

**An assessment of demand for Internet services at the community
of Nkowankowa in the Greater Tzaneen Municipality (GTM) in
Limpopo province**

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**Mini dissertation submitted in partial fulfilment of the requirements
for the degree**

of

Masters of development degree

in the

FUCULTY OF DEVELOPMENT STUDIES

School of Leadership

at

University of Limpopo Limpopo

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2011

ACKNOWLEDGEMENTS

Thanks to God the Almighty for His grace. My thanks go to my supervisor Dr T Moyo who worked with me tirelessly to make sure that the dream of having a Masters degree is realized. Thanks to the Department of Education, Health, Safety and Security and the Greater Tzaneen Municipality that allowed me to conduct this study within their jurisdiction. In particular, my gratitude goes to my wife Dolly and the children for their continuous support shown throughout the study. My special thanks to my friends for the encouragement they gave to me. I wish to thank the librarians in University of Limpopo for their support. Let the Almighty bless everyone who has supported me during this research project.

DECLARATION

I, Mashaphu Mosupje Moses, hereby declare that this dissertation submitted to School of Leadership at the University of Limpopo, Turfloop campus, in partial fulfillment of the requirement for a Masters degree in Development Studies has not been previously, in its entity or part, submitted for a degree at this or any other university and that it is my own work in design and execution and that all material contained herein has been duly acknowledged.

Signature----- date-----



ABSTRACT

Internet services can make a significant contribution towards the development of people both in the urban and rural areas. The study is focused on the demand for internet services in the community of Nkowankowa in the Greater Tzaneen Municipality (GTM) in Limpopo province. Internet services bring multiple opportunities such as information, e-mails, games, shopping, banking, and real time news. The study examined the nature of demand for internet infrastructure and services in the area. The study further explored strategies that may be cost-effective and affordable to internet users and to recommend strategies through which the municipality can improve internet service delivery. The use of internet services was also examined (i.e., what are internet services needed for)?

To understand these challenges and obtain in-depth information, both qualitative and quantitative research approach were used. The study population consisted of business owners (SMMEs), schoolmaster, students, and management in the municipal management committee, internet café owners, computer home users, police management and health management in Nkowakowa community in the Greater Tzaneen Municipality, selected through a purposive sampling method. These management workers are main role players in the use of internet services. A small sample of 40 respondents was selected based on the potential or likelihood that the respondents had same knowledge and interest in internet services. The researcher has selected the relative small sample because of the limited time frame. The findings reveal that Nkowankowa has a high shortage of internet infrastructure such as telephony. The entire Section C does not have a landline infrastructure and the only possibility is mobile connection, which is expensive. The internet cafés stand at 2 against the population of 30515 (Greater Tzaneen Municipality IDP: 2005-2006:12). The community depends on those two internet cafés.

Learned individuals and business have afforded to connect. Others depend on internet services from their institutions, work place, and internet cafes. Challenges of the infrastructure unavailability such as telephony have a negative impact on utilization. It was recommended that the Municipality should partner with NGOs and community based organizations to deliver internet and related services to the community.

ACRONYMS AND ABREVIATIONS USED

MPC- Multi-Purpose Centre

ICT-Information Communication Technology

FTP-File Transfer Protocol

COMESA-Common Market for Eastern and Southern Africa

ISP-Internet Service Provider

GTM-Greater Tzaneen Municipality

TMPC- Tivhumbeni Multipurpose Centre

NAP-National Accessibility Portal

ITU-International Telecommunication Union

YIP-Youth Internship Programme

NGO- Non Governmental Organization

USA-Universal Service Agency

SNO- Second National Operator

ADSL- Asymmetric Digital Subscriber Line

OPA-Online Publishers Association

IDP-development plan

SMME-Small and Medium Enterprise

APC-The Association for Progressive Communications

NRF National Research Foundations

DTI- Department of Trade and Industry

ONP- Online News Portal

PIT-Public Internet Terminal

DAI- Digital Access Index

ISOC-ZA- Internet Society of South Africa

SITA-State Information Technology Agency

POP-Post Office Protocol

IP-Internet Protocol

WAP-Internet Service Point

PIT-Public Internet Terminal

LIST OF TABLES

Table 1. Use of internet services by age	46
Table 2. Use of Internet services by gender	48
Table 3. Use of internet services by education	49
Table 4. Internet access by distance	51
Table 5. Computer training	62
Table 6. Respondents who used and never used the internet services	66
Table 7. Respondents that used and never used the internet cafes.	67
Table 8. Awareness of the existence of internet cafes	69
Table 9. Services commonly used from the internet services	71
Table 10. Ratings of internet services offered at home and institutions.	72
Table 11. Necessity of internet services.	75
Table 12. Frequency of using the internet services	76
Table 13. Respondents who have e-mail addresses and those who do not have	78

LIST OF GRAPHS

Graph 1. Use of internet services by age	47
Graph 2. Use of Internet services by gender	48
Graph 3. Use of internet services by education	50
Graph 4. Internet access by distance	51
Graph 5. Computer training	63
Graph 6. Respondents who used and never used the internet services	66
Graph 7. Respondents that used and never used the internet cafes.	67
Graph 8. Awareness of the existence of internet cafes	70
Graph 9. Services commonly used from the internet services	72
Graph 10. Ratings of internet services offered at home and institutions	73
Graph 11. Necessity of internet services	75
Graph 12. Frequency of using the internet services	76
Graph 13. Respondents who have e-mail addresses and those who do not have	78

