Males below 9 years old
Group interview	2	Library	2 male journalists
TOTAL	**29**		

As seen in the table above only nineteen (19) user participants indicated their ages. Three of these were (9) year old males who were interviewed at the Library. Five other users who indicated their age were between 15-20 years old (4 male and 1 female). These were interviewed individually in front of the library. Seven (7) user participants were aged between 21 and 30 years (i.e. 5 male and 2 female users). Three (3)

participants reported that they were between 31 and 40 years old. Only one user that was interviewed at Jeirah Internet Cafe' indicated that she was between 45 and 50 years old.

The next table shows the total of thirteen (13) participants who were considered as non-users of the ICT public access centres in Letlhakeng.

Table 3: Participating Non-users

RESEARCH TOOL	**NO.OF PARTICIPANTS**	**VENUE**	**COMMENT**
Focused group discussion	3	School staff room	Female adults
Individual interviews	3	Respective homes	All secondary students. 2 male 1 female
Group interview	4	Library garden	males aged 8, 9 and 10
Group Interview	3	Library garden	Secondary school females all 13 years old

As was the case with users, some none-users also did not disclose their age. The researcher resorted to profiling them using characteristics that may reflect their age. For example, female adults who participated in a focused group discussion at the school staff room preferred to be recorded as adults.

A consent for minors to participate was also not sought for the children non-users. In addition to the reasons forwarded in the justification for not sourcing such conscent for users, the researcher observed that participants in this category were difficult to locate and to pin down for interviews or focus group discussion. The researcher was concerned that the parents would not allow their children to participate because as noted earlier, it was not possible to set up focus group discussions because the participants would have

expected some payement. The impasse was however taken care of by the researcher's ethical stand anchored on knowing that the participants would benefit from the method of inquiry. As noted earlier, such a deviation can be expected in critical realistic study of this nature where the concern is to get data that would help address the existing social concerns .(Benoit 2007;Dobson 2002; Maxwell 2013:43).

4.9 Data collection tools

As noted in the earlier discussion on the guiding theoretical framework, this study triangulated various theoretical stances. The adopted theoretical stance further translated into triangulation of both the data gathering techniques and the tools used to gather the needed data. This means that different tools were used for different participants in different settings. Three sets of interview guides were administered to the user participants; infomidiaries and to the non user participants. Other data collection tools included a research diary, observation map, a camera and an audio tape recorder. The researcher always asked for permission to record or photograph from the participants.

The study also adopted what Cresswell and Miller (2000) view as environmental triangulation (i.e. varied settings in terms of time and place). For example, some research tools were administered publicly in the presence of other people (e.g. interviews at Photozone Studio); some discussions were held at the library while others were interviewed in the privacy of their homes or away from public hearing. It is very important to emphasise that the complimentary triangulation of these different techniques was mainly to understand the environment from the varied participants or elements of the reality.

There was neither triangulation of research methods investigators nor what Tellis (1997) refers to as triangulation of analysers. The data collection and analysis were solely by the present researcher. This complementary use of research tools to get data from different sources helped to validate the findings because each source presented its uniqueness. The triangulation also supported further understanding of the environment as the varied participants helped in the construction of reality. The tools were all used complementarily and were adjusted to fit the need for data collection. All the alterations were recorded in

the diary to enable tracking data to source and even open inspection by anyone concerned.

The narrative on the application of the diverse research tools overlaps with the data collection processes and participant selection. The discussion of these processes is inseparable because of the continuous comparative analysis of data as it emerged from different participants and settings and the continued addition of participants to address the observed need

4.9.1 Interviews

Before any interview session, the researcher took full responsibility of explaining to the respondents what the research was about and why it was important for the participants to be part of the study. It was also explained that the research was for academic purposes only. As noted earlier, in some cases an informal discussion developed into an interview. In such cases the researcher requested for interview, and explained the participant that the informal discussion revealed some data that the researcher wanted to capture for the study. The two sets of interviews were structured as a “guided tour” characterised by a mixture of closed and open ended questions. One set of interview guide targeted users (Appendix 7) while the other was set for infomidiaries (Appendix 6). The researcher chose a guided interview so as to enable free flow of ideas and in-depth investigation of motives. Such an opportunity would have been restricted if the researcher used a questionnaire. The guided interview therefore gave the researcher a chance to develop clarity on ideas as they developed.

A total of nine (9) infomidiaries were interviewed individually. While all other infomidiaries were interviewed at their respective centres during working hours, only one was interviewed by the roadside after working hours. This particular gentleman had just terminated his service at Jeirah Internet Cafe. Although the study targeted infomidiaries that were serving at the time of the study, an exception was made in this case because the researcher believed that useful data could be gathered from this information rich participant. This infomidiary had been observed during the preliminary visit and had agreed to participate in the study.

Another interesting case of the interviewed infomidiaries was the young man that was called to stand in for the one referred to above. He was a second year student from the University of Botswana. The young man indicated that he was in the village for a three months vacation visiting his mother who was a friend of the owner of Jeirah Internet Café. This participant was interviewed at the beginning of the in-depth data collection phase. Data was also gathered from this participant through informal discussions and observations throughout the data collection phase. Although this participant was categorised as an infomidiary, at the time of the first interview, he was only a few hours in the job and had no clue on what to expect. The continued discussions and observations during the multiple visits to the centre were useful in filling the gaps from the first interview. These informal discussions were not audio-recorded. The participant was very valuable as he also had massive experience as a user of not only this particular centre but even other centres in the village.

Three other participating infomidiaries were from the library, while one was from Kitsong Centre. .At the time of the interview, the Kitsong centre was not open to the public due to the on-going preparatory work. The centre was changing management from Botswana Technology Centre (BOTEC) to Botswana Post. The interview was then conducted at the post office where the infomidiary was doing some administrative work for the centre. The researcher took advantage of the several visits to the post office by interacting with the manager of Botswana Post and even the community members as they awaited the varied services at the post office.

As noted earlier, one of the infomidiaries at the library was interviewed during the preliminary visit. Although the visit was mainly for observations and informal discussions with participants and other key informants, the discussions with the librarian lead to an impromptu interview. This interview served more as a “trial” of the infomidiaries interview guide. Data gathered from this interview was helpful in two ways: it contributed data that helped to broaden the researcher’s understanding of the village and it also helped in reshaping the interview guide.

The other two infomidiaries at the library were observed and interviewed as “special” information rich cases during the last stage of the data gathering exercise. Although these

participants were employed as a cleaner and a gardener respectively, they served more as assistant librarians to the designated infomidiary at Letlhakeng Public Library. The cleaner, a female aged between 31-35 years was of particular interest because she came in to the library as one of the participants for the library's community skills development programme. She then volunteered to serve as a cleaner as a token of appreciation. The discussions with this participant covered her experiences throughout her journey from a learner to being an infomidiary at the public library.

The gardener on the other hand drew the researcher's attention with his zeal and passion for computers. He was also helpful during the preliminary visit as he assisted in the identification of the four stand-alone ICT access centres in the village.

Another interview guide was administered to a total of twenty-nine (29) participants who were identified as users of the ICT public access centres. Almost half (15) of these participants were individually interviewed while the rest were conveniently group interviewed. The six (6) individual interviews were conducted over different times at Photozone Studio, five (5) at the library, two (2) at Frazer's Studio and the other two at Ga -Mosotho and Jeirah Internet Cafe's respectively. All the just noted four centres are stand-alone centres.

Data was also collected from thirteen (13) other user participants through group interviews. Although group interviews were initially not planned for, the researcher had to be flexible and adaptive so as to get the most from the participants in their most convenient settings. For example, on several occasions, discussions with users ensued as users carried on with their order of the day. This approach was adopted because the focus was on gathering data and not necessarily a competition or testing of any of the data collection technique. The guiding tool in these discussions was predominantly the set individual interview guide with alterations to suit the group's diversity. Although the approach was adopted mainly for the convenience of the participants, it proved very useful because the researcher observed that some participants were more articulate and comfortable when with their peers. For example, a special case of one user that was followed for an interview at the work place invited his colleague to join in the discussion. Although the researcher had not prepared an interview guide that accommodated a

mixture of users and non-users, there was a need for an instant improvisation of a discussion guide. The researcher observed that the targeted participants were more comfortable in the presence of his colleague. These participants were expatriate professionals at a local clinic and the discussion went on as the other one continued with his planned work activity. Having a user and a non user in one session greatly helped with the confirmation and validation of different experiences of these participants.

Another group interview was with three (3) boys aged below ten years. The researcher met these boys at the time when they were asking for a book in which users of computers at the library registered. After attending to the participants' questions, the researcher engaged in an informal discussion that centred around why they registred to use one computer. As the discussion continued, the researcher then asked them to be research participants. When they agreed, the researcher asked them to step outside the library. Permission to use a tape recorder was then sought from the partipants. As noted earlier, the researcher did not seek parental consent because this would have disrupted the already flowing data that emerged from the participants. Both the informal discussion and the interview went on while the participants were still waiting for their time slot to use the computer that they had booked.

In some cases a group interview was conducted to save the participants' time. For example, the two siblings who were met at the library could not be interviewed separately due to time constraints on their side. The older sibling lived outside the village, so the younger sister wanted to maximise the time spent with the brother. A similar situation occurred in gathering data from two female participants who were users of Kitsong Centre. Both women worked in a hair salon in the same complex as the centre. The interview was conducted at this saloon while they were waiting for customers. Two reporters who worked for Botswana Press Agency were also conveniently interviewed in one session at the library.

Another group interview was conveniently held with four male friends (three out of school and one in school), who had come in for services at Photozone Studio (See picture below).

Photograph 1: A group interview at Photozone Studio

An individual interview guide was deemed not appropriate for these male participants as they did not have enough time for four separate interview sessions. The move to engage in a group discussion at this site was motivated by the observation that these young men were interested in finding out more about the discussion that had just ended, which the researcher had with other users at this centre. The just ended interview was very unique because during the course of this discussion, some participants left the room while others joined at the different levels of the discussion. This was because the researcher purposely allowed the participants who had finished the business they had come for at the centre to leave. Although many of the participants in this discussion could not be recorded, only a total of eight were recorded. The discussion was characterised by continued pauses in the interview because the researcher had to keep on explaining the intent of the study to some

participants as they walked in. To maintain a natural setting, the researcher also had to pause the interview when other participants bid the remaining ones farewell.

4.9.2 Focus group discussion

A focus group discussion guide was designed to gather data from community members who knew or were aware of the ICT public access centres, but did not use them (i.e. non-users. This guide (Appendix 8) was designed to gather data on especially the challenges of using the technologies from the non-users' perspective. This tool was instead administered as an "individual interview guide" because of observations that the participants would need to be paid for focus group discussion. The researcher opted for this approach because a proper focus group discussion would have been costly and contradicted the research ethics. The flexible continuous reshaping of this research tool was guided by the on-going interpretation of realities as they emerged.

Two sets of non-user groups were met: three secondary school girls who were invited to come to the library as they passed by the road; and three adult females who worked as cleaners at a local primary school. The girls were interviewed in the library gardern. The other group was identified and grouped through the assistance of two school teachers that were met at the library. These teachers participated in an informal unrecorded discussion with the researcher. The teachers then organised a meeting with these adult non-users at the school's staff common room. The teachers had invited a total of seven (7) non users, but only three were available for the discussion. One of the teachers sat in on the interview.

Three other participants were interviewed as non-users that were followed up as referrals by their friends who used the centres. The discussions took place at one of the participants' home. All the participants were students (two from university and one from secondary school) and were residents of Letlhakeng. Although an appointment was set for all these participants to meet at the set place and time, they all came at different times. Therefore it was not possible to conduct a group discussion. Four other non-users that were invited for this discussion did not turn up and were reportedly out of the village.

All the interviews and group discussions were audio recorded. The recording helped the researcher to avoid distraction by note taking during the discussion. It also helped the researcher to focus on observing the participants. The researcher then played the recordings at the end of each day so as to note or identify cases that were to be followed up. This also helped in reshaping the research tools.

4.9.3 Observations

The entire data collection period was characterised by observations that varied in depth and focus. For example, observation was the key information gathering approach at the initial phase (.i.e. Letlhakeng preliminary visit and the Nteletsa II Kitsong Centres). A camera was also used to capture interesting occurrences and observations. For example, at Kaudwane Kitsong Centre, the researcher took a picture of the many mobile phones that were brought in for battery charging (see photographs 8 and 9 in chapter 6).Throughout the study, the observation was predominantly what (Pickard 1998) refers to as semi-participant observation. Wang (2013: 767) rightly describes the approach as not purely 'looking at' the participants, but 'being with' them. This observation approach allowed the researcher to interact with participants and to share their experiences within the setting. For example, in some cases the researcher participated as an infomidiary, especially helped users at the library to access Internet and with typing at Jeirah Internet cafe. The researcher also used printing, photocopying and email services at Jeirah Internet cafe' so as to have experiences of the users and to observe the infomidiary. Hernandez-Limon (2009:58) used this participatory approach and reports to have voluntarily worked at the studied centre so as to get more insight about the centre. Duncombeand Heeks 2002; Jacob and Herselam (2005) and Roman and Blattman (2001) also support such a semi-participatory approach as it gives the researcher the advantage of being viewed by participants as "one of them".

4.9.4 The research diary

The research diary was characterised by a systematic daily provisional plan that was accommodative of the different phases of participant identification and selection; data gathering or even remodelling of research tools. Such orderliness and systematic

approach in field work is highly recommended (Tellis, 1997; Creswell, 1998:61; Yin 1981:59). The use of a research diary is also evident in the studies of Hernandez-Limon (2009) and Pickard (1998) who also used it to reflect the continued development and application of the research tools in different sub-plots. For example, in the present study, the preliminary analysis of diary notes from the Kaudwane visit led to the identification of a special information rich case of a young man who used the centres at both Kaudwane and Letlhakeng.

The research diary was also useful for replication and tracking of alterations of the research tools and approach. At times the continued remodelling of research tools and approach had to be done on site as the discussion unfolded. The research diary served as a monitoring tool for the different tools at all the various phases. It guided the researcher as not only a data collection tool but also as an instrument of data analysis.

4.10 Conclusion

Data that was needed to address the research question that sought to find out how the Letlhakeng community accessed and used the ICTs that were available through public access centre was gathered through triangulation of research tools and techniques. Although this methodology chapter shows three different data collection phases and has distinct sections of the different research tools, the analysis of the data could not be categorised in a similar way. Even as indicated in the current chapter, in some cases the discussion under one subheading brought in elements dealt with under another subheading. For example, information on participant selection was used to explain the application of the research tools. The collection of data from a user and a non-user in one setting called for an explanation on why the two were interviewed together (i.e. participant selection). The overlapping discussion, which also emerges in the data analysis chapter, was mainly because of the complementary application of the research tools and the continued analysis of data as it emerged.

The noted complexities in the data collection process in a way reflect the complex and intertwined nature of the society being studied. For example, a focus group discussion failed because the community members needed immediate returns on the time spent

doing any activity. The researcher's ability to gather data through interaction with the community also shows that this is a positive and receptive community. This, in a way,already sets in conclusions about the community.

The observed community engagement as evidenced throughout the methodology chapter is also an important element within the adopted interpretive approach that has elements of critical theorists. It enables Identification of both the challenges and the solutions from the community's perspective. The adopted flexibility in application of the research tools also augers well with the intent to assess the context with less emphasis in proving "academic correctness" of the method of inquiry.

The overlapping of sub-plots in the methodology chapter continues to be evidenced in the next chapter because the researcher had to give a detailed description and interpretation of both the data and its sources.

CHAPTER FIVE
DATA ANALYSIS

5.1 Introduction

This following narrative on how the Letlhakeng community accesses and uses ICTs that are available through public access centres is constructed from the data that was gathered at the research site. As indicated in the preceding chapter, there was a continued comparison of data as it was collected from the multiple sub-cases. The approach conforms to the social constructivist paradigm of presenting emerging social patterns that are observed though continual interpretation of the multiple realities. This guiding theoretical stance has been discussed in detail in the literature review chapter. The perspective is also demonstrated in the varied sub plots as discussed in the methodology chapter.