TABLE OF CONTENTS

Acknowledgements	1
Declaration	2
Abstract	3
Abbreviations and acronyms	4
Tables and graphs	5
CHAPTER ONE: Introduction and background	9
1.1 Introduction	9
1.2 Problem statement	10
1.3 Aim of study	10
1.4 Objectives of study	10
1.5 Research questions	11
1.6 Definitions of concepts	11
1.7 Significance of study	12
1.8 Conclusion	13
2. CHAPTER TWO: Literature review –internet services and community Development	14
2.1 Introduction	14
2.2 ICTs and development: theoretical perspective.	14
2.3 ICTs in South Africa: an overview of trends	17
2.4 Demand for internet services: evidence on the key determining factors	23
2.5 Review of evidence on determinants of demand for internet services	29
2.6 Challenges	31
2.7 Opportunities	33
2.8 Effort to lower broadband costs	34
2.9 Synthesis	35
3. The literature gaps	35
3.1 Conclusion	36
CHAPTER THREE: Research methodology	37
3.1 Introduction	37
3.2 Research design	37
3.3 Unit of analysis	37
3.4 Research methodology	38

3.5 Area of study	38
3.6 Secondary data sources	39
3.7 Primary data	40
3.8 Population	40
3.9 Sample selection	40
3.10 Data collection methods	41
3.10.1 Questionnaires	41
3.10.2 Interviews	43
3.10.3 Observations	43
3.11 Data analysis methods	44
3.12 Ethical issues	44
4 CHAPTER FOUR: Presentation, analysis and interpretation of findings	46
4.1 Introduction	46
4.2 Use of internet service by age	48
4.3 Use of internet services by gender	48
4.4 Use of internet service by education	49
4.5 Internet access by distance	51
4.6 Computer availability at home or at work place and internet connection	52
4.7 Computers accessibility by employees	55
4.8 How internet services help individuals and organizations.	55
4.8.1 Home users	55
4.8.2 Hospital	56
4.8.3 Students	57
4.8.4 Business	57
4.8.5 Police station	58
4.8.6 Municipality	59
4.8.7 Schools	59
4.8.8 Internet café owners	60
4.9 Reasons for not being connected	61
4.13 Reasons for non-use	68
4.15 How respondents came to know about the existence of Internet cafes within their area	71
4.16 Services offered at the internet cafes	71

4.19 Cost of internet services	74
4.22 Exposure to internet services.	77
4.23 Assistance with costs	77
4.25 Reasons for not having e-mail addresses	79
4.26 E-governance, effective and efficient way of bringing the services	79
4.27 Contributions of municipality to make e-governance work	79
4.28 Contribution by the municipality to increase accessibility among community members	79
4.29 Internet awareness programme	80
4.31 Advertisement of goods on the internet	80
4.32 Internet bank transaction.	80
4.33 The reason for not doing internet bank transaction	80
4.34 Challenges.	80
4.34.1 Internet café owners	80
4.34.2 Municipality	81
CHAPTER 5: Summary, conclusion and recommendations	82
5.1 Introduction	82
5.2 The state of internet service in the area	82
5.3 The purpose of internet services to institutions and individuals	83
5.4 Key factors that determine demand	83
5.5 The role of the municipality	86
5.6 Conclusions	87
5.7 Recommendations	88
5.8 Recommended area for further study	89
REFERENCES	90
ANNEXURES	92
ANNEXURE 1: QUESTIONNAIRES	92
ANNEXURE 2: MAPS OF THE AREA	107

CHAPTER ONE

Introduction and background

1.1 Introduction

The use of Information Communication Technology (ICT) in South Africa is increasing and plays an important role in development. Not only do urban communities use such services, but rural populations also need these technologies for a number of reasons such as access to information, marketing, and others. According to Barnes and Huff (2003:79) “the internet has many potential applications, including e-mail, games, shopping, banking and real time news”.

In South Africa, the challenge is that access to ICTs is still limited for most rural populations. According to a case study conducted by Gillwald (2001:5), the distribution of telephony service in South Africa continues to reflect the highly uneven development of the infrastructure of the past, with 18 percent of black households and 82 percent of white households having telephony service. The report agrees with the Bridges Report when it says, “those without access are mostly rural, black and coloured farm worker households who cannot afford” (<http://www.bridges.org/publication.htm>).

In response, the government has introduced Multi Purpose Community Centers (MPCC) in underserved rural and urban centers. Some of these centers have internet, telephone, fax and radio services. According to the Limpopo Province MPCC Strategy, these centres will provide government services such as information, welfare, home affairs, small business advices and health services. In such centres, public information terminals as well as computers, telephones, and faxes in a tele-centre would also be provided (Limpopo Province MPCC Strategy, 2006:07-08).

The study focuses at Nkowankowa Township, which is located in the Greater Tzaneen Municipality (GTM) in Limpopo province of South Africa. There is only one MPCC and very few internet cafes that offer internet services to consumers in this area. The MPCC offers only training, but it is not open for public consumption. Shortages of internet infrastructure, services, and distance remain a challenge to the competent internet users. The above challenges have prompted the researcher to conduct this study.

1.2 Problem statement

Nkowankowa students, business and other competent internet users are travelling long distances to access internet services. Internet services are cheaper during the night and expensive during the day. While internet services should be cost-effective, they tend to be expensive for the consumers because they are bound to use them during the day and to pay traveling costs to access them. Gillwald reveals that the differentiation in internet access and services between rural and urban households in South Africa remains high, with 64 percent of urban households and only 9 percent of rural households (Gillwald, 2001:5).

According to Simpson, many rural internet users who do not have a local POP (Post Office Protocol) also take advantage at low, capped STD (standard) rates after 6 or 7pm and dial into ISPs (Internet Service Provider) in nearby regional centers at lower per-hour rates (Simpson, June 2001:16).

Nkowankowa is a township, but there is a big problem in accessing internet services in most of the areas. Applications for landlines take long to be considered. There are few landlines and in some areas there is no single internet infrastructure. Landlines are weak and make internet services weaker or poorer to those who managed to have access to the internet services. Internet access is generally a problem to the Nkowankowa residents.

1.3 Aim of the study

The aim of this study is to assess the demand for internet services in the Nkowankowa community in the Greater Tzaneen Municipality in Limpopo province and to establish the underlying reasons for poor and lack of internet service delivery in some areas within the Nkowankowa community in the Greater Tzaneen Municipality.

1.4. Objectives of the study

- (a) To investigate the demands for internet infrastructure and services;
- (b) To explore strategies for more cost-effective and affordable internet services; and.
- (c) To recommend ways in which municipality can improve internet service delivery.

1.5 Research questions

- (a) What is the nature of demand for internet services in the Nkowankowa community?
- (b) What does the community need internet services for?
- (c) What is the role of the Greater Tzaneen Municipality in the development of Nkowankowa community regarding internet service delivery?

1.6. Definitions of the concepts

Sustainable development

According to Todaro and Smith, sustainable development refers to "meeting the needs of the present generation without compromising the needs of the future generations" (Todaro and Smith, 2005:471). Todaro and Smith agree with the Brundtland commission in their definition of sustainable development as an "economic and social development that meets the needs of current generation without undermining the ability of future generations to meet their own needs" (WCED, 1987:01).

Digital divide

According to Dyson, digital divide is the division between those who have access to ICT and are using it effectively and those who do not (Dyson, 2006: 1). Arrison agrees with Dyson, that "digital divide refers to the gap between those who have access to technology and those who do not" (<http://www.heartland.org.infotech-news.org/article/13330/why-Digital-Dividers-are-Out-of-Step.html>).

Internet services

According to McBride, internet is a network of computers, which can communicate and share data with each other (McBride, 1998:02). He further claims: "The internet lets the computer users share files, send and receive messages and internet users are able to communicate and share knowledge through this kind of network" (McBride, 1998:02).

According to Brian the internet or net is a vast collection of interconnected computers spread across the globe providing almost any subject imaginable and provides access to vast amount information through web pages (Brian, 2002:8). Hodder and Stoughton add, "the network can be local area network (LANS) which links the computer in the same building or wide area networks (WANS) which links the computer by telephone lines, to other computers anywhere in the world (Hodder & Stoughton, 2002: 7)". Berry

& Hawn define LANs (Local-Area-Networks) as a special type of network that connect users who are near each other, usually in the same building and WANs as larger networks called Wide Area Networks (WANs) (Berry& Hawn, 2001:104).According to Cashmen series, Internet offers services such as World Wide Web, e-mail, FTP (File Transfer Protocol), Telnet, newsgroups, mailing lists, chat rooms, instant messaging and portals (Cashmen Series, 2000:7).

Information Communication Technology (ICT)

Internet is one of the services of ICT. According to Common Market for Eastern and Southern Africa (COMESA), ICT refers to the technologies, including computers, telecommunications, processing, transportation and delivery of information and communication services to the users

(<http://www.comesa.int/ict/policy/doc/ICT%20Policy%20Part%201/view>).

Access

Access means getting information from the computer (Berry & Hawn, 2001:9).

Demand

According to Bantjes, Kredachi and Kriel demand means something in need and consumers are ready to pay the cost and manage it (Bantjes, Kredachi and Kriel, 2005: 28).

Assessment means to make a judgment about a person or situation after considering it (Longman Active Study Dictionary, 2004: 40).

1.7. Significance of study

After careful investigations, the sources that the researcher explored reveal that there is no single research that has been conducted in this area in the past on the topic under study. How will the study help? Since there is no indication of the research conducted about the topic in this area, the study will help to bring awareness of the nature of ICT services in the community of Nkowankowa and is also expected to inform the municipality, business and private sectors (NGOs) about the state of affairs regarding the ICT services at Nkowankowa community. The study will again serve as the

awareness of internet services among the residents of the Nkowankowa community. The research will also serve as groundwork for further research on the role of ICTs in development.

The study will add to finding solution for insufficient internet infrastructure and poor internet service provision within the parameters of Nkowankowa community. The establishment, increase and quality of internet services shall enable business growth and reduce costs, improve the equality of learning, make communication easy and quick and generally make life easier. It is the prerogative of the residents to access basic services with ease or without any difficulties. It is against the above-mentioned background why the study is considered significant, particularly to the Nkowankowa community.

1.8. Conclusion

There is no doubt that ICTs play a crucial role in the lives of people. ICTs are important in both social and the world of economy. The use of ICTs can better the livelihoods of people in various sector of the community. The study is expected to inform local government, business, and private sectors (NGOs) as to whether there is a need or demand for internet services at Nkowankowa community and also to raise awareness of internet services within the residents of this community. The researcher also hopes that the study will contribute towards a solution with regard to the problem of insufficient internet infrastructure and poor internet service provision within the parameters of the Nkowankowa community

CHAPTER TWO

LITERATURE REVIEW: INTERNET SERVICES AND COMMUNITY DEVELOPMENT

2. 1 Introduction

This chapter reviews the literature on the question of demand for internet services. It focuses on how ICTs impact on development and factors that determine the demand for such services. The chapter will further explore the ICTs usage, evidence on the ground, and the digital divide between urban and rural communities.

2.2 ICTs and development: theoretical perspective

What is development? The Brundtland Commission defines sustainable development as “economic and social development that meets the needs of current generation without undermining the ability of future generations to meet their own needs” (WCED, 1987:01). Internet services enable community to attain both economic and social needs.

People are able to communicate and generate money through internet services.

According to Chigona et al (2006:02), human development is about creating an environment in which people can develop their full potential and lead productive lives in accordance with interests and people are seen as the actors of development.

ICTs bring development such as information processing, storage, and transmission. Technological developments affect every industry, every service, and penetrate society as a whole. Development can be achieved in a country that transforms into an information society. What kinds of developments do ICTs services bring in the lives of people? Internet is rapidly becoming the most important source of information for business, academics, public and industrial users. Internet services have transformed the way business used to work and can also help tertiary students in education and research. Many people, including business, use e-mail to communicate and for bank transactions. ICT services can contribute towards job creation and the national income of the country. In the light of the above information, the demand of ICTs services is unquestionable.