The broad thematic areas that emerged in the data analysis chapter are similar to the "socio-technical pointers" that Walker (2008:4) observed in the literature reviewed. These include the broad interrelated themes of structure of the centre, services offered at the centre and issues of ownership. For example, the just cited pointers feature in Jacob and Herselman's (2005) discussion of Ikageng Centre in rural South Africa and in Lesame's (2008) discussion of four other rural centres in the same country. The themes are also evident in Latchem and Walker's (2001) fourteen case studies presented in "The Commonwealth of Learning, Perspectives in Distance Education" series. The pointers are also reflected in the Bridges' (2005) guide for assessing issues in ICT public access centre. These specific guidelines were also adapted by Gomez and Gould (2010) to build yet another framework for assessing the range of factors that affect how people use ICT's in public access venues at a global scale.

As pointed out arlier in the conclusion of the third chapter, the various presentations of these pointers offer good methodological lessons of organising data, breaking it into units, synthesiszing it and mapping out patterns and knowledge to be shared. This chapter selectively uses these pointers to break down, synthesise and analyse the collected data on how the Letlhakeng community uses the ICT public access centres. Although an effort is made to individually discuss each of the pointers, their

interrelatedness made it impossible to exclusively discuss one pointer without referring to the other. It is important to note that these thematic areas were also not set before but surfaced as the researcher interacted with the sources of data.

The analysis of the data is also aligned to the specific research questions that sought to identify the available technologies; the providers of the services and the users. The research question that sought to assess the factors that motivated or hindered usage is more pronounced in the next chapter that presents the findings as deduced from the data.

5.2 ICTs in the public access centres.

The first research objective sought to assess the ICTs that the Letlhakeng community could access and use through public access centres. To address this research need, the researcher analysed data in line with the inter-related research question that called for identification of the ICTs that were available to the community and the one that sought to establish ownership of the centres. The following discussion analyses data that addressed the first two research questions through a continued comparative analysis of the themes from the different sub-cases and sources.

5.2.1 ICT Public access centres in Letlhakeng

This study found it imperative to identify the centres before itemising the technologies that were available to the community through the noted centres. A total of six (6) ICT public access centres were identified in Letlhakeng Village. These were Jeirah Internet Café; Photozone Studio; Ga-Mosotho Investments; Frazer's Studio, Kitsong Centre and the Sesigo e-library. Although each of the identified centres had unique characteristics, the researcher identified attributes that could allow them to be classified into two broad categories of those that were privately owned or managed by individuals and those that were linked to other existing programmes or services. A similar grouping was observed in the literature review chapter and respectively referred to as "stand-alone" and the "embedded" centres (Latchem & Walker 2001; Jacobs & Herselman 2005:58).

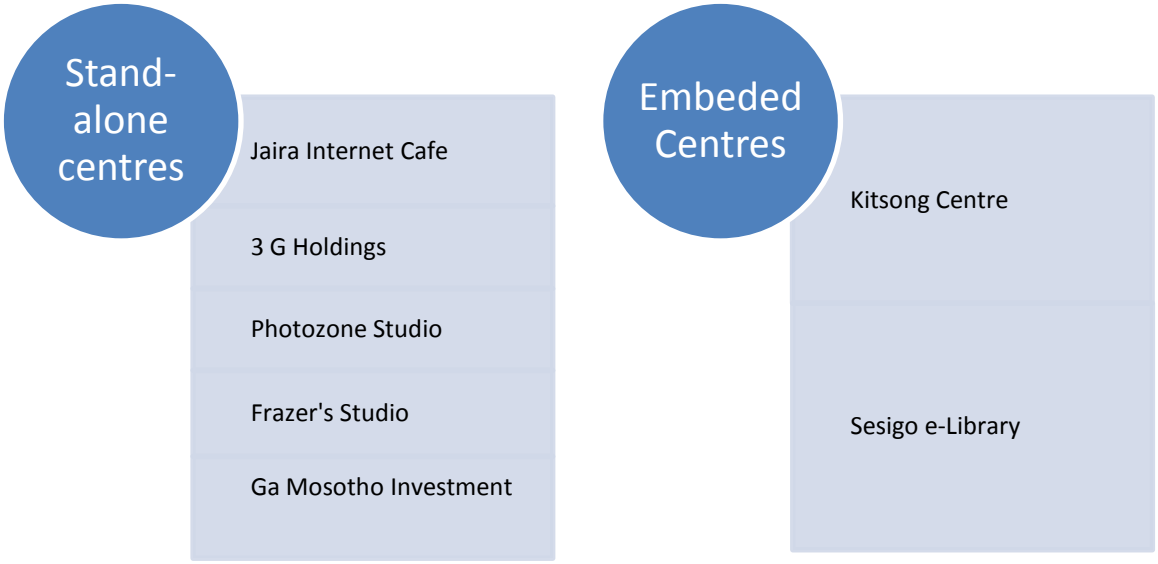


Figure 3: Types of ICT public access centres in Letlhakeng

Although the researcher appreciates the uniqueness of each stand-alone centre, the following discussion avoids discussing the centres individually. Data on the inter-related socio-technical pointers of structure; ownership and the services are analysed through cross reference and comparison so as to emphasise both the differences and the similarities of the centres.

5.2.2 Structure of stand-alone centres

All "stand-alone" centres operated from rented space within a larger compound that had other structures that were used for other activities. The compound may be rented out for the family's economic gains or to support the predominantly extended nature village was characterised by such compounds which is also a common pattern in most villages in Botswana.

Three of the stand-alone centres, Jeirah Internet Café, Ga-Mosotho Investment and Frazer's Studio operated from rented stand-alone rooms within larger compounds. The only unique case was Photozone Studio which operated from a porta cabin similar to the Kitsong Centres under the Nteletsa II Rural Connectivity Project. The picture below is of Photozone Studio followed by one of the just noted Kitsong Centres.

Photograph 2: Photozone Studio

The suitcase left by the door belongs to a user who was from neighbouring villages. A community member is waiting for services outside because all the chairs in the centre are occupied.

In the picture below, the researcher stands in front of the Kitsong Centre at Goo Nku. There were no users at the time of visit. This was a contrast to Kaudwane case (Photo 9) where there was a line of users waiting to collect their recharged mobile phones.

Jeirah IInternet Café operated from a rented two roomed house within the same compound as Photozone Studio. In the same compound, there were other smaller stand-alone structures that were rented out by different individuals for residential or business purposes. For example, one of the structures was used as a hair and beauty salon while another was a general dealer

Photo 3: Kitsong Centre at Goo Nku

Photozone Studio centre was very visible and strategically located towards the gate of the compound. It was a stark contrast of Jeirah Internet Café which as just noted was a structure with two rooms that did not look very attractive and had no signage. These two rooms were more like a kitchen and a walk-in pantry. All the services at this centre were offered from the "pantry like" room which was at the back. The users therefore had to walk through the empty bigger room to the smaller one that served as the service point.

Even though the owner of Jeirah Internet Café regretted the set up, she took consolation in the fact that the structure would be accommodative of future growth. One of the regular users of this centre, an expatriate professional, expressed concern that the space was not conducive for the business and was not likely to attract customers. Both this participant and the owner of the centre indicated in separate interviews that the choice of the structure was based on the rental charges that the owner could afford. It was not clear how much the owner paid for the space.

Ga-Mosotho Investment centre also operated from a similar rented out single room in a compound that had four other stand-alone structures of different sizes. All the other three structures in this compound were used for residential purposes. Although this centre did not have good signage, it had the advantage of being along the main road to the Rural Administrative Centre, where the community got most social services. The centre was also situated at the entrance of the compound where it was easily accessible and had the door facing the main road. It was therefore visible as an ICT public access centre for people passing along the main road.

The structure that Frazer's Photo Studio operated from was a single room detached from the main building that had a grocery store, a dress maker and an animal feed outlet. Although this centre also did not have good visible signage, informal discussions with people from the grocery store revealed that they were aware of its services. The grocery store was one of the busy stores in the village because it served as one of the distribution outlets of the different social safety food baskets. Informal discussions with the women who had just collected their groceries from this store showed that they used the centre for photocopying and taking passport size photos.

Photo 6 below shows some community members after collecting their food rations from the grocery store in the same compound as Frazer's Photo Studio.

Although the infomidiary at this centre did not disclose how much he paid for rental, he pointed out that it was affordable and that the owners of the compound were very supportive to his business. The researcher learned from the infomidiary that the owners of the compound allowed him to use the fax at their shop for free. The landlord also did not get the infomidiary to pay for the services of the security guard and for both water and electricity.

Photograph 4: Some community members and their grocery baskets

Another stand-alone centre, 3G Holdings, was located within a compound that had a restaurant and a general dealer. It was the only stand-alone centre hat operated from a purpose built retail outlet. The centre's strategic location rendered it more as an extended reprographic department for the Rural Administration Centre (RAC). The infomidiary at the centre noted that at times some users failed to understand why they had to pay for the services offered at this centre because they mistook it for being part of the RAC offices.

5.2.3 Ownership of Stand-alone centres

All the stand-alone ICT public access centres in Letlhakeng were owned by Batswana. Although they all operated from rented space only one of them owned the structure that was situated within the rented space (i.e.Photozone Studio). It emerged from the interview with this infomidiary that he bought the porta cabin and the ICTs in the centre through funding from the National Youth Grant. Although the infomidiary was not explicit when he started the business, he indicated that he got financial support through

the government youth grant immediately after he completed his tertiary education in 2010.

This infomidiary and the one at Ga-Mosotho Investment were the only ones in stand-alone centres who were permanent residents of Letlhakeng. This emerged from the separate individual interviews with these participants. This observation was further corroborated by general unrecorded discussions with members of the community who also revealed that both infomidiaries were immediate relatives of prominent village leaders. Further interaction with members of the community revealed the likelihood that the infomidiary at Ga-Mosotho Investment had also benefited from any one of the government social safety nets. This could not be verified with the infomidiary because he was not available during the in-depth data collection. Even during the preliminary visit, the researcher did not get a lot of data from this participant because at the time of the visit, the infomidiary was working on repairing a photocopier and had three other customers waiting.

It is however important to note that the analysis of the data gathered from observing this infomidiary during the preliminary visit, coupled with observing community members when they found the centre closed was useful. For example, the participants appeared as confident and possibly knowledgeable of what he was doing at that time (i.e.repairing a photocopier). The observation that this infomidiary was skilled further links to the response given by the participant that was interviewed outside this centre when he indicated that he expected an infomidiary to have good ICT skills. The fact that three other customers were waiting for the infomidiary to attend to them may also be used to add to the observation that the infomidiary had the needed ICT skills.

All the stand-alone centres were manned by one person. The infomidiaries at Ga-Mosotho Investment, Photozone Studio and Fraser's Photo Studio were self employed. The ones at Fraser's Studio, 3G Holdings and Jeirah Internet Café were from outside Letlhakeng. The self employed infomidiary at Fraser's Photo Studio indicated that he was aged between 35-40 years; while the one at 3G said she was between 25 and 30 years. The latter was employed by her sister who was also operating another similar service at her home village, Molepolole. The owner of Photozone Studio reported that

he was twenty seven (27) years old and held a Diploma in Graphic Design from Limkokwing University of Creative Technology, Gaborone.

Jeirah Internet Café was owned by a lady who worked at the Rural Administration Centre (RAC). She indicated her age to be between 35 and 40 years old. The centre was manned by one employed infomidiary. During a brief, informal and unrecorded discussion with this lady, it emerged that she was not a permanent resident of Letlhakeng village and that she would easily pack up the business any time that she was transferred from the village. The discussion also revealed that in addition to her formal employment, the lady had a company that provided different types of goods and services as and when there was a market opportunity. The license for the just noted business included Jeirah Internet Café.

The discussion with the owner of Jeirah Internet Café' also brought to surface that she started an ICT public access centre based on the observed needs of her private entrepreneurship. The motive was therefore that she observed a market gap from the community's perspective (i.e.as part of the community). She also added that in all her business endeavours, she had no financial support or business guidance from any institution or government support structure. She said she was only guided by the business frame work for her trading license. A similar observation was made in the interview with the owner of Fraser's Photo Studio, who was also self-funded. Due to lack of f funding,these two centres were the least attractive.

5.2.4 ICT's in Stand-alone centres.

Analysis of data that was gathered about the technologies available in the different stand-alone centres presented a pattern closely related to the services offered by the centres. The services also related to the strucure of the centre and the owners' interest and abailities. For example, Frazer's Photo Studio focused more on photos and video productions because of the owner's passion for photography. This infomidiary noted his love for photography as one of the reasons why it was the main income earner for the centre. It is however important to acknowldge the fact that due to limitations of the structure, services like Internet access and faxing could not be offered because there

were no telecommunication structures to support that. Photozone Studio also had a similar challenge. As seen in the table below, only one stand alone centre, Jeirah Internet Café had internet services.

Table 4: ICTs in stand-alone centres

ICTs	Photozone Studio	Jeirah Internet Café	Ga-Mosotho Investment	Frazer's Studio	3G Holdings	Total
Photocoping machine	√	√	√	√	√	5
Computers	√ 2	√2	√2	√2	√2	10
Access to Internet	x	√	X	X	X	1
Printer	√	√	√	√	√	5
Scanner	√	√	X	X	X	2
Laminating machine	√	X	√	X	√	3
Camera	√	X	√2 plus stand	√2	X	5
Spiral binder	x	X	X	X	√	1
Facsimile machine	√	√	X		√	3
Telephone	x	√	X	X	√	3

Key : √ = has the item X= item not available

The table shows that all the stand-alone centres had photocopying machines, at least one computer and a printer. Photozone Studio, 3G Holdings and Ga-Mosotho Investment each had a laminating machine while Jeirah Internet Café and Frazer's Studio did not have it. The facsimile machine at Photozone Studio was not functioning

because there was no telecommunication connection at the centre. Jeirah Internet Café and 3G holdings both had their facsimile machines and telephones working. Both centres had no cameras. There was a scanner at Jeirah Internet Café and a Spiral binder at 3G Holdings.

5.2.5 Services offered by stand-alone centres

The services offered at the centres related to the technologies that were available in a given centre. All the stand-alone centres had photocopying services while Photozone Studio; Frazer's Studio and Ga Mosotho offered services for passport size photos. These centres also had video production and graphic design services. Both the infomidiaries at Ga- Mosotho and Frazer Photo Studio noted in separate informal discussions during the preliminary visit that passport photos and video developments were their main income generating services.

The computers at these centres were mainly used for photography, video editing and graphic design. For example, the infomidiary at Frazer's Studio noted that the first computer that was bought for this centre was primarily for editing and developing photos. The infomidiary at Ga-Mosotho Investment also acknowledged that he had his first computer for photography. The demand for passport photos was mainly for processing different application forms for a broad range of social services. For example, one of the participants in a group that was interviewed at Photozone Studio had come to take passport size photos that she needed for processing her tuck-shop trade license. This participant was from Takatokwane, a village 87 km west of Letlhakeng village. Within this group, there were four other users who had come for passport photos while three others needed to photocopy some forms and national identities. Within the same group interview, there was also a retired school teacher who had come for both passport size photos and to photocopy a title deed for his field.

The infomidiary at Frazer's Studio also added that although initially he was not skilled in graphic designs, the users' demand for the service propelled him into developing the needed skills. This participant added that he designed and printed flyers; seasonal

greetings cards; invitation cards and business cards. The infomidiaries at Photozone Studio and 3G Holdings also indicated through separate guided interviews that 51-75% of their tasks were to create “information packages like leaflets, pamphlets”. An in-depth discussion on this revealed that the participants were referring to designing and printing invitation cards for different social events in the village.