According to Chapman and Slaymaker, “ICTs offer great potential in increasing the flow of public good type information such as whether forecasts, basic information on soils, cropping techniques, market prices and food safety” (2002:18). ICTs could be used

successfully to minimize the amount of information to transform the poor rural communities. One cannot overlook the capacity of ICTs to transcend physical distance and to provide communication between the extended communities and integration with wider social and economic networks. ICTs also offer unprecedented information storage capacity.

According to the Netsurit Survey Research Report, about half of 2200 SMMEs have reported e-mail as their primary use of the internet while a third cited banking as their primary online activity (Argaez, 2000-2007:3). It is crystal clear that people are in demand for ICTs and are starting to realize the advantages that are brought by the Internet services. Business people use internet services for communications and banking. They develop business customer contacts, find out the price of goods, supply stock, and find out shopping schedules or to liaise with banks for financial transactions. These are the real developments brought by internet and they are irresistible to ignore.

Small businesses are given an opportunity to advertise goods to customers. According to the South Africa Yearbook, small businesses can narrow the gap between the business and its customers to interactive e-mail and business owners can advertise goods on the internet, receive orders via e-mail and then post goods to the customers (2006/2007:138). The online business is becoming apparent. Business people are taking the advantages of internet services to advertise their goods worldwide. Franchising has become easier with the recent technology. ICTs help the poor to stay informed and to make informed choices and decisions. According to Chapman and Slayman, donors increasingly recognize the importance of making markets work for the poor and attention to information and communication process is of central importance in this respect (2002:7).

Online submissions of tax returns are prevalent these days. According to Computer South Africa (1999:03), SARS used R8m in a project to upgrade IT back-up systems at the end of 2007 and by January 2008, the majority of the South Africans were also filling their income taxes electronically. South Africa was following the footsteps of the USA, which according to Marchionini et al, 39.5 million Americans filled their 2001 income taxes electronically in 2002 (2003:26). The majority of the South Africans are starting to fill their income taxes electronically. If many people submit their tax returns through the

use of online services, these can minimize long queues at the SARS offices. Online submissions reduce the traveling costs and hours waiting to be helped.

People demand Internet services for multiple opportunities. According to Barnes and Huff, “the internet has many potential applications, including e-mail, games, shopping, banking and real time news” (2003:79). The functions of the internet may be briefly described as communication, social, economic, commercial and information agent. Obama used internet services as one of the ways to campaign his presidential elections and won. He sent messages to millions of people through the internet services. As indicated by Barnes and Huff, Internet services also give advantages for payments, banking and investment industries worldwide (Barnes and Huff, 2003:79).

Bradley adds that the purpose of networks is to “help businesses and their advisers obtain the information they need to make better decisions” (2000:104-105). Network-links help business to grow. According to Herzberg (2003:53), the use of secure and convenient mobile personal devices could revolutionize the payment, banking and investment industries worldwide. Individuals can bank, pay and invest through the use of cell phones. This saves time and money for transportation. There is evidence of internet usage and growth, but the fact remains that a huge gap between the urban and the rural, the rich and the have-nots still exists.

With ICTs, rural communities can acquire the capacity to improve their living conditions and become motivated through training and dialogue with orders to a level where they make decisions for their own development (Bait 1998:30).

ICTs can empower rural communities and give them a voice that permits them to contribute to the development process. Farmers could promote their products and handle simple transactions such as order over the web. It is a cheaper and faster to trade online than on a paper-based medium.

ICTs are demanded for educational research purposes. Gillwald reveals that academic internet access has provided access to most research and tertiary education institutions in South Africa, as well as to more than 200 schools (Gillwald, 2001:30). Internet services enable students and individuals to conduct online research from the internet

services. It will be difficult for students, individuals, and organizations to conduct a research without internet. McDonald adds, "Experience with the internet will leave students better equipped to cope in our increasingly complex society" (McDonald, 1997:16).

ICT is enriching the world with social information and the knowledge of economy. ICTs could play a major role in empowering communities with rich knowledge that serves to reduce poverty in communities, particularly the poor rural communities. The use of ICTs in rural communities can acquire the capacity to improve their living conditions and can be pragmatic solution to rural development.

2.3 ICTs in South Africa: an overview of trends

Usage

The level of usage is an important measure of internet demand. The number of users determines the types of resources and the amount of information, quality and quantity of services required. It is important for people to make use of the information for their livelihoods. ICTs provide a pool of information and people must make better choices to better quality of their lives. ICTs improve the efficiency of information system and provide better quality of data.

Besides the digital divide that exists between communities, urban and rural areas and between individuals, the number of internet users continues to grow. Gillwald (2001:30) indicates that the number of South Africans gaining access to the internet through corporate networks linked to the internet via high-speed digital leased lines continues to grow rapidly and in November 1998, there were 60 000 corporate users and by the end of 1999, the number of corporate users in South Africa was approximately 1.040.000. The number of internet users continues to grow. Growth in figures or numbers of internet users is a signal of internet services demand. People seem to show high response to internet services in the country. The number of internet users is appealing for more internet infrastructure, as users and infrastructures should tally.

The Online News Portal survey confirms that internet usage in Africa, including South Africa is growing faster than any other region in the world, internet users include Egypt

with 5million users, South Africa with 3,6 million users, Morocco with 3,5 users and these numbers exclude internet café users (www.digital-m.co.za/seo-blog/2006/05/internet-usage-surges-in-africa.html). The increase in ICT infrastructures could cater for the increasing number of internet users.

The Online News Portal survey continues to show very clearly that the rapid growth of internet users will eventually be reflected in an increased demand for online purchasing and the growth of E-commerce in general and that internet usage in South Africa is growing faster than any other region in the world (www.digital-m.co.za/seo-blog/2006/05/internet-usage-surges-in-africa.html). Online business is booming. People use online services for shopping and selling. Online services could probably increase the national income of the country. Internet growth will eventually bring development opportunities and economic growth that result in job creation.

Goldstuck predicts that broadband users will double to about 800,000 users by the end of 2007 (Thomas, 2007:1). Internet services in South Africa have the ability to grow and the high figure predicts the high demand of internet services. The challenge is that the number of internet users should be in proportion to the internet resources at present. The possible solution is to find means and ways of increasing internet services and infrastructures. According to Argaez, 3,1million South Africans had access to internet at the end of 2002 and growth in internet users was approximately 7% (2004:03). The number of people who have access to the internet services continues to grow.

There is a tremendous growth of the number of internet users. ITU shows that from the year 2000 to 2006, the number of internet users increased from 2.400.000 to 5.100.000 in 2006, and this accounts for 10, 3% growth of internet users (ITU, 2004:3). The possible reasons may be because people are starting to realize the benefits accrued by the internet services or more people are being trained along the computer line or the marketing skill has improved.

There should be a balance between demand and supply side. The number of ISP also kept on growing as the demand increases. Gillwald (2001:9), discovered that, by the end of 1998, there were 120 ISP with 1.040.000 subscribers/users and by the year

2000, there were 150 ISP's with over 1.8 million subscribers/users. Quality, delivery and efficiency of services will determine usability, creativity, and flexibility.

Online business is growing at a fast rate. The survey by Goldstuck of World Wide Worx shows how people are starting to show a great interest in using internet services for buying and generally how internet services impact on the economic growth of the country. He says: "Goldstuck reports that growth in online retails is expected to grow by more than 35% this year (2007) after growing at 35% this year after growing at 33% in 2006" (<http://netucation.co.za/is-it-worth-selling-your-product-online-from-south-africa>). The survey continues to show that, the total spend of online retail is expected to reach R929million up from R688million in 2006 (<http://ramonthomas.com/2007/10/is-it-worth-selling-your-product-online-from-south-africa/>). The above report further predicts that combined sales for FlySAA.com, Mango, Kulula.com, 1Time and Nationwide Air in online ticket sales is expected to reach R3 billion, which is about 3 times the rest of the online retail segments put together (netucation.co.za/is-it-worth-selling-your-product-online-from-south-africa/). People are buying flight tickets from online services. The usage of internet services is increasing and these contribute towards increased economic growth. The online business growth will ultimately contribute to the national income of the country.

The number of South Africans who are gaining access to internet services is growing. The possible increase in internet users may be linked to an increase of computer training, advertisement of internet services by the media, social and economic reasons. Rural communities are often left behind with regard to the use of ICTs. They are often seen as information poor and lack access to information that is important to their lives and livelihoods. Access to information should remain a key concern for information and technology drivers to address. Information and communication technology has the ability to help the rural poor to find markets for their production, as most rural communities depend on agriculture for their livelihoods. In fact, knowledge that is well directed has the ability to transform the lives of ordinary people, particularly the rural poor. Quality and quantity of information available to the poor can significantly affect production and livelihood decisions. As technology grows, the digital divide widens and rural communities are left behind. Rural communities are often diagnosed as suffering

from lack of information especially relating to “the functioning of markets and market opportunities” (Chapman and Slaymaker, 2002:24).

ICTs could be used more favourably to bridge the information gap between the haves and the have-nots, between urban and rural people. To achieve these ends, perhaps, different types of ICTs should be considered, particularly those that are inclusive of rural areas such as community radio; however ICTs such as internet have a lot of potential information and leave a potential user with many choices. Illiterate individual farmers may prefer information over the radio whereas literate individuals may prefer to access information over the internet. The challenge with the internet is that only trained or oriented people with a certain level of education can operate internet services. Variations of ICTs should be made available to ensure that even the disadvantaged groups can find a way of gaining access to and make informed choices relevant to their livelihoods.

Mobile phones

Cellular industry is booming in South Africa. The South Africa Yearbook reports (2006/2007:136) that South Africa has witnessed tremendous growth in the cellular industry. South Africa has three major operators, namely, Vodacom, MTN and Cell C. Vodacom provides a service to millions of customers in South Africa. According to the Yearbook, Vodacom connected its 20 millionth subscriber in May 2006 in South Africa and MTN received a 55% year-on-year growth in subscribers across all its operations (2006/2007:137). Subscriber numbers to Vodacom and MTN are growing tremendously in South Africa. The growth of these two cellular industries may increase the possibilities of mobile internet connection in the country.

Gillwald (2001:16) reveals that South Africa’s market has one of the most rapid take-ups of mobile cellular telephony in the world and that the opportunities for mass internet access via this medium are a reality, as a single mobile phone with WAP/WIP capability has the potential to allow the mass user base instant internet connectivity. Mobile telephones show high level of growth, which gives an opportunity for internet connection, and ultimate internet usage growth and demand.

Bridges publication report (2004:6) indicates the initiatives to use wireless connectivity to connect the primary health care facilities and to provide the ability to access data via mobile devices. Mobile telephone is a solution to internet connectivity to primary health care facilities. Once the primary health facilities are connected, they will be able to use internet's multiple opportunities such as online ordering of medicines.

Many people have the opportunity of mobile internet connection. The challenge is that not all cell phones have the ability to connect to the internet. Mobile modems are also expensive. Internet world stats show that the introduction of internet and multimedia services via 3G-mobile technology has led to a market increase in data traffic (Argaez, 2004: 5). Besides the cost of mobile phones with internet features, the mobile internet connection is growing. The possible reason maybe that cell-phones are a portable, easy and affordable way to communicate. The constraints that can be realized by cell-phone connectivity are that the majority of people in South Africa are not able to afford it. Cell-phone connectivity is expensive. Cell-phones with internet features are also expensive. While cell-phones are trying to reduce the gap of digital divide, only those who earn a good salary can foot the bill.