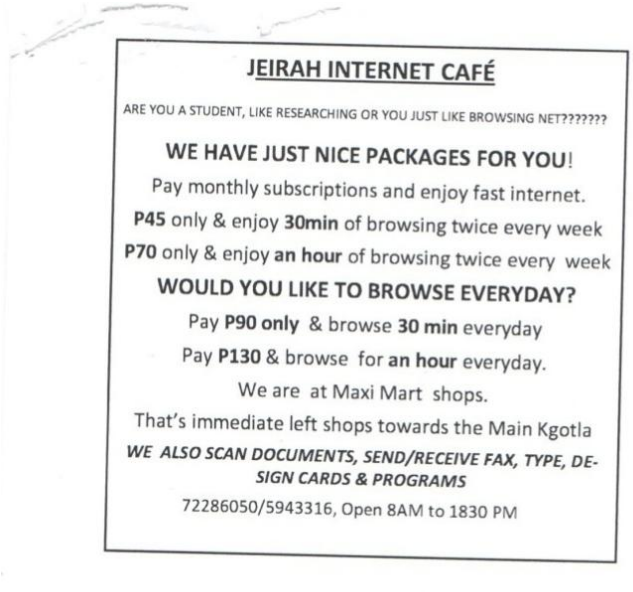
The observed high demand for such invitation cards and printed programmes was also corroborated in a group interview of non-users at a local primary school. One of the women said the stand-alone centres helped in developing invitation cards and programmes used at funerals, weddings and other social gatherings. Within the same group interview, the other woman further added that the good thing with these stand-alone centres was that they could “design the cards and allow you to pay later on specially tailored payment terms”. These women were responding to a question that sought to find out what the community used the centres for.

During the preliminary visit, the researcher found the infomidiary at Fraser’s Photo Studio designing an invitation card for a “kitchen top up” party. The researcher learned from informal discussions with community members that there was a growing trend of “kitschen top up” parties. Such parties were organized by friends with theintend of supporting a needy friend with kitchen items; groceries or any house hold items that the hostess needed. The organizers, which in most cases were family members or a select team of close friends, then prepared snacks for the guests, who then brought in the gifts.

During the same visit at Fraser’s Photo Studio, the researcher also noticed that there was also a printed copy of funeral programme that infomidiary had just finished designing. The infomidiary said that although production of such social invitation cards and funeral programmes was a good potential for income generating, the local funeral service providers were giving the stand-alone centres competition because they had started offering the programmes as a free add on to their bouquet of services.

Although at the time of indepth data collection, the researcher did not see any centre offering laminating services, Jeirah Internet café, Ga-Mosotho Investment and 3G Holdings had laminating machines. The infomidiary at 3G Holdings demonstrated to the researcher how the laminating machine operated. It emerged that the community preffered to laminate the different documents that they frequently photocopied. This was mainly for the preservation of the documents. The researcher did not get to confirm if the machine at Ga-Mosotho Invesrment was in working condition because the centre was closed through out the indepth data collection phase. Informal discussions with community members who lived around this centre also acknowldged that the centre offered laminating services.

Jeirah Internet Café was the only stand-alone centre that offered access to Internet. The two computers at this centre were both used for accessing Internet and word processing. The infomidiary also did the centre's administrative work on one of these computers. During one of the visits to the centre, the researcher also found the owner of the centre using one of the computers for some administrative work for both her work at RAC and her other businesses. Although as noted earlier, this centre did not have good visible signage, it is worth noting that this was the only stand-alone centre that had a leaflet of services offered. Some of the leaflets were distributed at the library.



Photograph 5: Services offered at Jeirah Internet Café

As reflected in the above figure, this centre had a number of pay options for accessing Internet. However, discussions with the former infomidiary indicated that the arrangement for advanced payment was not working very well because of the disruptive power cuts. He also alluded to the fact that it could also be because people generally did not have money for advanced payments.

Both Jeirah Internet Café and 3G Holdings offered faxing services. There was also a fax machine at Photozone Studio, although it was not connected. 3G Holdings was also the only stand-alone centre that sold office stationery and equipment. The researcher observed customers buying some stationery items at this centre then proceeding to RAC for various services.

Photograph 6: Display of stationery sold at 3G Holdings

It emerged in the interview with the infomidiary at this centre that RAC also bought stationery from this centre. She also indicated that sometimes she prepared tender

documents to supply goods and services to local schools and other businesses in Letlhakeng and neighbouring villages. She added that the greatest challenge with such tenders was what she referred to as the “long complex government processes and procedures”.

None of the stand-alone centres had training programs for the community. The participant that was interviewed as a user at Ga-Mosotho Investment indicated that he appreciated the fact that infomidiaries in these centres could not afford to have such training programmes because “the time they spend on you will be so much that they could have covered three more people”. This participant was referring to the cost in terms of money and time that the infomidiaries in stand-alone centre would incur if they did community training. The two siblings that were interviewed together as Sesigo e-library users also shared similar sentiments that stand-alone centre did not have community education programs because such programmes would be costly for the centres.

Although there were no specific training programmes at Jeirah Internet Café, users could do their own typing. This offered the users a chance to practice using the computer. The infomidiary then assisted these users if and when they experienced any challenges in using the computer. The infomidiary at Photozone Studio also indicated that he at times allowed the users to do their own typing; and that whenever he had time he helped in sharing skills with his users. He however acknowledged that this was on very rare occasions.

5.3 Embeded centres

Two of the ICT public access centres, Kitsong Centre and the Sesigo e-Library were embedded into community service that were already in the village. Both centres were conceived as government supported projects that aimed at developing computer connectivity to enable rural communities to access information for development (BTC 2004; Morakanyane, 2010:2; Grand et.al. 2010:5). These two centres are therefore managed as public services or entities. The following discussion shows the interrelated

nature of factors of ownership, structure of the centre, location of the centre, and the services offered by the centre.

5.3.1 Ownership and structure of Kitsong Centre

The Letlhakeng Kitsong centre was one of the three pilot community user information centres that aimed at using ICT's to link government, NGO's and the private sector with rural communities (Rural Telecommunication's Strategy 2006:6; Morakanyane 2010:12). As noted in the introductory chapter, government partnered with private telecommunication service providers for connectivity in areas that were previously not serviced. The researcher learned from the Department of Telecommunications and Postal services, that it was against this backdrop that government and BOTEC were transferring the management of the Kitsong Centre at Letlhakeng to Botswana Post as a private service provider. At the time of data collection, the handing over was still in progress.

Discussions with government officials and the infomidiary at Letlhakeng Kitsong Centre revealed that in 2004 when the centre started operating, it was located in a place that was not very ideal. The centre was then moved to where one may regard as the village's main shopping centre, within a busy complex which also housed a hair salon; a bakery and a grocery store. There was also a tyre service and a fuel station within the same compound. Immediately outside the compound there were four informal tuck-shops selling strategic items like fat cakes and soup, cigarettes, sweets, frozen flavoured ice cubes, etc. Some of these outlets sold airtime for all the three wireless networks (Mascom, BTC and Orange).

Earlier discussion on especially the location and structure of the stand-alone centre showed that the cost of rental space played a big role in location of the centre. Although it was not clear how much Kitsong Centre's rental was, it was evident that none of the stand-alone centres could afford the rental for this seemingly prime area.

Photograph 7: Letlhakeng Kitsong Centre

The in-depth data collection phase coincided with the time when the actual operation of the centre was being handed over to Botswana Post. The centre was therefore closed at that time. Although there was a very small notice indicating that the services will resume soon, there were no specific dates indicated, nor any indication for the reasons for the closure. Informal discussions with members of the community revealed that they were not well informed why the centre was closed and when it was going to re-open. The researcher learned from the Botswana Post Manager and the infomidiary that the centre was going to open as soon as all the needed technologies from Botswana Post were delivered. At the time of data collection, preparations for reopening were reportedly at an advanced stage. On one of the days the researcher even saw some BOTEC staff members who had travelled from Gaborone to collect some of the equipment at the Letlhakeng Kitsong Ccentre.

5.3.2 Services offered at Letlhakeng Kitsong Centre

As noted earlier, the broader objectives of Kitsong Centre included linking the rural communities with needed information for their livelihood thus reducing the travel time

and cost for the people. The centres are also meant to offer business support services for the communities that they serve. The Ministry of Transport and Communications states in the Nteletsa II website, that Kitsong Centre's primary goal was to provide basic services of photocopying; Internet access; fax; laminating; scanning; typing and printing. Although at the time of data collection the Letlhakeng Kitsong Centre was not functioning, both the Botswana Post and the Kitsong Centre Infomidiary reported that they were going to continue with all the services that were offered before the centre closed.

The services offered at Letlhakeng Kitsong Centre included typing; printing; accessing Internet; photocopying; faxing; laminating; producing invitation cards for different social events and stationery sales. The community seemed content with the services offered at this centre and viewed the centre as an ideal ICT public access centre and applauded it for good services. For example, the two female participants who were interviewed together at the hair salon said the centre offered most needed services. Even community members who regarded themselves as non–users of any centre commended the Kitsong Centre. For example, the female participants referred to earlier expressed appreciation that this centre was one of the greatest developments in the village. One of these women noted with appreciation that at this centre she was once given a chance to do her own typing. This lady viewed this as being honoured. A similar appreciation of being given a chance to do her own typing was also noted by one of the two female participants that were interviewed at the salon as users of this centre. Although some community members expressed appreciation of being given a chance to do their own typing, some preferred to get the typing done by the infomidiary so as to save on time.

It emerged in different interviews with both infomidiaries and the user community that it was very essential that the infomidiary was well skilled in using the computers. This issue was brought in to the fore by the concern that if the infomidiary was not well skilled the time allocated for the user may elapse while the user was still struggling with the computer. For example, the user that was interviewed at Ga Mosotho Investment stressed that the Infomidiary should be able to tackle any problem that the users may

encounter and the infomidiary should also be able to train the community in especially the computer skills. Although this participant was interviewed as a user at Ga Mosotho Investments, he indicated that the Infomidiary at Kitsong Centre had the needed skills.

Other than serving individual community members, Letlhakeng Kitsong Centre offered some printing and photocopying for the different government offices in the village. For example, the interviewed government driver noted that although he had never used the centre for personal needs, he had on several occasions been sent from different government offices, to photocopy official documents. The three lady cleaners that were interviewed at the primary school also said that they were at times sent to this centre by the school administrator for some printing and photocopying jobs.

Although Kitsong Centre had faxing services, none of the interviewed users had used it. The two female participants interviewed at the salon however acknowledged that they had seen other people using the fax machine at this centre. The infomidiary at the library also indicated that she at times used the fax at Kitsong Centre for both personal and official matters. As noted earlier in the introduction of the ICT public access centres in Letlhakeng village, while at the office for the member of parliament for the Letlhakeng constituency, the researcher met some gentleman who had come to send a fax from this office. This gentleman, who worked at the bakery in the same building complex with the Kitsong Centre, indicated that he usually faxed documents at the Kitsong Centre. Informal discussions with the manager of the bakery also revealed that the bakery used this centre for business services like photocopying; faxing and buying varied stationery items.

Further comments from the young man who had a stationery shop showed that Kitsong centre was the main stationery outlet in the village. This also emerged in the interview with the two female participants that were interviewed at the salon. The other two stationery shops that the researcher noted were 3G Holdings and a very small kiosk that was operated by a young man who participated as a user of Sesigo e-library.

The inter-relation of the structure of Kitsong Centre; ownership and services offered at the centre rendered it as a popular ICT access centrein the community. One of the users commented that "…most people know about Kitsong and they are not well aware what the library offers". This statement was made by one of the female participants who were interviewed at the salon. Her colleague further said that "everybody is aware of it since it was the first centre of its kind in the village before the library or any other. The just cited lady also added that "the young and old all come to Kitsong".

Despite the affirmation that all community members preferred Kitsong Centre, the researcher noted some pockets of non users. For example, a set of three nine year old boys that were interviewed as users at the Sesigo e-library indicated that they did not know Kitsong Centre. When the researcher described to them where the centre was located, they knew about it but pointed out that "we never go there". The two journalists that were interviewed as users at the library also noted that they never used the Kitsong Centre. The gentleman that was interviewed together with the user of Jeirah Internet Café also indicated that he never used this centre. Although the head of the local primary school also said she had never been to the centre, it is worth noting that on some occasions she sent some printing and photocopying jobs to be done at the centre. This was deduced from the interview with her and in two separate interviews with the government driver and the three female participants that are refrred to as cleaners at the primary school.

5.3.3 Letlhakeng Sesigo e-Library

The participants in this study interchangeably referred to the Letlhakeng Sesigo e-library as just "the library" or "Sesigo". This could be attributed to the fact that access and usage of ICTs was one of the services embedded to the already existing library services. The present researcher therefore interchangeably uses the name "Sesigo e-library" and just "library" to refer to the centre. As noted in earlier discussion of both the theoretical framework and the methodology chapter, interpretation of issues would be constructed through the lens of the participants. By adopting the name commonly used

by the community the researcher was being in line with the research stance of avoiding preconceived labeling.

The e-library differed from all the other centres in terms of management and the services offered. It was part of a countrywide collaborative project of the Botswana Government and the African Comprehensive HIV/AIDS Partnership (ACHAP), funded by the Bill and Mellinda Gates Foundation (Grand et.al. 2010: x). The project's primary goal was to offer communities free computer and Internet services through public libraries. This made the Sesigo e-Library at Letlhakeng Village outstandingly different from all other Public Access centres in this study. For example, Kitsong Centre was charging a recovery fee for the services; while all the stand-alone centres were for profit making. At the library the users were allocated 30 minutes slots for free, while the users at Kitsong and Jeirah Internet Café paid P10.00 for the same length of time.

The Letlhakeng library was managed by a qualified librarian who was assisted by three other staff members. One of the staff members was a non-paid volunteer young lady who served as the IT officer at the library. Her relationship with the library began in July 2012 when she was doing a tertiary school study project. Upon completion of her studies she volunteered to continue serving at the library so as to beat boredom of staying at home. Another lady volunteer served as a cleaner at the library. This lady first came to the library as one of the community members being trained on how to access and use the ICT's at the library. Towards the end of the training session, she volunteered to stand in for the library cleaner, who was on a long sick leave. The two volunteers also regarded serving as infomidiaries at the e-library as an opportunity for them to continue improving their Internet usage skills.

5.3.4 Services at Sesigo e-library

The computers in the Sesigo e-library were used for both word processing and accessing Internet. The users varied across gender; age; professions; and economic activity. The community members applauded the Internet service at the library for being free, fast and user friendly. For example, one of the interviewed free lance photo journalists noted that:

> "In our office the Internet is very poor and it can take hours to download one photo, so we use the Internet here in the library since it is much faster. However I had never used Internet at the Internet cafe's because I can't afford to pay, that's why I prefer the one in the library because it is free"

Reference to "our office" in this case was to government press agency offices. Two other participants that were interviewed at the hospital made a comment that, "at least the computers are consistently running". The researcher learned that the librarian and the other three library staff had undergone some basic training on troubleshooting. The infomidiaries also reported that they contacted the BNLS head office whenever there was any challenge with the computers. This explained why the computers in this access centres were always in good condition.

The researcher also observed that the library was also the only access point that had services that catered for younger children. This was further affirmed by the young business man that operated a stationery shop in the village when he noted that at the library "children are offered lessons in the afternoons and I think it is a good thing". One of the two women that were interviewed at the hair salon also alluded to a special children's program that the library offered. The other woman said "There are three primary schools in the village and each is allocated a day to use the library". The participants who worked as cleaners at the primary school also noted that children were catered for at the Sesigo e-library. The researcher also saw a training schedule for primary schools that was posted on the wall in the librarian's office.

The discussion with the three boys that were regular users of the library however did not reveal that they were aware of any dedicated programs for young children. These boys even pointed that, due to lack of supervision, the older users at times bullied them out of the computers. One of the boys said he was taught how to use the computer by a friend in his neighbourhood while the other said he was self taught. These boys however acknowledged that there were computer lessons offered at the school that they attended. It emerged that the boys did not appreciate the school computers that much

because of lack of Internet. The boys also seemed to enjoy working independently at the library. The researcher however learned from the infomidiaries at the library that there were children's programs and that these young ones were mainly taught how to draw and how to type their names.