Digital divide

Digital divide is one of the determining factors of demand for use of ICT services and discourages the rate of penetration in the country. According to Dyson (2006:1), the digital divide is the division between those who have access to ICTs and are using it effectively and those who do not. Arrison agrees with Dyson (<http://www.heartland.org.infotech-news.org/article/13330/why-Digital-Dividers-are-Out-of-Step.html>), when she says that "digital divide refers to the gap between those who have access to technology and those who do not". In most cases, certain categories of people are able to benefit more from these recent developments than others. Internet developments benefit only those who can afford them and the poor, particularly the rural poor are left in behind.

There are various and possible reasons for existence of digital divide. It is obvious that knowledge gaps and information poverty are the results of a growing digital divide and relate to the unequal distribution of technical knowledge. Knowledge gaps and

information problems contribute to poor development. Information should remain accessible and be shared amongst communities. According to Chapman and Slaymaker, current debates on digital information disparities over-emphasize the importance of global knowledge sharing and under-estimate the importance of local knowledge sharing (2002:24). Members of the community should share important information or knowledge that is relevant for their livelihoods.

According to Payton (2002:89), “various research results have revealed that digital divide is due to a combination of factors including income, age, education, policy implementation, technology optimism and underrepresented minority communities”. The level of income, education, age, police implementation and the underrepresented communities may become barriers towards internet services usage. Indeed one cannot be able to use internet services without a certain level of education since English is a precondition to operate computers. Again, internet connection and maintenance of internet services require a certain level of income. In fact, with a lower income, it is difficult or rather impossible to connect.

Underrepresented communities are neglected. The political scenario in the country requires government officials who are competent to make sure that services are delivered to people in order to bridge the digital divide. An effort should be made to address inequitable access to information in order to make markets work for the poor. Concerted effort is necessary for rural development. Private sectors and technology drivers should be engaged in pursuit of rural development goals.

The digital divide did not spare even people living with disabilities. The research report conducted by the National Accessibility Portal, discovered that up to 12% or approximately 4 million South Africans are neglected of their wider social needs and this has resulted in severe isolation, reduced quality of life, economic and social marginalization of people with disabilities and their families, and above all it indicates that many people with disabilities suffer abject poverty and do not have access to information and services that could empower them (1996-2005:1). The re-balancing of infrastructure is paramount, as the present infrastructure that exists does not cater for persons living with disabilities.

Gillwald (2001:5) reveals that the distribution of telephony service in South Africa continues to reflect the highly uneven development of infrastructure of the past, with 18 percent of black households and 82 percent of white households having telephony service, the universal access, measured as 30-minute walk to the nearest phone and the differentiation in access and services between rural and urban households remain high, with 64 percent of urban households and only 9 percent of rural households. The situation on the ground has not yet changed. The digital divide still exists between blacks and whites, the urban and the rural, the rich and the have-nots. In confirmation, Bridges report says, “those without access are mostly rural, black and coloured farm worker households who cannot afford” (Gillwald, 2004: 1).

Developing countries such as South Africa has a long route to travel in order to reshape the situation from the past and bring meaningful developments to the ordinary people.

2.4 Demand for internet services: evidence on the key determining factors

According to Bantjes et al, demand means something in need and consumers are ready to pay the cost and manage it (2005: 28). According to Roberts, demand means greater use of ICTs by households and business (2009:53). According to Heilbroner and Thurow, demand means not just how much we are spending for a given item, but how much we are spending for that item at its price, and how much would spend if its price changed (Britannica Concise Encyclopaedia, 2010). According to the above definitions, demand can be measured in terms of level of customs, quality of service, preparedness to use the services, level of income, level of education, availability of infrastructures, etc.

Infrastructure development

Infrastructures are some of the hampering factors that make ICTs unavailable and inaccessible to the majority of South Africans. The problem with ICT infrastructure in the country is the uneven development of networks in rural and urban areas. The level of infrastructure determines the level of ICT users. It is obvious that lack of internet infrastructures will discourage the level of internet potential users. ICT infrastructures could improve service delivery in government departments. According to Statistics South Africa (Statistics South Africa, 2007), from a population of 375.588, 2266 households have telephones, 5998 people have cell phones, 4811 households have computers, and 1337 households have computers that are connected to the internet in

the Greater Tzaneen Municipality. The current ICT initiatives should focus on infrastructure development and the extension of information and communication services from the center to the periphery. The focus of building ICT infrastructure should be directed to the rural poor communities as they have been neglected for years. According to Chapman and Slaymaker, “strategic use of ICTs for poverty reduction will depend on developing the appropriate infrastructure to enable economic development and appropriate information content for necessary human development to occur” (2002:5). ICTs have the ability to serve the needs of the vulnerable communities and appropriate infrastructure should be made available for such a purpose. For proper development to occur, suitable resources are a necessity.

According to Dyson (2004:1), the drive towards e-government and e-service delivery within the provincial government and some key municipalities such as the city of Cape Town and Knysna has provided a resilient and affordable ICT infrastructure. E-governance can address major issues related to service delivery, access to information and other developmental issues. For the municipality to run efficiently and effectively, e-governance is a necessity. People will be able to access services online and will stay informed of the current issues taking place within their municipality. People will again be able to pay through online services and this will reduce/minimize the level of congestion within the municipality. ICT can be used to make the government processes to work more efficiently and effectively to improve service delivery.

Gillwald (2001:7) shows that the government gave Telkom a contract for a period of five years to expire in May 2002 to install 2.8 million new lines, including 120.000 pay-phones targeted for underserviced areas. Telkom tried to honour its contract, but the gap was huge. Most communities in rural areas are still without landline telephones.

The South Africa Yearbook confirms Vodacom’s commitment to rolling out subsidized community telephones in South Africa to under-serviced areas (2006/2007:137). The provision of mobile services to rural areas increases possibility of the internet connection and growth of internet users in the country. The provision of internet infrastructure gives an opportunity for internet connection and ultimate internet growth.