The library had programs to inform and educate the community on basic computer skills and how to access and use the Internet. The two users that were interviewed together as users of Kitsong Centre also noted that "at the library there are people who teach basics in computing". One of the lady cleaners at a local primary school reported that although she once used the Kitsong Centre for her typing needs, she acquired the basic computer skills at the library. The government driver that was interviewed at the library said that "it all started here in the library". He said this in response to a question that sought to establish where he learned how to use the computer.

The gardener at the library, who also served as part of the team that trained the community, indicated in an interview that the training programs had been running since 2012. He further added that the training was mainly in Setswana, although the hand outs were in English. Another participant that was interviewed as a user at Ga-Mosotho Investment also commended the Sesigo e-library for the community training programs. The young man who operated a stationery shop also indicated that the library had programs to impart skills for the youth and that he wished such programs could be extended to elderly people.

Although the infomidiaries at the Sesigo e-library indicated that the training programs were open to all members of the community, it emerged that some members of the community mistook that the training was for the younger community members. According to one of the infomidiaries at the library, most of the people who came in for trainings were usually out of school youth. This was mainly because the trainings were done during school hours and those in school are not able to attend. This may explain why the three nine year old boys that were cited earlier on did not know of any training programs.

5.3.5 Users of Sesigo e-library

As indicated in the preceding discussion on the services that are offered at this centre, the users were drawn to the library by free and faster Internet The journalist that was cited earlier also out-rightly said that he would not use Internet where he had to pay. He also noted that the Internet at the library was faster than the one at his office.

One of the interviewed participants noted that although the library Internet seemed the most popular, it seemed to be frequented by “the same faces every time and if it’s a new face they bring their own laptop”. This user, who was a young local businessman, said he spend at least one hour at the library every day. The participant used the computers at the library. Even the librarian reported that this user was one of the regular faces at the library. Throughout the data collection phase, the researcher continued to meet this user at the library and held informal and unrecorded discussions with him whenever there was an opportunity to do so.

There was also a set of three nine-year old boys who participated as users of the library. These boys also indicated that they came for the computers at the library almost daily at around 1400hrs. Indeed the researcher saw these users at the library for three consecutive days. The two journalists that were interviewed together at the library also declared that they were regular users at the library. The librarian also affirmed that these were regular users.

Three other male participants respectively aged 18, 19 and 20 years old reported that they accessed Internet at the library. These were interviewed in a group at Photozone Studio while they were waiting to be served there. Two of them were out of school and not engaged in any economic activity, while the other one said he was a form fur student. The participants indicated that they used the Internet for leisure and social networking. One of them specifically said that he uses the network to keep abreast with the life of his favourite celebrities. When asked what he benefited from information about the celebrities he said “I learned that celebrities need discipline and I also got influence by that”. Still within this group, one of the participants added that they also

used the Internet for “new things like downloading music and movies”. One of the female participants that were interviewed as a user at Kitsong Centre also said she knew of a DJ that downloaded his music from the Internet at the library.

Although the young male participants cited in the preceding paragraph were regular users of the Internet at the library, one of them acknowledged that “I sometimes go to the Internet café next door”. This participant was referring to Jeirah Internet Café which was in the same compound with the centre he was interviewed from.

Although the Internet at the library was predominantly used by local youth for leisure, some users, especially the workers used it for professional purposes. For example, the two participating journalists indicated that they used the Internet at the library for work and school purposes. They also indicated that their colleagues in the profession also at times used the library services for accessing Internet.

The young man operating a stationery shop also indicated that he used the Internet at the library for both business and leisure. He also cited cases of people he knew in the village who applied for jobs and secured jobs by using email that the accessed at the library. This user also said that being able to access Internet from especially the library had helped him further his passion for drawing and designing invitation cards. He said he used the Internet from the library to find different designs and that this has shortened his turnaround time for card design and production. This user also said he used the Internet to listen to music through his personal headphones that he brings to the library.

The Infomidiary at Photozone Studio also said he used the Internet at the library. He said he mostly accessed it to download antivirus software. He commended the library staff for being helpful on this.

The library also allowed users to access WIFI using their personal laptops. For example, the two journalists and the unemployed youth indicated that at times they brought their laptops to access the wireless network. The present researcher also observed that the teachers were using the wireless connection for both social networks and responding to online career development opportunities. Informal unrecorded

discussions with these teachers revealed that that they were applying for online sponsorship for further education. The researcher also used this network and can attest that it was especially very good in the evenings when the library was closed.

The profile of the users described above shows that users at this Centre ranged from primary school users; out of school youth; professionals and the business community. The users also ranged from children to adults and from locals to non-citizens. Although the discussion above was specific to the Sesigo e-library, the pattern of users also mirrored that of the user community for all the centres in the village.

5.4 Who uses ICT public access centres in Letlhakeng?

Earlier discussions on the structure of the centre and the technologies that are available in the centre revealed that these thematic pointers have a bearing on the services offered by the different centre. The thematic pointers also relate to the type of users drawn to the varied centre.

Three broad categories of users emerged: people regarded as originating from the village (i.e. local users); people who worked in the village but were from elsewhere (i.e. workers); and those who were living in neighbouring villages who only came to Letlhakeng for specific services (i.e. visiting users). The following discussion shows how these three broad categories of the community used the ICT public access centres in different ways. Throughout the discussion the local user community is not singled out because this user group had some elements of both workers and visitors. Another reason for less focus on the local user group in the following discussion because their usage patterns have been covered in earlier discussion on services offered at the library. These users are mainly the out of school youth, who as noted earlier, prefer to use the library.

5.4.1 The Workers

There were community members who worked in various services in the village. Some of these people accessed the ICTs in public access centres for work related or professional activities. They also used the technologies to either generate income or support some income generating initiatives. For example, the teachers that were met at

the library brought in their laptops to access Internet for work related websites. The researcher also met a nurse at Photozone Studio who needed to buy a memory stick so as to transfer some work documents from her laptop to be printed at the centre. One of the participating journalists also indicated that he used the technologies in the library for both his office work and for private studying. All the cited users lived in Letlhakeng as employees in different sectors.

There was also an observed trend that this user group came to the centre to output the work that they had processed elsewhere. For example, the nurse cited in the above paragraph needed to print some work she had processed elsewhere. One of the participating journalist also indicated that he did his work either at his office or on his laptop, then visited the library to send it out to the institution he was studying with or to his employer, Botswana Press Agency.

The participating infomidiaries from Jeirah Internet café and Photozone Studio also affirmed that in some cases users, especially students and some workers, came in for printing work that they had typed elsewhere. The pattern was further corroborated by the adult user that was interviewed at Jeirah Internet Café indicated that sometimes she typed her work from elsewhere then came to the centre for printing services.

The participating school principal and the lady cleaners at her school indicated in different interviews that they used the ICT public access centre to photocopy documents from their work places. Although the lady cleaners regarded themselves as non-user, the researcher viewed their indirect usage as some form of usage. A similar trend in usage was observed in the participant that was earlier on described as government driver. He indicated that he had been sent to especially Kitsong Centre with varied assignments from different government departments in the village.

An interesting paradoxical situation was observed in the usage pattern of this user community. For example, this was the community with more potential of spending more paying for the services in especially the stand-alone centre. These users however spent less time at the centre because as just noted earlier on, they only came in to output work that they processed elsewhere. The reduction in time spent at the centre then

translated into less money paid at the centre. The situation was also worsened by the fact that, the centres were not open over the weekends.

The time limitation observed in the usage pattern of the workers also emerged in the usage pattern of the users who were coming from the neighbouring villages (i.e. the visiting users).

5.4.2 Visiting users

Letlhakeng village served as the headquarters of the sub-district. The people from neighbouring smaller villages regularly visited Letlhakeng for a broad range of social services that were not offered in their smaller villages. These people mostly came to the ICT public access centres for quick services like photocopying; printing or passport photos as they proceeded for other services at places like the RAC, post office, hospital, or the schools.

The visiting users were seen to prefer getting quick paid-for services in stand-alone centres so that they may quickly proceed with other errands in Letlhakeng before going back to their respective villages. For example during the preliminary visit at 3G Holdings the researcher observed and engaged in an informal discussion with customers who said they were from the villages of Ditshegwane and Sesung. These users bought the needed stationery items; or made photocopies of forms and certificates that were needed for varied services at RAC.

The users from neighbouring villages also tended to prefer to come for the services very early in the morning so that they may proceed to other social services in the village. For example, one young lady who reported that she was from Ditshegwane village said that she started cueing at the post office from as early as 0700hrs for services which started after 0900hrs. She indicated that she left her village as early as 0600hrs, using public transport. The lady further noted that at times she spent a night in Letlhakeng with relatives so that she was early enough for the needed services. Even though these community members were not waiting for services from any of the ICT public access centres at the time of these informal discussion, they shared some experiences on the

use of the centres. Discussions with the manager at the post office also revealed that in most cases they needed to use the centres to process some documents needed to get payments under different government safety nets. The observed community members were both young and old and of both genders.

Another participant from the visiting users' category was the retired school teacher who participated in one of the group interviews at Photozone Studio. He had come to the centre for photocopying and taking passport size photographs. This user specifically lamented that he had been waiting for the services at this centre very early before the centre opened. He expressed the wish that the centre could open even earlier than 0800hrs.

On two occasions the researcher observed users at Photozone Studio cueing for services even before the centre was opened. Informal discussions with these people revealed that they wanted quick services so that they may proceed with other errands for the day. Another user that was interviewed at Ga-Mosotho Investment also noted that he arrived in Letlhakeng village as early as 0730hrs because he had a lot of other things to attend to before going back to his village. Towards the end of the interview, this participant showed signs of lack of concentration and was no longer coherent in the discussion because he was in a hurry to find an alternative centre that could offer him the needed photocopying services.

Although the community in general appreciated the advent of ICT public access centres in the village, the positive impact was mostly felt by the "visitor" user community. These users appreciated especially the fact that the services reduced the challenge of having to travel to either Molepolole or Gaborone for services like photocopying, printing and passport photos. For example, in one of the groups interviewed at Photozone Studio, there was a lady who remarked that she used to travel 78 Km from Takatokwane to Letlhakeng, then proceed 140 km to Molepolole to get passport size photographs. At the time this lady was interviewed, she had come to Photozone Studio for passport photographs that she needed for processing her tuck-shop trading license.

During the just cited group interview, when the participants discussed the relief on especially transport cost, the researcher got the sense of appreciation from all the other users who were waiting to be served at the centre as they kept on nodding and giving traditionally appreciative interjections like “ruri!” “eish!” “ehe!” “oh!”

Similar appreciation was also expressed by the young man that was interviewed as a special user at 3G Holdings. This user had travelled from Kaudwane at the cost of P60.00. He explained that there was no dedicated public transport service between his village and Letlhakeng. During the preliminary visit, the researcher experienced travelling on the road between the two villages and could relate to the bad terrain that the participant was explaining. This user explained that at times, travelling between the two villages one had to sleep over at Letlhakeng or in between the villages. This happened especially when there was a need for one to proceed to Molepolole or Gaborone for some social service. Discussions with this users echoed strong appreciation of the of ICT public access centre at Letlhakeng village as they saved the community further travels to Molepolole at the cost of an additional two hours and not less than P18.00.

During the preliminary visit to Kaudwane, the researcher also learned from the users of the Kaudwane Kitsong centre that they appreciated the centres in Letlhakeng. They also viewed the Kaudwane centre as very essential in initiating any communication or travel process. This was because the community charged their phones at this centre.

The special participant described in the preceding paragraph was followed through a lead from the preliminary visit to Kaudwane. This young man, was cited as the communication link between the community and various village development partners. He was cited as one of the main users of the Kitsong centre at Kaudwane and that he used the ICT public access centres in Letlhakeng for the good of Kaudwane.This also included buying stationery that was needed for the Kaudwane Kitsong centre. The participant preferred meeting the researcher at 3G Holdings because he needed to buy

some stationery and photocopy some documents before proceeding to RAC. The user said he could not photocopy at Kaudwane Kitsong Centre because there was no printer. During the preliminary visit to Kaudwane village, the researcher observed that the community preferred to do most of their reprographic needs at Letlhakeng where they submitted various applications for a broad range of social services. It also emerged that the printers at both centres had a lot of technical challenges that were related to the relatively low ICT skills of the people who managed the centres.

5.5 Summary of the analysis

This chapter presented an analysis of data that addresses the inter-related research questions of what ICT public access centres are available in Letlhakeng; who offers the services and who are the users. The discussion of the six ICT public access centres shows how management of the centre relates to the services that are offered and the type of clientele' that are drawn to the centre.

Throughout the chapter, data about these centres was presented in a descriptive way that included where the inquiry took place; from whom and how. For example, in the case of data collected from the two journalists; the researcher explained that they were interviewed at the library and who created the link with these participants. The detailed description of the context helps to build some form of portrait of both the centre and the users. For example, there is a detailed explanation about the participants that were met at the hospital; what they were doing and why they were interviewed together.

Such a detailed narrative of the context adds value to the study in multiple folds. For example, it validates that indeed the user was a professional as indicated by the infomidiary that ushered him in. The detailed description of the context also becomes very useful in the process of deriving findings from the analysis. For example, by explaining that the user continued with his professional activity adds to conclusion that the workers had time constraints as part of the challenges to use the available ICT centres. The noted participant actually added he did not have time to volunteer teaching other community members the skills needed to use the ICTs.

As noted in the introductory section of this chapter, the data is analysed so as to map out usage patterns and knowledge to be shared. The next chapter shares detailed findings or knowledge derived from the data analysis chapter.

CHAPTER SIX

FINDINGS OF THE STUDY

6.1 Introduction

This concluding chapter presents the findings on access and usage of ICT public access centres in Letlhakeng. It is important to highlight that all subsequent conclusions and recommendations are anchored on acknowledgement of two primary facts:

I. The village is characterised by both the vertical and the horizontal divide.

II. The ICT public access centres in Letlhakeng are very instrumental in bridging the existing digital divide.

As a way of contextualising the research conclusions and recommendations, the chapter begins with a recap of some background information from earlier phases of the research project. This is then followed by the research findings that draw from the two major ones stated above. The study's specific research questions serve as sub-headings in the presentation of the findings. Some findings cut across the set research questions. Therefore, there is a continued comparison and cross referencing of findings as they relate to the different questions. In some cases the findings present what emerges as a cause- effect cycle. This trend is mainly because of the triangulation that characterised the entire research method. The chapter ends with a summation of the study conclusions and recommendations.

6.2 Background to the findings

Letlhakeng serves as the headquarters of Letlhakeng sub-district, which lies within the Kgalagadi desert. As reflected in the introductory chapter, the community is classified as poor; with low educational attainment and a high unemployment rate. As reflected in the literature review, the patterns of the digital divide follow the already existing global socio-economic disparities (Corrocher & Raineri 2010; Dintoe 2010; Evusa 2005 and Latchem & Walker 2001; Norris 2001). The initiatives towards promoting access and usage of ICTs have to take cognisance of the reality of the already existing differences.

The complexities of the interrelated factors of the digital divide call for an assessment of the concept from different geographic contexts and through different theoretical lenses.

Amongst the many concerns about the factors of ICT access and usage, researchers are highly concerned about the complex situations where communities continue to have disproportionately low access rates despite availability of the technologies. This is one of the concerns that motivated this study.

It is against this backdrop that the following findings, conclusions and recommendations were reached.

6.3 What ICTs and related services are available for access and use by the Letlhakeng community through public access centres?

A total of seven (7) ICT public access centres were identified. The two embedded centres and five (5) stand-alone centres. These centres diffred in management, structure and the services that they offered. The services in the different centres related to both the market demand and the technology that the owners of the centre could afford to buy and maintane.

The services offered by the ICT public access centres in Letlhakeng had many intertwined sub-plots and inter-related themes that wove together issues of structure and management of the centres. The usage patterns of the centres also related to a broad range of socio-economic factors. For example, this study found that the Letlhakeng community used the ICTs in public access centres to process information that was needed to access the social services that ranged from government poverty alleviation programmes; education and job opportunities. The community therefore processed information in formats that were dictated by the social service providers. This finding resonates with Alampay's (2006:16) assertion that the situation people find themselves in affect their ability and capacity to access and use ICTs.

The stand-alone centres developed the services based on the observed maket demand and the need to generate income. The owners of these centres also had the advantage

of being part of the community and hence having first hand experience of the need for a service. This is in contrast with the needs assessment for the embedded centres which was done by researchers from outside the community.

In addition to the observed need, the motive to set up a stand-alone centre was also guided by the owner's capabilities or passion and economic need. For example, Frazer's Studio was born from the infomidiary's love for photography and the need to earn a living. Jeirah Internet Café on the other hand was motivated by the owner's personal needs for the services to support her other income generating projects.

All the stand-alone centres and Kitsong Centre offered printing and photocopying services at a cost of P2.00 per copy. They also offered typing services at a cost of P10.00 per page. The demand for photocopying was so high that even some retail outlets offered photocopying services at some cost. The researcher failed to get much information on this issue as the owners of the retail outlets declined to participate in any such discussions. The study observed that these retail outlets even had an advantage of offering the services even after official working hours and during weekends. None of the centres opened after working hours and weekends.

There was also a high demand for passport photographs at stand-alone ICT public access centres in Letlhakeng. Photozone Studio and Fraser Studio had a strong hold in this service while Jeirah Internet Café had Internet as its flagship service. It also emerged that the centres were named in a way that meaningfully conveyed the key service offered.

6.4 Who provides the services to enable the Letlhakeng community to take advantage of the ICTs?

The findings on this research question are presented with a continued cross referencing between the centres. There is also a noticeable slant of more findings on stand-alone centres because these centres had more information rich cases. The study deliberately accommodated the emerging slant because the literature reviewed for this study did not show as much knowledge on stand-alone centres as it did on embedded ones.

Unlike the embedded centres which were established as community projects, stand-alone centres were owned and managed by young Batswana. The management of the services that were offered through the centres was found to differ in line with the structure of the centres; available ICTs and the community's needs.

6. 4.1 Management of the embedded centres

The embedded centres were well resourced, with good access to both telephone lines and Internet. The centres were also manned by qualified personnel with good support structures. For example, the library was manned by a librarian who was supported by three other staff members. The library also had nine computers that were all in good working condition.

The findings on management of the stand-alone centres were also in contrast to the embedded centres. For example, the stand-alone centres lacked funds and were managed by one person who constantly had to close the centre whenever there was any other errand to attend to. Only two of the infomidiaries in the stand-alone centres had the relevant IT qualifications (i.e. Ga Mosotho Investment and Photozone Studio).

This study noted with concern that there was lack of community involvement in the management of the embedded centres. For example, at the time of data collection, the Kitsong Centre was closed, but the participants were not well informed that the centre was transferring management from government and BOTEC to Botswana Post. The study also noted a lack of community awareness of the Sesigo e-Library community training programmes. For example, although there was a training schedule for the different primary schools posted in the librarian's office, a group of nine year old boys who participated in this study as users of the e-library and another set of three non-user primary school girls did not know about the training programmes.

Although the study did not set out to establish the cause of the community's detachment, this study related the challenge to the fact that both projects were more of what Jacobs & Herselman (2005:68) and Evusa (2005:25) refer to as "top-down

projects". This means that the concept was conceived from elsewhere then implemented in the village. This emerged as what Jacobs &Herselman (2005) and Evusa (2005: 127) referred to as typical in "top down" project with guidelines drawn by external funders. The study also noted that there was close government and community involvement at the stage that Narayan & Nerurkar (2006:35) refer to as the "time–to–public" phase but less collaboration at "time-in-public" phases. As these author's note participation of all stakeholders at all stages affects usage of the technologies.

Both centres are therefore managed through countrywide policies and management styles that are not easily altered to meet the immediate users' needs. For example, the Sesigo excluded photocopying or printing services although these were the services most sought by the Letlhakeng community. It was not possible for the Letlhakeng librarian to alter this policy so as to meet the needs of the community being served.

It is important that the community is involved in the management of the centre. As observed by Evusa (2005:126) in the base line study of similar centres in Kenya, lack of community involvement in the management of a centre contributed negatively to the uptake of the technologies. There was no evidence of community involvement in the management of embedded centres. Even though the stand-alone centres did not show any indication of community involvement in the management, as noted earlier, the centres had an advantage of being managed by people who lived within the community. Both embedded centres were instead managed by infomidiaries that seemed to be detached from the community that they served. They were both not from within the village and they both always travelled out of the village to join their families every weekend.

6.4.2 Demand driven stand-alone centres

Although the reviewed literature showed more success stories on services that were embedded into the already existing community services (Benjamin 2001:82; O'Neil 2002:86; Jacobs and Herselman 2005; Yu 2006) the present study found more positive stories in stand-alone centres in Letlhakeng. For example, the stand–alone centres were the most used to process information needed to access some social services. The

library was notably used for more leisure than any other development. There was more demand for services at stand alone centres even though the centres had challenges of access to the internet, unreliable opening hours and even not conducive space for the users to sit.

6.4.3 Stand-alone centres follow Kitsong Centre model

This study observed that the Kitsong Centre emerged as, what Norris (2001:12) and Corrocher and Raineri (2010: 68) refer to as a techno-leader for especially stand-alone centres. These centres seemed to benchmark their services against Kitsong Centre. For example, Photozone Studio operated from a structure similar to the countrywide Nteletsa II Kitsong Centres. The centre was the first centre in the village and as reflected in the data analysis chapter, some participants regarded it as an ideal centre. All the other stand-alone centres also emerged as techno-followers because they were found to strive towards growing into some kind of Kitsong Centre in terms of the ICTs that they had.

The emergent lead-follow trend affirms earlier optimistic stances from the developmental theorists that the digital divide can be bridged through diffusion from the techno-concentrated location.

The stand-alone centre however had an advantage of strategically following the Kitsong Centre model in a flexible and market-driven way. For example, these centres observed the service demand and trends from Kitsong Centre. One of the participants indicated preference of stand-alone centres for designing invitation cards and funeral programmes because they could negotiate payment terms. This was a flexible arrangement that the users could not get in the strict policy that governed embedded centres. Unlike the embedded centres, the stand-alone centres could alter their management system without any consultation and approval from any external body.

6.4.4 Structure of stand-alone centres

The findings on structure and location of stand-alone centres related to a trend observed by O'Neil (2002: 77) and Jacobs and Herselman (2005: 90) that funding played a critical role in ICT public access centres.

The need for the stand-alone centres to generate income translated into the observation that the centres had to be strategically located where there was continued flow of potential users. For example 3G Holdings and Frazer's Studio were both located in busy shopping complexes. The other three centres were along the road to the main village administrative centre.

The location was also determined by the availability of affordable space for the owner of the centre. In some cases such spaces were not conducive for the service. For example, one of the user participants lamented that:

> "I think their main challenge is lack of conducive and adequate space to operate their business, because to attract more customers to your business you need space. The other problem is that, the rental is too expensive, so I don't think they are making no big profits"

This was a response to a question that sought to find out the challenges that were faced by those who offered the community access to ICTs through public access centres.

Only one stand-alone centre, Jeirah Internet Café, had access to Internet while all the other stand-alone centres were not connected because of both financial and structural issues. Another example may be picked from the finding that Photozone Studio, which began with financial support through a youth empowerment program under the Ministry of Youth Sports and Culture, had the most ICTs and was the only one that operated from a nice portacabin that was clearly labelled.

.The fact that the owners of Ga-Mosotho Investment and Photozone Studio were from families of village leaders; and that bothcentres had government financial support bring to mind a trend observed by Norris (2001: 4) that the digital divide tends to be

entrenched into the already existing democratic divide and social divide. When compared to other stand-alone centres, these two centres were also had most of the technologies. Therefor, the vertical divide between the stand alone centre was similar to the already exisisting social division. The resultant vertical divide between the centres further create a horizontal devide as differences in how the community uses the technologies. The trend affirms observations made in the e literature review that there is a tendency for both the vertical and horizontal divides to be aligned to the democratic and socio-economic power divisions that characterise communities (Norris 2001:12Corrocher & Raineri 2010:59).

6.5 What promotes or hinders the Letlhakeng community to access and use ICTs that are available through public access centres?

The findings on this research question centred on thematic areas of rural poverty; loweducational levels and individual preferences. In some cases the way the centre was managed attracted or inhibited users. Some factors that were promoters to other user groups were seen as challenges to other community members. Some of these inter-related inhibitors and promoters are singled out because they emerged as more pronounced than others.

6.5.1 Unreliable services at stand-alone centres

The stand-alone centres displayed a worrisome trend of unreliable opening hours. The centres were manned by one person who in most cases had to close the centre to attend to any other business outside the centre. For example, Frazer's Studio was closed for two days when the infomidiary had gone to do a recording of wedding outside the village.

This study also found that the different factors of funding and location of the centres also presented a trend that one may term as a "temporary operation" or "temporary lodging" attitude in the management of stand-alone centres. For example, the centres strategically operated where they could conveniently relocate as and when the owner of the centre saw the need to do so. The owner of Jeirah Internet Cafe stated that she would close the centre any time she to go and work outside the village. Even the

physical address on the business card for this centre was stated as the owner's home village instead of the location of the centre. This temporary lodging attitude was even worsened by the fact that, most of the infomidiaries (i.e. Jeirah Internet Café, 3G Holdings and Fraser's Photo Studio) were not from Letlhakeng village. The just noted unreliability of stand-alone centres echo earlier assertion by Benjamin (2001:82) and O'Neil (2002: 84) that such centres have the tendency of collapsing.

The erratic power cuts in the village also contributed to the observed unreliable operations of especially the stand-alone centre. For example during the preliminary visit, there was no electricity for two days. Although the researcher had set appointments with infomidiaries at the centres, three of those who operated in stand-alone centre had travelled outside the village to attend to other social commitments because they found it useless to open the centre.

The users from neighbouring villages were the most affected by unreliable operations of the centres because they were usually pressed for time. One of the participants narrated how a user from one of the neighbouring villages once lost an opportunity to submit tender documents because of the unreliability of these centres. Although this participant mentioned this example to express the inconvenience posed by the library's no printing policy, it presented a general picture posed by both challenges of inflexible library policies and the unreliable stand-alone centres.

Besides the unreliable nature of stand-alone centres, the embedded centres also had a challenge of inconvenient hours of operation. The workers were the most affected by this challenge. For example one of the participants indicated that she failed to use even the free computers at the library because the library only operated at the times that she was at work. This was the young lady that worked at the saloon that was in the same compound with Photozone Studio and Jeirah Internet Cafe'. Both the library and Kitsong Centre closed at five and none of the centres in the village operated over the weekend.

At the library the challenge related to hours of operation was at times exacerbated by the thirty minutes booking system. The arrangement seemed to only favour the out of school youth who could afford to wait for their time slot. This is an example of a case

where one factor inhibits other community members while it works out very well for other users. Free Internet at the library encouraged the out of school youth to use the ICTs. It however was discouraging to the workers who always found the computers already in use.

Although there was concern over the opening hours of the centres, this study observed that these hours of operation were in line with the office hours of most social service providers in the village. There was therefore no demand for the services of ICT public access centres in the evenings and during the weekends.

This present study also found that as a way of addressing the time constraint, the workers preferred to process information elsewhere, and then take it to the ICT public access centres to output the information. For example, they typed at home using their private laptops. The use of memory sticks to transfer the information posed a risk of computer viruses in the centres. This challenge was further worsened by the lack of Internet access in especially the stand-alone centres.

6.5.2 Limited or no ICT skills

The general lack of ICT skills hindered good and effective usage of the technologies. For example, the lack of skills to wisely use free Internet at the library also created a general negative societal perception of Facebook. The users of free Internet in the library mainly used it for social networks like Facebook. These users did not know how to use Internet for personal and social development. The community stigmatised the users of free Internet at the library as lazy and negatively denting the cultural value systems. There was a general negative societal perception of Facebook in the community. As noted by the participating journalist: “the problem is that people here believe Facebook is a dating site”. Some school girls also said that the church discouraged them to use Internet at the library.

Observations from the Letlhakeng community affirmed (Selwyn 2003: 100) assertion that usage of the ICTs will continue to be low if the people do not see the professed benefits of the technology. The observed trend in a way contradicted the optimistic diffusion theory that the positive effects as seen from the early users of the ICTs would

lead to successful adoption of technologies (Calderaro2010:28). The non-users were not attracted into using the Internet because they did not see any positive usage.

6.5.3 A call for ICT education programmes

The community called for ICT education programs. For example, the women who participated in a group interview as non-users at a local primary school expressed interest in knowing what Internet was and how they could access it. The participating journalist also constantly referred to the need for training even when the question was not specifically asking about that. When this participant was asked to give his general view on how ICTs can drive towards the National Vision 2016 of an informed and educated nation, he said**:**

> **"...**they should get serious with teaching the community about the technology tools they offer".

The participant meant that the drivers of Vision 2016 should take part in community education programs. This echoes sentiments of scholars from an ethical perspective as discussed in chapter two of this study. The contention from this line of thought is that government has the moral responsibility to equip the community with the needed skills (Alampay 2006:8). Failure to do that is viewed as denying the community a democratic right to be part of the information society (Yu 2006: 242 ; Selwyn 2003).

The comments also reflect lack of ownership of both the national vision and the community ICT projects in the village. The technologies are viewed as belonging to government, which also has a responsibility to teach the community. When the researcher asked this participant if the available technologies were helpful to job seekers, he also said,

> "the problem here is that people don't know about this technology. They have to be taught".

This comment also buttresses earlier findings that the community lacked the needed ICT skills. In addition to a call for community education, this participant's comments also

imply challenges towards realisation of the National Vision 2016 because people did not have the skills to meaningfully use the technologies that were available.

Interestingly, even the school principal, who was shown as a typical case of someone who had failed to take advantage of any learning opportunity, also called for training programs. She noted that such training was needed because

> "..the government is moving towards *e*-government therefore people will end up being forced to learn the Internet."

This comment also shows that the community is not attracted to learning how to use Internet because there is no compelling need. The comment .also has the implication that the vision towards e-governance would not be realised without teaching the community how to use the technologies. For example, none of the participants had used e-banking because they did not have the need to do so. The participants were also not informed about the safety of such Internet usage.

The observed lack of need to use the technologies also affirms Kereteletse's (2015) report that some of the challenges in implementations of Maitlamo or ICT policy is the slow implementation of e-government; e-Health and e-Business services. There were no such services in Letlhakeng.

The need for community education was even expressed by children. For example, the three primary school girls who said that their church discouraged them from using Internet at the library also called for user education. They expressed that such programs would address the growing negativity on especially the use of Internet.

Although the study reiterates the need for community training, it observed a need for a thorough needs assessment that would cater for the divergent needs of the community. For example, some people seemed not to mind learning in public forums like the library (e.g. the driver; the three school boys and the library cleaner) while others preferred private learning from peers or by themselves. The young lady that worked at the hair salon near Jeirah Internet Café indicated that she was hoping to privately learn from her cousin who had bought a laptop. The retired school teacher also said he was learning

from his laptop at home. This study also found that there were no specific training programmes that met the unique needs of both users from neighbouring villages and those who worked in the village.

The community also had different views on how the training could be done. For example while others were willing to volunteer sharing skills, some participants felt it was government's responsibility to train the community or to renumerate those people who trained the community. The expectation that government should pay those who imparted ICT skills to the community may also be related to an earlier observation that there was a relatively low level of voluntarism in the community. The need to reward any form of services to the community was also echoed by the special user from Kaudwane who said:

> "People who are working there should not just be volunteers but rather they should be appreciated with something. Maybe they will be motivated to work hard."