The Post Office contributed to development by erecting Public Internet Terminals (PIT) throughout the country. PITs help people to access internet. The availability of PITs gave South Africans an opportunity to create e-mail addresses (South Africa Yearbook, 2006/2007:138). Most people can create e-mail addresses from PITs services. The problem with PITs is that in most cases, there is only one terminal in each Post Office to serve so many people and when they are broken, they take long time to be fixed. Lastly, it takes long time to access information because of long queues.

The infrastructure in the country does not support people living with disabilities and therefore ICT growth is uneven. People living with disabilities are left marginalized from the information access, which is a key element for growth. The rights of people with disabilities are violated. Disparities of internet infrastructure and services are key issues in development to address and need immediate attention.

Availability of internet infrastructures and services promote internet usage. The study by Gillwald reveals that Vodacom and MTN were required under ACT 103 of 1996 to install Community Service Telephones to under-serviced areas for the period of five years (1994-1999) (Gillwald, April 2001:31). Mobile phones were installed in most rural areas and the level of digital divide was to a certain degree reduced.

According to Dyson, to maintain number portability carriers are to contribute 0.5% of their turn over to the Universal Service Fund as from April 2003, to ensure that infrastructure is implemented in areas currently without telecommunications services (2001:4). The idea of USF is right, but the problem is the delay in implementation since the majority of the rural communities are at present without infrastructure.

According to Bridges report, the Universal Service Agency (USA) administers funds that are utilized for the provision infrastructure for telecentres and school cyber-labs-computer laboratories with ICT equipment (Dyson, 2004: 02).

The provision of infrastructures at schools could help students to surf the relevant information for their studies and could result in increased internet usage however, only few schools have the ICT infrastructure at present.

APC in their right charter (Venezia, 1999-2007:2-3) and COMESA policy (<http://www.comesa.int/ict/policy/doc/ICT%20Policy%20Part%201/view>) agree with Telecommunications Act 103 of 1996, in respect of the right to access of infrastructure irrespective of where one lives.

The report on South Africa Telecommunications Overview (policy brief), explains among others new policy directions as “to provide for sharing of infrastructures and make the 1800kHz band open to fixed and mobile carriers” (Dyson, 2 May 2001:4).

Though there are attempts to increase ICT infrastructure in the country, high shortages of ICT infrastructure remain a challenge. McGee shows that telephone main lines stand at 105 per 1000 people, personal computers at 82 per 1000 people and internet users at 108.8 per 1000 people (McGee, 1996:01). South Africa does not have sufficient infrastructure such as telephony and computers. The reason for insufficient infrastructure such as computers and telephony may be that they are expensive and people with lower income cannot afford them. The internet user’s statistics is above the infrastructure in the country. ICT infrastructure does not resonate with ICT users. While there is evidence of internet usage growth, the infrastructure shortage becomes a hiccup for internet growth. Scarcity of telephony makes it very difficult for people to connect to the internet at their homes.

Infrastructure development should not be seen as a government responsibility alone, but a joint effort between business, private, and government entities. Development agencies should also take responsibility to harness the potential of ICTs in the poor rural areas.

Operational skill

Computer skill is a precondition for internet usability. It is impossible for anyone to operate a computer without a computer skill. According to Bridges report, it will be difficult for the information have-nots to participate in new ICT-based jobs, e-government, ICT improved health care and ICT enhanced education (Bridges, 2006:01). People cannot participate in ICT based jobs without the necessary skill. Training of people with ICT skills is necessary to raise the bar.

In considering the shortage of ICT skills, the DTI has launched the pilot of what will be an extensive Youth Internship Programme (YIP) to address the severe lack of ICT skilled individuals in South Africa (Perry, 2003:10). According to Perry, the pilot programme has targeted the youth in the previously disadvantaged communities and the composition is as follows: 85 black people, 54% women and 4% disabled (Perry, 2003:10). The training of the previously disadvantaged communities, women, youth and disabled is a right move towards the right direction, and this will ultimately reduce the number of unskilled individuals who cannot operate a computer. The anticipated results are that people can start to enjoy ICT-based jobs.

Access and affordability

Easy access and affordable costs to internet services encourage people to use internet services. According to Shneiderman, the term/concept “universal access” is linked to the U.S. Communications Act of 1934 that sought to ensure adequate facilities at reasonable charges especially in rural areas and to prevent discrimination on the basis of race, colour, religion, national origin or sex (Shneiderman, 2000:86). Adequate facilities at reasonable charges are fundamental to easy access, and the realization of the above would narrow the digital gap. But unfortunately, high prices perpetuated by Telkom monopoly make the dream impossible to be realized.

According to Dyson, the government introduced the telecommunications deregulation plan to promote low-cost telecom environment and to encourage the widespread diffusion of the ICT sector (2001:2). Dyson further indicates that an ICT provider must provide service to urban, rural and remote areas as the condition or specified in the performance contract (2001:2).

Considerations should be given to low telecommunications cost, balanced services to both urban and rural. The reduction of digital divide and provision of telecommunications should be made affordable by all users.

COMESA policy also emphasizes reasonable tariffs as key factors that influence competition and the rate of penetration of services (<http://www.comesa.int/ict/policy/doc/ICT%20Policy%20Part%201/view>).

According to the COMESA policy, the government should create an enabling environment for the provision of affordable and available services (<http://www.comesa.int/ict/policy/doc/ICT%20Policy%20Part%201/view>). Amongst others, the policy suggests reasonable tariffs and enabling environment for competition. Competition will automatically reduce costs and increase internet users.

Telecommunication Amendment ACT, ACT 64 of 2001 aimed at bringing down the costs (South Africa Yearbook Report, 2006/2007: 133). The Act proposes the cut down of costs. The cut down of costs could improve the rate of penetration because the majority of the people will be able to afford. The intentions are good, but delays in implementation remain a challenge.