Although this participant was specifically calling for payment for the infomidiaries in the Nteletsa II Kitsong Centre, he echoed the Letlhakeng community's general attitude towards volunteerism. The view also reflects the community's expectation of the government's role in especially community education. The expectation resonates with Alampay's (2006:11) earlier contention that development encompasses entitlements to being given the capacity to use in the ICTs that are available. It is from this perspective that one may argue that the community rightly expects government to ensure that they are able to use the technologies

Some members of the community however felt that the community at large should collectively equip people with the needed skills. There was also a view that the ICT public access centres also had a responsibility to teach the community how to use the technologies. For example, this emerged in the varied responses to the question that sought to establish what the participants thought was the primary role of these centres. This shows that the community viewed the centres as playing the role of service

providers while also educating the community. Some participants also expressed the view that skilled community members needed to teach others to augment whatever programmes could be developed by centres. The suggestions that emerged from these community members included a partnership of the local schools and the ICT public access centres. One participant recommended involving the local chief “because people believe a lot in their chief”.

Even though the present study acknowledges that there was a lack of volunteerism in the community, it also notes that the observed challenge emerged as part of the complex issues of poverty with factors that stretched beyond the scope of this study.

6.6 How does the Letlhakeng community access and use the ICTs that are available through public access centres?

The findings that addressed the research question that sought to map how the community used the available ICT interrelated with the one that identified the services. There will therefore be continued comparison or cross referencing on how a specific service was used and who the main users were. For example, there is a specific sub-section on findings on the usage patterns of users from neighbouring villages as information rich cases. Some of the factors that influenced the usage patterns of these people emerge as beyond the scope of this study, These are however referred to so as to help building an understanding on the findings of how the centres in Letlhakeng were used. For example, due to the limitations of the Kitsong centres in Sorilatholo and Kaudwane, the ICT public access centres had to be able to support the users from these villages to be able to access the needed social services.

The Letlhakeng community is heterogeneous and hence the needs and usage of the ICTs differed even within the community. The interrelated sub-themes that were found in the usage patterns of this community covered issues related to rural connectivity; the community’s constraints in time and money; the effect of distance to both the ICT public access centres and the varied social services; the role of both the centre and the

infomidiary; and the application of the technologies in actual life processes. The users' economic activities also influenced the ICT access and usage patterns.

The community used the ICTs in the centres in according to the demands of the different activities in their day to day needs. As a result, the demand for the services varied. Even in stand-alone centres where the services offered were demand driven, some services were more used than others. There was a general high demand for printing and photocopying. It emerged that the service providers of the different social services in the village demanded hard copies of the documents. The community therefore made a lot of photocopies of the different documents needed for these social services. This finding on photocopying affirms Morakanyane's (2010:10) remark that Kitsong Centres had shifted focus from the intended primary role of access to Internet and local content to photocopying, typing and printing.

There was also a growing demand for other services like desktop publishing, faxing; binding and laminating of certificates. This was found as a good business opportunity for especially the standalone centres. The library did not offer any of these services. Most community members therefore preferred stand-alone centres over the library.

6.6.1 Why is there a high demand for photocopying?

> ....most of the people here are farmers, so they are making national identity cards or *Omang* copies for various purposes such as acquiring seeds from the field agricultural office. They are also using those copies to earn their pension money from the post office.

The above comment sums up the finding on the use of photocopying services in the village. *"Omang"* is a Setswana word that literally translates as "who are you". It is commonly used to refer to the Botswana national identification card.

As noted earlier, this was one of the poorest districts in the country and therefore people needed photocopies of *Omang* to access some of the social safety nets. The community also photocopied different documents that were needed as part of the applications for the needed services.

Some community members collected their payments for the different grants or remunerations at the post office. The above comment that people photocopied identity documents to access their pension money is therefore interpreted to be inclusive of all these other payments that were made at the post office. Some of the recipients of these payments were from neighbouring villages.

It was also observed that in some cases photocopying was done for educational purposes and application for job opportunities. The business community and the different government offices in the village also used the centres for photocopying and printing.

6.6.2 The diverse user communities

Access and usage of the different ICT public access centres revealed multiple sub-themes with subplots that collectively showed evidence of what Cho (2004) refers to as both the vertical and the horizontal divide. The studied user community in Letlhakeng included both the young and old; both genders and people at different levels of education. Some of the users were engaged in different economic activities while others were not engaged at all.

Although these different demographic factors are not covered in detail in the following findings, it emerged that they were inter-related in their influence on how the community accessed and used the ICTs that were available through the centres. The following presentation of findings instead maps the usage pattern in terms of where users lived and the services they needed.

6.6.2.1 The indirect users

There were some pockets of people who did not directly go to the ICT public access centres in Letlhakeng but instead sent other community members to processes the needed information for them. This study referred to these community members as indirect users. Etta and Parvyn-Wamahiu (2003:47) also identified a similar group of users in Timbuktu, Mali and refered to them as secondary users or beneficiaries.

The infomidiary at Jeirah Internet Café commented that older people did not come to the centres but instead preferred to send younger ones to photocopy their documents. This has the implication that the indirect users are mainly older people. The findings on the usage patterns of the community were contrary to this. The group of users in this category cut across all ages and had people with different levels of education. The various offices that were seen to use the centres for different business support services are also regarded as indirect users.

Some community members who did not have the needed skills to use the ICTs also displayed a pattern of indirect usage. They sent other members of the community to process the needed information for them. For example, it was reported that when the Ministry of Education released school leaving examination results through Internet, community members with skills to access the Internet checked the results for those who did not know how to do it. The librarian reported that at that time the library was usually full of both direct and indirect users. The participating lady cleaners also referred to the same period to demonstrate the advantages of ICT public access centres in the village. This was reportedly the busiest time at the library, Kitsong centres and Jeirah Internet Café as the only providers of Internet.

The indirect users could also be further analysed at different levels. There were those who did not go to the centres at all while others visited the centres but had the infomidiaries processing all the needed information for them. This latter was a very common usage trend. The infomidiary at Photozone Studio also corroborated this when he noted that he did most of the typing for his users because they lacked the needed skills. One of the participants also said that if she ever needed to use an ICT public access centre, she would choose where she paid “because, you don’t have to know

how to operate the technologies...they just do it for you". This user found the stand-alone centre as the most convenient for the users who did not know how to type.

6.6.2.2 The local user community.

Two main groups of local user communities were identified: the out of school youth and the workers. Although the study did not explore the inter-related challenges of being an out of school and unemployed young person living in a poor community, it emerged that the usage pattern of this group was related to many other social challenges of their context. It was also regrettable that the community stigmatised these young people as lazy and disrespectful of culture. This societal perception was also worsened by the fact that this group of people had a lot of free time to use free Internet at the library for leisure. This emerged as contrast to the usage pattern of the workers and the visiting user community who had to pay for quick processing of business related documents.

The study also found that these unemployed youth emerged as a hindrance to other community members' access and usage of the ICTs at the library. For example,the three female participants that were interviewed as non users at the library indicated that their church discouraged them from using the Internet at the library. The restriction by the church emanated from the observed irresponsible usage of Internet at the library. It further relates to an earlier observation that the community associated these technologies with what they termed was a moral decay in the society. Although these out of school users had basic ICT skills, it was evident that they lacked the skills to profitably use especially Internet. Neither the library nor Kitsong Centre had programs to help these young people to effectively use the Internet.

The websites of the Ministry of Education, Skills and Development and the Ministry of Agriculture were specifically cited as being used by the community members who participated in this study. As noted earlier, the community accessed the school leaving examination results through Internet. Some community members also used the Internet to get information on agricultural products. For example, the two female participants that were interviewed at the hair salon as users of Kitsong Centre also revealed an

interesting usage pattern when they noted that they used the information from the Internet to augment what they heard from the radio. Access to Internet therefore altered the traditional pattern of getting information from the radio and the local agricultural filed officers.

There were however some local community members who used the ICTs in public access centres for development. These users were mainly the workers and the local business community. For example, the manager at the local bakery reported that he used Kitsong Centre for faxing; photocopying and for buying office stationery. More examples of workers here include the lady teacher that was interviewed at Jeirah Internet Café; the nurse that was met at Photozone Studio and medical professional that was interviewed at the hospital laboratory. The category is also inclusive of students and the two news reporters who also relied on the Internet at the library for their work. The workers were seen to, preferr t quick “paid-for-services” at stand-alone centres because they did not have time to use the free library services.

Some of the workers used Internet at the library between 12:30 and 13:45 when they were having their lunch break. One of the out of school youth commented that “people come mostly around lunch time”. He further added that the centre was “free around ten in the morning when it’s just us the unemployed”. Although this user was responding to a question that sought to establish when the library was most busy, the noted trend was also observed in other centres in the village. For example, the infomidiary at Jeirah Internet Café reported that his clients, who were mostly students and workers, preferred to pay for quicker services because they had to go back to work.

Some workers brought personal laptops to access free Internet at the library. This in a way helped in addressing the challenge of having to go through the library system of pre-booking so as to access a computer for thirty minutes. In some cases these users transferred work processed elsewhere through a memory stick. Discussions with both the users and the infomidiaries revealed that such users mainly came to print application letters for jobs or schooling opportunities.

The visiting users on the other hand had no access to either laptops or memory sticks. They also mainly processed information that was related to agricultural support and other poverty alleviation programmes. This differed from the workers who photocopied and printed documents that were related to work and /or educational development.

6.6.2.3 The Visiting user community

The countrywide Kitsong Centres that were introduced as part of the Nteletsa II project were meant to link the rural communities with services providers and to save the communities the travelling time and cost. The public access centres in Letlhakeng also played this role. These centres cushioned the travelling factors in a similar way as the Kitsong Centres. The cushioning effect was mostly experienced by the visiting user community.

Before the advent of ICT public access centres in Letlhakeng, this user community had to travel an additional 140 km and two more hours and pay at least P18.00 more. This was because they travelled from Letlhakeng to Molepolole or even beyond for services like photocopying and passport photographs. The advent of ICT public access centres therefore also helped the delivery of social services to the visiting community. It was now easier and cheaper for these users to process and submit the needed information within the village (i.e. at the RAC).

The Nteletsa II Kitsong centres in some of the nearby villages also contributed to how these user communities accessed and used the ICTs available in the centres in Letlhakeng. For example, during the visits to Sorilatholo and Kaudwane, the researcher observed that centres experienced technical challenges that were related to lack of ICT skills of both the community and the people manning the centres. There were also challenges related to management of these centres. The potential users of these centres preferred to travel to Letlhakeng for relatively better services. The limitation in the centres in these nearby villages increased the demand for services at the centres in Letlhakane.

The visiting user community was the most adversely affected by the unreliable operations of the stand-alone centres in Letlhakeng. This challenge was worsened by

the fact that these users in most cases had time constraints. They also had no ICT skills and at times they even had no money to access the ICTs at the centres. The infomidiary at 3G Holdings reported that at times she helped by hand writing letters for users who could not afford to pay for typing services. A similar compassionate gesture from the infomidiaries may be seen in the fact that these stand-alone centres were also able to structure payment for the services offered according to the users' affordability.

At times the visiting users had to pre-arrange the visit with the infomidiary. For example, the participant that was followed as a special case from Kaudwane had made orders of the stationery that was needed by the Village Development Committee with the infomidiary at 3G Holdings. Making such a pre-arrangement had other multiple challenges. For example, at Kaudwane beMobile was the only telephone network that the community used. The network was as not good in some parts of the village.

Photograph 8: A welcome to Kaudwane board marketing beMobile

The lack of electricity in the neighbouring villages also posed another challenge for these users. For example, the Kitsong centres at both Sorilatholo and Kaudwane were powered through solar panels. The community mainly used these centres for charging

mobile phones and buying air time. It cost P2.00 to charge a phone until the battery was full

For example, the user that was interviewed at Ga-Mosotho Investment appeared to be highly inconvenienced by the fact that this centre was closed. He had travelled from a nearby village called Salajwe. They also preferred to go to quick “paid for” services where they also expected the infomidiary to be very knowledgeable and even considerate of especially the time constraint and other interrelated challenges associated with life from these villages.

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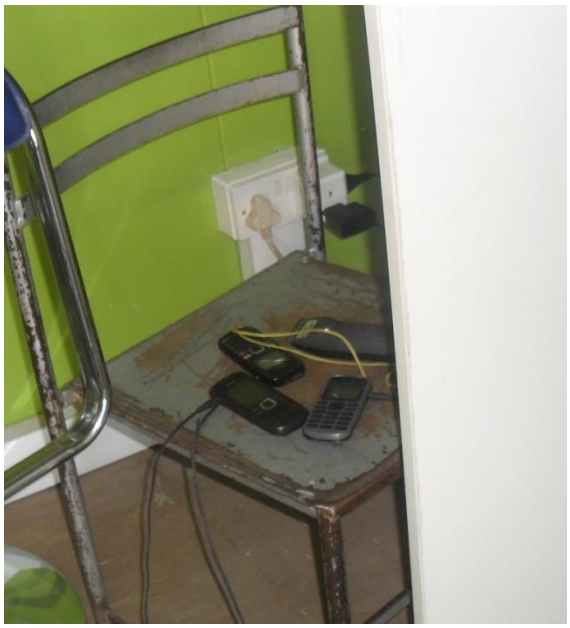

Photograph 9 Phone charging at Kaudwane Kitsong Centre

Photograph 10: Phone charging at Sorilatholo Kitsong Centre

Therefore to make a call, one had to find a way charging the phone and then struggle with the network. Travelling to Letlhakeng was yet another challenge because the road was bad and there was no dedicated public transport. The picture below shows users at Kaudwane, waiting to collect the phones after being charged. The other one holding a school leaving certificate also needed to photocopy it. She then had to plan to proceed to Letlhakeng because the photocopier at Kaudwane was out of order.

Photograph 11: Users waiting to collect mobile phones at Kaudwane

6.7 Conclusions and recommendations

The conclusion and recommendation drawn from this study present an optimistic view on the strategies adopted to bridge the existing digital divide. This hopeful conclusion was borne from theresearcher's interpretative approach (Dobson 2002; Maxwell 2013:43) and the adopted critical theorists' view that research has to help "find remedies to social ills" or have an "emancipatory interest" (Benoit 2007)

As seen in the first two chapters of this study, the digital divide displays two broad trends: the gap resulting from the absence of the technologies in the community; and the difference or gap in how the community uses or fails to use the available ICTs. This trend has been observed in this study. Despite the observed digital divide, the community used the ICT public centres to access social services; to alleviate poverty

and to keep themselves informed. The centres were helpful in supporting both business and delivery of social services in the village. This principal conclusion further translates into another conclusion that the community was optimistic on the advent of ICT public access centres as a strategy to bridge the digital divide.

The study therfore contributes knowledge needed to map out how ordinary citizens embrace global, regional and national initiatives to bridge the digital divide. (Davison et.al. 2000:6; O'Neil 2002: 94; Evusa, 2005:67; Akinsola, Herselman & Jacobs 2005: 37; Elijah & Ogunlade 2006: 55). The study's contribution towards mapping the digital divide importanatly shows that even in a small rural village, there are different tpes of divides that have to be understood from the given context. This study does not only showcase the content from Botswana but also also affirms the theory that the digital divide is a broad concept with complex interrelated factors. The fact that the study acknowledges a digital divide even though there are different types of ICT public access centres in the village further attest to the earlier assetion that the the gap cannot be bridge by one single solution.

In the second chapter of this study, the discussion on the different theories that related to the digital divide showed that the development of intervention strategies was in most cases guided by the implementing body's theoretical stance or philosophical position (Falconer & Mackay 1999: 287; Maxwell (2013:39). A similar trend is observed in the conclusion on the type of ICT public access centres in Letlhakeng. For example, the embedded ICT public centres emerged as driven by government's ethical concern and political responsibility for addressing social inequalities. The stand-alone centres on the other hand were motivated by the owner's economic drive. The services offered and the usage patterns therefore differed in line with the motive for establishing a centre. The role played by both the embded centres and the stand-alones as such demonstrate the fact that the challenges of access and usage of the technologies call for a triangulation of theories and for involvement of role players with different expertise. Although this author was referring to access and usage of especially Internet cafes in Tanzania, similar sentiments have

been observed despite the significant investment in supportive ICT structures in Botswana (Mogotlhwane, Khosrowshahi & Underwood 2013: 1054).

Although there was a general appreciation of the ICT public access centres in the village, the study observed differences in users and non-users as units within the information society. Even within the user community accessibility related to both affordability and availability of the technologies. The community's access and usage of the centres was influenced by both socio-economic factors (e.g. lack of skills, time, money and interest) and structural factors. The observed variations reflect what Norris (2001) noted as a continuation of the already existing social divide. For example, the out of school youth preferred free access at the library because they could not afford paid for services. However, the workers could not afford to wait for free services at the library because of time constraints. The usage pattern of people from neighbouring villages like Kaudwane and Sorilatholo further demonstrated how the factors related to poverty and harsh dessert conditions influenced the use of the centres at Letlhakeng.

There were also variations amongst non-user communities. For example, the school principal chose to be a non-user despite having the technologies. Other non-user were restricted by lack of access; lack of skill and at times lak of awareness of the need to use the available services.This finding resonate Selwyn's (2003: 99) condemnation of the general misconception that non-users of the technologies are purely the "have-nots.

The differences between the centres also related to the factors of funding and social stratum.For example, the only two stand alone centres that benefited from government support belonged to young males swith university degree qualification and also related to influential community members.

The recommendations drawn from this study are as inter-related as the factors that can be used to define the nature of the divide in the village. These are presented so as to inform policy and practice on the provision of ICTsservices that are needed to enable rural communities to access social services. The secondary intent is to contribute

Botswana specific scholarly knowledge in the discourse on the digital divide so as to help in the global mapping of both digital divide and the intervention strategies. it is for this reason that all the recommendations are loaded with inbuilt recommendations for further research so as to inform the proposed intervention.

It is also important to declare that although the recommendations emanate from the case of Letlhakeng, some generalisations emerged where a need for a countrywide action was observed.

Recommendation 1: Develop the infrastructure

Government should provide the rural communities with the needed ICT infrastructure. It is recommended that the government should revisit the interrelated national programs like the rural electrification; rural telecommunications and the “Connecting Communities” programmes to factor in the structural needs to access Internet.

This recommendation is borne from the observed horizontal divide or differences in availability of the ICTs in Letlhakeng. There is an implied need for a quantitative assessment of the ICTs that are available and accessible for use in terms of time and location. The quantification could adopt the the broad ICT Development Index (IDI) indicators of infrastructure, ICT use and the people’s skills (ITU 2009:1). ADocumentation on the specific sequential or historic development of the ICT landscape is also needed to build an understanding of what motivates the uptake and diffusion of the technology in Letlhakeng. Such a context based quantitative assessment would be in line with Corrocher and Ordanini (2002:12) and Barzilai-Nahon (2006) call for a comprehensive and flexible indeces which can be transferred to different contexts. .

Recommendation 2: Community Education

The development of the needed infrastructure and the provision of the needed technologies has to be coupled with the needed skills to use the technologies. This study recommends that government and the community should collaborate in the development of context specific programmes that could educate and inform the

community to effectively use of the ICTs. Such collaboration can be attained through continued community engagement in the management of especially the embedded centres which would then serve as techno-leaders for both the stand-alone centres and individual users.

This recommendation also has implications for research that will inform both content and delivery of the community education programmes. It further calls for research on the best practices in especially sustained community engagement in such programs.

The already existing community education programmes offered by the library also have to be restructured to cater for the different user levels.

Recommendation 3: Funding

It is recommended that government and private telecommunication service providers should support stand-alone centres with financial schemes and entrepreneurship programmes so that the centres become sustainable development vehicles called for in the literature review chapter (Prado 2009:12; Elijah & Ogunlade 2006:55; Duncombe & Heeks 2002: 66).The recommended support package should be inclusive of installation of solar energy so as to compensate for the erratic power cuts in the village. The support could be done through a programme that borrows from the youth grant model of helping young people initiate businesses. The proposed programme could also borrow from the current government and private sector partnership approach that was used for the development of the Nteletsa II Kitsong Centres.

Supporting stand-alone centres would address both challenges of poverty eradication especially amongst the youth, while also making the technologies available to the community.

As is the case with youth grants, the applicant would need to have the relevant skills and a viable business proposal. This would help address the need for skilled infomidiaries in the stand-alone centres. The continued support and mentoring by government and/ or private sector would also alleviate the unreliability that was observed in stand-alone centres.

Recommendation 4: e-Service

Government is encouraged to promote online submission of information needed for different social services. The Economic Intelligence Unit (2013:6) reports successful cases of such “electronically by default” government services in e-mature states like the UK. This study recommends borrowing some elements of the system to apply to selected social services at Letlhakeng. Such an expectation from government would compel the community to learn how to use especially Internet. Kozma and Wagner (2006:7) describe such a learning process as both instructive and constructive. The community would have no option but to learn (i.e. instructive) so as to address the social need (i.e. constructive). For example, none of the participants had used electronic banking because they had never come across a need for such a transaction.

Recommendation 5: Collate related research

This study recommends an establishment of a systematic framework of collating and synthesising ICT related research output and recommendations. Such a repository would inform the decision makers at national and international levels like the African Ministerial Conference on Science and Technology (AMCOST) on country level developments and experiences. It would also be of great help in guiding research development in the area.

Some of the recommended stakeholders in the development of such a framework could include the Ministry of Infrastructure, Science and Technology; the Botswana Collection Section at the University of Botswana Library and the SADC office that deals with ICT for development.

Recommendation 6: Research

This study recommends that research should be done on the varied thematic areas of what Nnafie (2002:12) refers to as “a complex and indirect sequence from use to impact”. For example, one study could focus on different issues related to the effects of free access of ICTs through the library. It is also recommended that the assessment of

the economic impacts or the contribution of especially the stand-alone centres to the community should be studied

The present study also recommends a study on the community's usage of mobile telephones and how this can be incorporated into building programs that help the community to access and use especially Internet for development.

6.8 A closing note on the study

This study symbolically ends at the time when Botswana ends the National Vision 2016 and progressivel ushers in Vision 2036. The new vision is built on an interrelated framework of the different theories and experiences gained from the just ending one. Similarly, the different theoretical views and lessons shared through out this study present a fountatin from which more research and services can be developed. It affirms earlier acclamations of the positive contribution of ICT public access centres even though the strategy is intrinsically intertwined with a broad range of socio-economic challenges.

The entire research process progressively contributes knowledge needed to address the existing paucity in literature in the area. The inter-related themes that run through the different stages of this study are also reflective of the inter-twined nature of the factors that influenced access and usage of ICTs in Letlhakeng.

Although the study is in agreement withbuttress UNDP (2005: 54) and BTA's (2006:5) observation that despite the technologies being made vailable to rural communities in Botswana, access and usage of the technologies is still very low, it t concludes on an optimistic note that the digital gap can be bridged. The study most importanatly demonstrates the community's willingness to be part of the information society. The vision will be realized and the gap will be bridged.

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APPENDIX 1 : PROOF OF PROPOSAL APPOVAL

From: Van der Walt, Thomas
Sent: 12 March 2012 09:32
To: 'LEBELE A A'
Cc: Ngulube, Patrick; Onyancha, Bosire (Onyanob@unisa.ac.za); Majanja, Mabel; Rachel Ojo (ojorr@unisa.ac.za); Luyanda Dube (dubel@unisa.ac.za)
Subject: RE: 4756-7589 Lebele proposal

Dear Ms Lebele

As you already know the Higher Degrees Committee of the Department of Information Science accepted your research proposal. This means that you can continue with the research part of the degree.

However, the Committee Members who attended the meeting were concerned about some issues and made valuable recommendations about possible improvement of the study. I will summarise these – as soon as I have received other comments from Committee Members I will discuss this with you:

1. The title: the feeling is that the title should be abridged to: Access and usage of Information and Communication Technology in Letlahakeng rural village in Botswana.
2. A question was asked about the general use of "ICT's" – what type of ICT's will be included in the study?
3. An important issue that was raised deals with the sampling procedures. The committee members feel that snowball sampling will not work with your particular population and to establish the access and usage to ICTs. I would like you think about this again and then let us discuss it. You also mention purposive sampling … the committee asked how this will be linked to snowball sampling?

Let us discuss these important issues, but in the mean time, I assume you are continuing with Chapter 2 and the rest of the study.

Kind regards.

Thomas van der Walt

APPENDIX 2: ETHICAL CLEARANCE FORM

SUMMARY SHEET FOR THE ETHICAL CLEARANCE OF RESEARCH PROPOSALS

The Higher Degrees Committees in Departments in the College of Human Sciences are reminded that they should make applicants and candidates aware of the policy for research ethics of UNISA available at:
http://cm.unisa.ac.za/contents/departments/res_policies/docs/ResearchEthicsPolicy_apprvCounc_21Sept07.pdf

In judging research proposals, Higher Degree Committees should comment on the methodological, technical and ethical soundness of the proposal and ask the applicant to complete the following summary sheets. Difficult or special cases should be referred to the Ethics Subcommittee of the College of Human Sciences under the chairmanship of Prof Kuzvinetsa Peter Dzvimbo, the Deputy Executive Dean: College of Human Sciences (Tel: 012 429 4067; E-mail: dzvimkp@unisa.ac.za).

CANDIDATURE DETAILS

A1 FULL NAME OF CANDIDATE

Ayanda Agnes Lebele

A2 ACADEMIC AND PROFESSIONAL QUALIFICATIONS

DLitt et Phil candidate

A3 TITLE

Mrs

A4 PERSONAL PARTICULARS

(a) staff number:	
(b) current address:	Botswana Embassy P O Box 22282 Code 1000 Addis Ababa, Ethiopia
(c) e-mail:	ayandalebele@yahoo.com ayandalebele@gmail.com
(d) telephone number(s)	+251 912440592 (mobile) +251 13715422 (office)

A5 PROJECT MANAGERS/COLLABORATORS

(a) Initials & surname:	Prof. T. B. Van Der Walt
(b) Contact details:	+27 12 429 6520
(c) Department:	Information Science
(a) Initials & surname:	
(b) Contact details:	
(c) Department:	

(a) Initials & surname:	
(b) Contact details:	

APPENDIX 3: REQUEST FOR RESEARCH PERMIT

Ayanda A. Lebele

c/oEmbassy of the Republic of Botswana
P.O. Box 22282
Code 1000
Addis Ababa,

Ethiopia

31st October 2012

The Permanent Secretary

Ministry of Infrastructure Science & Technology

Dear Sir/ Madam

REQUEST FOR RESEARCH PERMIT- A LEBELE: UNISA PHD CANDIDATE # 47567589

I write to request for permission to carry out a research project entitled "Access and usage of Information and Communications Technology through public access points in Letlhakeng rural village in Botswana**."**

I am a Botswana citizen, living in Addis Ababa, Ethiopia with family on a diplomatic assignment. I have enrolled as a Phd candidate at the department of information science, University of South Africa. My research proposal and literature review chapters have been approved by the University hence my request for permission to access the study site.

Please find attached a detailed research permit request form; a detailed summation of my professional background (CV) and the approved proposal that I am currently shaping into chapter one of my thesis.

Yours Sincerely

Ayanda A. Lebele

APPENDIX 4: RESEARCH PERMIT

Republic of Botswana

Ministry of Transport and Communications

Private Bag 00414, Gaborone, Botswana Tel: (+267) 361 2000 / 390 7230, Fax: (+267) 390 7236

REF: MT&C 1/13/9 II (20)

13th November 2012

Ayanda A. Lebele
c/o Embassy of the Republic of Botswana
P.O. Box 22282
Code 1000
Addis Ababa
Ethiopia

Dear Sir,

REQUEST FOR RESEARCH PERMIT – AYANDA LEBELE

The Ministry of Transport and Communications acknowledges receipt of your request to undertake research.

Your request to undertake the research has been **approved** and you can therefore proceed with your data collection exercise.

The Ministry will be grateful if you share the findings of the research so as to inform Government on the perception and areas of weakness or improvement that Government can amend to better their project implementation strategies.

Thank you and good luck with your studies.

Yours faithfully

Mabua L. Mabua
for/**PERMANENT SECRETARY**

LONG TERM VISION FOR BOTSWANA

we connect communities

APPENDIX 5: PARTICIPANT CONSENT FORM

[Form for research Participant's permission]

1. Title of research project: Access and usage of Information and Communications Technology through public access points in Letlhakeng rural village in Botswana.

2. I…… ……hereby voluntarily grant my permission for participation in the research project as explained to me by Mrs Ayanda Lebele (Phd Candidate, Library and information Science, University of South Africa).

3. The nature, objective, and implications have been explained to me and I understand them.

4. I understand that my name is requested only for research administrative purposes only and that all responses will be reported anonymously.

5. I understand and agree that participation will include an in-depth individual interview. I agree to interviews being tape-recorded. I understand that some of the responses have to be reflected on the guided interview schedule which will be taken by the researcher at the end of the interview.

6. I understand my right to choose whether to participate in the project and that the information furnished will be handled confidentially.

7. I am aware of the fact that the results of the investigation may be used for the purposes of publication or be presented during conference presentations.

8. Upon signature of this form, I will be provided with a copy.

Signed:

Research Participant …….. Date:

Researcher :…… Date:

Witness: ……. Date:

APPENDIX 6: INTERVIEW GUIDE FOR INFOMIDIARIES

Access and usage of Information and Communications Technology through public access points in Letlhakeng rural village, Botswana.

RESEARCH TOOL1: FOR INFOMIDIARIES

Context

This interview guide is for community members with primary responsibility for supporting users with public access to technology. (I.e.staff supporting users at public ICT centres, managers and owners of the centres.) In this study these people are referred to as infomidiaries.

The goal is to gather data that addresses the research questions 1: what ICT's and ICT services are available? ; Research question 2: who provides the services?; and Research question 3 : who are the users/ non users of the services and what promotes or inhibits access and use. The tool also gathers data on how the community access and use the technologies? (I.e. research question 4). Information collection will be conducted by the researcher.

Date:

_____

Time:

_____

Centre Name:

_____

Centre Type:

_____

Centre address:

_____

Opening hours: _____

Respondent's name:

_____

Gender: Male / Female Age Range: 1) 10-20 2) 21-303)31-40 4)41-50 5) 51 & above

Respondent's highest level of education:

_____

Language(s) most comfortable communicating (reading& writing): SetswanaEnglishboth English & Setswana any other

Respondent's job title/position:

_____

Years in current position _____Years working for current centre/organization_____

Current role title –

_____

A. MAY WE PLEASE DISCUSS YOUR JOB COMPONENTS

1. What would you say are four key responsibilities that you see as important to your role at the centre?

2. Please lets us go through a list of tasks below, then you indicate the estimate proportion of your job that you dedicate to these activities (whether or not technology is involved)?

1) Less than 10% 2) 10-25% 3) 26-50% 4) 51-75% 5) 76-100%

2.1 Helping people find information	
2.2 Helping people complete homework	
2.3 Helping people process job application	
2.4 helping people process applications for school/ college	
2.5 Creating or distributing information on health, educational or community development issues	
2.6 Providing technology training for users	
2.7 Assisting users with special needs (e.g. people with disabilities; specific community group; etc)	

2.8 Administration	
2.9 Other (please specify)	

1. Which of the activities listed above do you like the most? Please explain why?
2. Which of the activities listed above do you find most challenging? (Please elaborate your answer)

3. Has your centre conducted training or lessons in the use of the technologies that are available at your centre in the past year?

1. What were the key training needs for the users?
2. What did the users find the most difficult during their training?
3. As an infomidiary, what did you find most challenging in this training program
4. If you were to organise another training of this type what changes would you make and why?

4. How oftenyou help people to use the following tools or technologies? (Please let us go through the list of tools or technologies below then use the key provided to reflect the number corresponding to your answer in the box to indicate the frequency you assist users for each tool)

1) Daily 2) once a week 3) once a month 4) never 5) I don't remember	
4.1 a computer	
4.2 a telephone	
4.3 a scanner	
4.4 a fax machine	
4.5 a personal laptop	
4.6 Internet	
4.7 Online Public Access Catalogs	
4.8 other (please specify)	

5. Based on your experience at the centre, which of the tools do users encounter most problems when using? (Please elaborate the nature of the problem and how you address it)

C. NOW LET US TALK ABOUT YOUR TRAINING AND SKILLS LEVEL AS AN INFOMIDIARY

6. What kind of training have you received in the following areas – either formal (resulting in a degree or certificate) or informal (such as workshops or ad hoc coursework)? (Please let us go through the list of training areas below, then use the key provided to reflect the number corresponding to your answer in the box for each training level you have received)

1) Formal 2) Informal 3) None

	Training
6.1 Information repackaging (tailoring information to users' requirements)	
6.2 Customer relations	
6.3 Marketing	
6.4 Project management	
6.5 Advocacy and community engagement	
6.6 Organizational management	
6.7 Basic technology skills (such as office productivity applications)	
6.8 Use of the email	
6.9 Online searching	
6.10 Use of databases (eg online public access catalogue, commercial databases, etc)	
6.11 Other (please specify)	

7. How would you assess your IT skills in the following areas(Please let us go through the list of IT Skills below, then use the key provided to reflect the number corresponding to your skills level next to each skill)

1) Highly proficient 2) Proficient 3) Low skill level 4) None at all

	your skills level
7.1 General computer skills or computer literacy (opening programs, printing, etc.)	
7.2 General technology troubleshooting (dealing with frozen computers, jammed printers, etc.)	
7.3 General office productivity software use (basic use of word processing, spreadsheets, databases, presentations)	
7.4 Advanced office productivity software use (formatting, troubleshooting, etc.)	
7.5 General use of Internet tools (basic e-mail, web browsing, using online services etc.)	
7.6 Advanced use of Internet tools to send an email with attached files	
7.7 Advanced use of Internet search tools to make phone calls	
7.8 Using E-Government services (ie services provided by local and central Government, searching for legal acts, etc)	
7.9 Using Internet resources for economic activities (e-banking, e-trading,paying bills etc)	
7.10 Using Internet to accessHealth-related information and tools (online registration with health professionals, finding information on health and diseases, using online health services)	
7.11 Using online databases (online library catalogues, commercial databases to search and find content, etc)	
7.12 Development of Internet content (writing blogs, creating websites, using content management systems)	

7.13 Using social networking / Web 2.0 tools (using blogs, Facebook, Twitter, RSS, wiki, etc.)	
7.14 Participating in online chats, online discussion forums (posting messages to chat rooms, starting new discussions)	
7.15 YouTube or similar video/ music sharing system	
7.16 Other (please describe)	

1. For the tasks that your skills level is highly proficient and / or proficient, please elaborate how your skills level supports or challenges your role as the infomidiary.
2. For the tasks that your skills level is very low or you don't have the skill, please elaborate how your skills level supports or challenges your role as the infomidiary.
3. For the tasks that your skills level is very low or you don't have the skill,what are your plans for developing the skills?

D. MAY WE NOW DISCUSS YOUR VIEWS ABOUT ACCESS & USAGE OF ICT'S AT THE CENTRE

8. Based on your experience as an infomidiary

1. Are the users mostly male or female?
2. What is the most frequent age group? 1) 10-20; 2) 21-30; 3) 31-40; 4) 41-50; 5) 52 and above
3. What language are most of the users at the centre most comfortable communicating with?
4. What would you say is the employment status of most users at the centre?
5. How do most people come to your centre? (do they walk, use public transport, private car, etc)
6. How else would you describe the users of the centre that you serve as an infomidiary?

9. From your experience as an infomidiary, what occupation is most represented among the people who come to the centre? (Please lets us go through the list below then reflect the number corresponding to your answer in the box)

) Unskilled labour 2) Skilled labour 3) Professional or specialist 4) Manager 5) self mployed 6)Retired 7) Student 8) Other (please specify)

10. From your experience as an infomidiary, what sector do you think most users of the centres work in? (Please let us go through the list below then write the number corresponding to your answer in the box)

) Agriculture 2) Healthcare 3) Social services 4) Government 5) Non-profit 6) Construction r industry 7) Retail 8) Transportation; or communications 9) Tourism 10) Education 11))ther (please explain)

11. Which population group would you say hardly ever use or rarely uses your centre?

1. What do you think limits this group of people to access and use the technologies at the centre?
2. What interventions do you think would help to ensure that this group of people/ individuals access and use ICT services at your centre?

E. INFORMEDIARIES VIEWS ABOUT USERS COMMUNICATIONS AND INFORMATION-SEEKING BEHAVIORS

12. When do you have most users at the centre (i.e. when is the busiest period daily, weekly or monthly?)

1. Why are there most users at that time of the day, week or month?
2. Based on your experience as an infomidiary, what do you think keeps the users away from the centre during the least busy period?

13. From your experience as an infomidiary, approximately how often do you see users using the tools or services listed below? (Please let us go through the list of tools together, and then use the key provided to reflect the number corresponding to the frequency of use for each tool):

1. Daily 2) Weekly3) Monthly 4) Rarely 5) Never

	Frequency of use
3.1 Using public telephone	
3.2 Using photocopying machine	
3.3 Using fax machine	
3.4 Using basic computer programs such as word processing, spreadsheets, or power point presentations	
3.5 Sending or receiving email	
3.6 Using online resources for education (homework, studying, research, etc.)	
3.7 Accessing online information on health	
3.8 Accessing online information on business or work opportunities	
3.9 Accessing online educational information (distance learning, etc.)	
3.10 Accessing online Government information and services	
3.11 Accessing online information on culture or language	
3.12 Accessing online information on agriculture	
3.13 Obtaining online training on computers and Internet	
3.14 Accessing online community information	
3.15 Using online entertainment materials (such as movies, music, games)	
3.16 Making a bank transaction	
3.17 Looking for job information online	
3.18 Communicating online with friends, family, or colleagues (using yahoo messenger, Skype, Facebook,)	
3.19 Reading books online	
3.20 Reading newspapers online	
3.21 Making an online purchase	

.3.22 Enrolling for a course online	
.3.23 Other (please specify)	

1. Which of the services above are you concerned about the way it is used or not used at the centre?

2. How can the just stated concern be addressed?

14. Approximately how often do you encounter the following situations when users are looking for useful information to assist them in life or work – such as information on healthcare, agriculture, education, government services, business or work opportunities? (Please let us use the list of activities andthe key below to guide our discussion, and then write the number corresponding to answer in the box for each situation)

.. Always 2) Often 3) rarely 4) Never

14.1 Information they need is not available anywhere	
14.2 they do not know where to find the information needed	
14.3 they are not willing to pay the amount needed to access the information through the centre	
.4.4 Information needs to be repackaged for the users (e.g. interpreted or translated)	

1. How do you respond or assist when the users do not find the information they need?

2. How do you assist the users when the information they need cannot be accessed through your centre?

3. What is your experience with situations where the information that the users need has to be repackaged?

4. How do the users respond to situations where they have to pay for a service? Why?

5. If and when users are not able to pay or are not willing to pay for a service, how do you assist or resolve the situation?

F. INFORMEDIARIES VIEWS ABOUT USE OF ICT PUBLIC ACCESS CENTRES

15. From your experience working at the ICT public access centre what do you think is the most attracting element, tool or feature that attracts users to your centre? (Please explain how your centre can sustain this attraction)

16. On average, approximately how much time does a user spend on the computer during a visit to the centre?

) Up to 30 minutes; 2) 1 hour; 3) 2 hours; 4) 3 hours; 5) 4 hours; 6) More than 4 hours	

1. What category of users would you say spend an average of more than one hour on the computer during a visit to the centre?
2. From your experience as an infomidiary, which activity or tasks would this specific group of users be mostly doing on the computer during a visit at the centre?
3. What category of users would you say spend an average of 30 minutes or less on the computer during a visit to the centre?
4. What are your views about this specific group of users?

17. In your own opinion, why are other members of the community not using the information and communication technologies in your centre (i.e.please let us use the guide below in our discussion to tick factors that you think limit their usage?)

7.1they don't have a need for computers or the Internet

7.2 The Internet doesn't have what they need	
7.3 they use the technologies at their work places	
7.4They have the technologies in their homes	
7.5 They don't know how to use computers	

7.6They don't know how to use the Internet	
7.7 They are barred by cultural laws or practices	
7.8 Accessing computers and Internet at this centre is too expensive for them	
7.9 They don't know about the services	
7.10 I don't know	
7.11 Others(please specify)	

18. Do you think there is any law, cultural or community practice that denies or make it difficult for any group of people to use the services? (If so please explain)

19. Does the centre have any dedicated program for any special users? (E.g. user education, services for the blind, homework slots, farmer's forum, etc) (Please explain who the service targets and how it operates)

20. Which program or service in the village supports your service provision? (Please elaborate your answer)

21. Has the centre ever had any program guided or supported by Vision 2016 secretariat, ThutoNet or any arm of the Maitlamo ICT policy framework? If so, please explain stating which activities, who had organized that, when and what was the goal)

AS WE CONCLUDE OUR INTERVIEW

22. Please share your thoughts on how centre can best improve its services not only to promote increased usage but also towards realization of the national vision of "an informed and educated nation by 2016"?

23. Do you have any other information that you would like to offer on factors that promote or inhibit the Letlhakeng community to access and use ICT's that are offered through public access centres?

Thank you for taking time to participate in this study

APPENDIX7: INTERVIEW GUIDE FOR USERS

Title of research project: Access and usage of Information and Communications Technology through public access points in Letlhakeng rural village in Botswana.

Research Tool 2: Interview for users

The questions are mainly to guide a discussions that will enable gathering data on what services are available (objective 1); establishing the users/ non users (objective 3) ; how they use the facilities (objective 4) and what motivates or discourages them from using the available technologies (objective 3).

A. Please let us start with your views about ICT public access centre?

1. General questions about centres

1. What do you think is the primary role of an ICT public access centre?
2. What would you say is the role of the infomidiaries at these centres? (I.e. staff supporting users at public ICT centres, managers and owners of the centres)
3. According to you, what technologies or services do you think an ideal ICT public access centre should have?
4. Please elaborate how such technologies or services would help the Letlhakeng community to access social services or educational services.
5. Would you say there are any such ideal ICT public access services in the village? (Please explain which ones you would consider as ideal/ not ideal and why).
6. According to you, who are the main users of the ICT public access centres in the village? (i.e. briefly describe the type of users)
7. What do you think is the most attracting feature/ tool or service for the users?
8. Is there any specific group of people that you think never or rarely use public ICT access centres? Who are they and what do you think limits them from using the centres?

2. Personal views about ICT access centre(s) that you regularly use

1. Which ICT access centre do you prefer the most? (briefly explain what you like most about this centre and how you find it helpful or convenient for you)
2. At the centre that you regularly use, which tool(s) do you mostly use?
    1. How much time and money do you spend on these tools?
    2. What do you mostly do with these tools?

3. Where did you learn to use these tools?

4. How do you use this tool or tools to access for any economic, educational or social gains (ie what are your benefits from using these tools)

3. At the centre that you regularly use, which tool(s) do you rarely or hardly use?

1. Why do you hardly or never use the tool you just mentioned?

2. Do you ever get to see other people use these tools? (Please elaborate who uses this tool and for what?)

3. What would you suggest or recommend to the infomidiaries about tools that are hardly used (please give specific recommendations for specific tools that you know are hardly used)

3. Now may I have your views on usage patterns of the available ICT's

1. Which ICT access centre do you think is the most popular and why do you think most people like this centre?

2. Which technologies do you think are the most used by people at your favorite centre and why?

3. Which applications (email, Facebook, word processing, etc) do you think are the most used and why?

4. Based on your experience in using your favorite ICT public access centre, when do you think is the busiest period at the centre? (I.e when is the busiest period in the day, week or year). Why is it most busy at that time?

5. Are you aware of any government services that the community access through ICT public access centres? If yes, please elaborate more on the services. If not, which government services do you think the centre should provide access to?

6. **Views on how ICT access centre(s) help the community**

1. How does the ICT access centre that you use support the community in any of these social needs: (please elaborate your answers with examples from your personal experiences at the centre or any event/ program that you think the centre is supporting the community)

1. Educational needs

2. Local business/ economic activities

3. Health information

4. Job searching

5. Job creation

6. Agricultural information needs

7. Distribution of government information

8. Promotion of culture

9. Other social services like banking, paying for utilities, etc

10. As we conclude may I have your general views on

1. How the providers of ICT's through public access centre can help the community in the drive towards vision 2016 pillar of "an informed and educated nation"

2. How do you think the centre can best help especially unemployed and out of school youth to address the broad challenges of youth in rural communities?

3. Do you have any other information that you can share to offer more insight on how the community access and uses ICT's through public centre?

THANK YOU FOR YOUR PARTICIPATION!

APPENDIX 8: FOCUS GROUP DISCUSSION GUIDE

Title of research project: Access and usage of Information and Communications Technology through public access points in Letlhakeng rural village in Botswana.

F0CUS GROUP DISCUSSION GUIDE FOR NON-USERS

Context: This focus group discussion guide is for community members who are not users of the technologies that are available to the community through public access centres in Letlhakeng village.

The goal is to gather data that addresses the research question 3: who are the users/ non users of the services and what promotes or inhibits access and use. The tool also gathers data on how the available services can be improved. Information collection will be conducted by the researcher.

Instructions:

1. Please fill in the participant attendance slip below. Cut the page off and hand it to the researcher before the group discussion. You may keep the page with discussion guide questions if you wish to.
2. During the discussion, please answer the questions to the best of your knowledge. There is no right or wrong answer. I am interested in your views on the issues related to use and non use of ICT's that are available through public access centres.

Date: _____Time: _____Venue: _____

Community group /club affiliated to: _____

Male / Female

Participant name_____

Age Range: 1.10-20 2. 21-30 3.31-40 4.41-50 5.51 & above

Highest level of education: _____

Employment status: Employedunemployedself employedstudent other (specify)

Language(s) most comfortable communicating (reading& writing): SetswanaEnglishboth English & Setswana

any other

DISCUSSION TOPICS

1. General views about ICT public access centres

    1. May you please share your thoughts on what you think an ICT public access centre is?

    2. Have you ever been into any? (Please share your experiences)

    3. Do you think the centres bring any positive contribution in the village? (please elaborate your answer)

    4. What negative impact do you think the ICT public access centres have in the community?

2. In the next five minutes, please let us talk about people who use ICTs that are available through public access centres?

1. Who are the users?

2. What do you think they do at the centres?

3. What do you think they benefit or loose from using the centres?

4. Now let us spend the next five minutes talking about community members who do not use ICTs that are available through public access centres?

    1. Who are the non-users?

    2. According to you, why are some people not using the ICT centres?

    3. Now let us specifically focus on individual members in this group. Why are you not using the ICT centre? (allow each member gives her/ his own reasons)

5. Please now let us explore the potentials of ever using ICT's at the public access centre

1. What do you think would attract you or your friends into using ICT's at the public access centre?

2. What training would you need to enable you to access and use the services at the centre?

3. What kind of information would you like to access at the ICT's at the public access centre?

    1. Why that information?

2. How can the centre help you to access that information?

4. How do you think ICT public access centres can support you in your area of economic activity?

5. What other services do you think the providers of ICT's through public access centres should offer and how?

THANK YOU FOR PARTICIPATING IN THIS DISCUSSION GROUP.

YOU HAVE MADE VERY VALUABLE CONTRIBUTION.

APPENDIX: 9

LEBELE RESEARCH TOOL 5: OBSERVATION MAP

DATE	**PLACE**	**TIME**
Category of observed participant/ event		
What to find out:		
ICT's at site or in use		
Field notes:	**Key findings**	

Observation checklist

ICT facilities at the centre (what tools are there, how many in working condition, etc)
Location of centres
Peak times (busy hours or days)
Infomidiaries attentiveness & response
People using the ICT facilities
People who hardly come in (which population group not seen at the centre)
Nature of ICT activities
Economic activities in the region
Peoples' attitudes towards the centres (users and non users)
Challenges facing people's access and usage of the ICT's at the centre