According to the South African Telecommunications Overview (policy brief), government introduced a deregulation plan and amongst others aimed at bringing down telecommunications costs (Dyson, 2001:2). According to Dyson, an e-rate is to be introduced to government-funded schools, which will give a 50% discount on calls made for internet access (2001:4). Schools will be subsidized on a 50% basis. The 50% discount would increase a penetration at most schools to the internet, particularly the previously disadvantaged schools. This could increase internet usage at schools.

The Electronic and Transaction Bill supports Telecommunications Act 103 of 1996, which is under review that emphasizes amongst others, universal access and affordability (Dyson, 2002:3). The Act emphasizes provision of access to the national telephone network to all potential users, provision of service on affordable terms through common points or facilities such as libraries, schools, health centers, community centers, public call offices, and pay phones (<http://www.comesa.int/ict/policy/doc/ICT%20Policy%20Part%201/view>).

Competition

Competition encourages costs cut and ultimate usage of internet services. The Electronic Communication Act, Act 36 of 2005 seeks to remove policies that hinder the development of cross-sector applicants, services and business (South Africa Yearbook Report, 2006/2007:132). Competition creates a possibility of costs reduction and

penetration of services. An environment of free competition was not realized because of Telkom's monopoly.

According to the South African Telecommunications Overview (policy brief), the government introduced a deregulation plan, to foster competition and bring down telecommunications costs (Dyson, 2001:2). Competition would increase the number of internet users.

Telkom monopoly discourages competition and promotes high costs, which results in people being unable to afford internet services. According to Dyson, Telkom was given a five-year monopoly in 1997 to provide non-wireless telecommunications infrastructure in South Africa through its public switched telecommunications service license issued under the Telecommunication Act 103 of 1996 (2001:2).

2.5 Review of evidence on determinants of demand for internet services

The situation in South Africa regarding ICT infrastructure needs a serious review, particularly in rural poor areas. According to the Broadband and Market Report, some of the largest municipalities in the country started rolling out their own telecommunication infrastructure in an attempt to address the challenge of high demand (2000-2007:05). The municipality is a custodian of service delivery and the proper channel to bring meaningful development to the people.

The Limpopo Province MPCC Strategy indicates that the government uses the Multi-Purpose Community Centres to provide government services such as public information terminals as well as computers, telephones and faxes (2006:07-08). According to Mutshekwane, Multi-purpose Community Centres have been established as a point of integrated service and information delivery to communication by governments and range of other stakeholders for rural developments, and they are being used for capacity development programmes for educators (2004:16). The last statement is mostly prevalent in the Greater Tzaneen Municipality. In Limpopo, MPCC do exist but the challenge is that the majority of them do not have internet infrastructure and therefore they do not serve the community as they were intended. According to Streicher, Greater Tzaneen Municipality uses bulk SMS messaging to coordinate meetings and events among youth in underserved, poor, rural communities and the strategy has reduced telecommunications costs (<http://community.bulksms.com>).

Organizations have an important role in the development of infrastructures. Dyson shows that the Cape Access Programme is using both new and existing infrastructure to provide rural communities with access to information technology (2004:5). Dyson further indicates that by using existing computer centers in the local schools and multi-purpose center, Cape Access has helped communities to get the greatest benefit from these facilities and new computers centers have been installed in libraries and communities where there are no facilities or where extra facilities are required (2004:5). NGOs and business can bring meaningful development into the lives of people. If all important role players can follow the route of Cape Access, shortage of infrastructure could be minimized or totally be uprooted and the majority of South Africans would be able to access ICT services without problems.

Though there are attempts to increase ICT infrastructure in the country, high shortages of ICT infrastructure remain a challenge. South Africa does not have sufficient infrastructure such as telephony and computers. The reason for insufficient infrastructure such as computers and telephony may be that they are expensive and people with lower income cannot afford them. The internet user's statistics is above the infrastructure in the country. ICT infrastructure does not resonate with ICT users. While there is evidence of internet usage growth, the infrastructure serves as hiccup for internet growth. Scarcity of telephony makes it very difficult for people to connect to the internet at their homes.

Gillwald, (2001:7) shows that the government gave Telkom a contract for a period of five years to expire in May 2002, to install 2, 8 million new lines, including 120.000 pay-phones targeted for underserviced areas. Telkom tried to honour its contract, but the gap was huge. Most communities in rural areas are still without landline telephones.

The South Africa Yearbook confirms Vodacom's commitment to rolling out subsidized community telephones in S. Africa to under-serviced areas (2006/2007:137). The provision of mobile services to rural areas increases possibility of the internet connection and growth of internet users in the country. The provision of internet infrastructure gives an opportunity for internet connection and ultimate internet growth. In an attempt to add the level infrastructure, the Bridges report indicates that 'DBSA has installed and funds municipalities to connect to the internet via a DBSA network' and

Cape Town municipalities have experienced such a reality (2004:3). The NGOs, private and generally the donor communities are making the meaningful contributions, but the challenge remains that they are concentrated in certain areas and the rural poor remains in the similar conditions.

According to Dyson (2001:10), for the period 1998 to 1999 Telkom has also installed 505.750 new lines in rural areas. Dyson further confirms that for the period 1998/1999, telecommunications services were brought to 920 new villages and during the period 1999/2000; telecommunications services were brought to 2038 new villages (Dyson, 2001:10).

2.6 Challenges

The challenges perceived by various studies have been briefly summarised by Esselaar. In his presentation, Esselaar (2007:5-7) has indicated amongst others the following:

- Lack of competition;
- Poor people do not have access to internet services;
- There is little internet access in rural areas;
- Regulation/Legislation is hindering growth; and
- There is lack of independent access to international telecommunications (SAT3).

High cost of services is a result of lack of competition. In fact, this is the present situation in South Africa. The monopoly by Telkom perpetuates high costs of internet services and denies access to the poor people. Rural villages do have little access because concentration was on urban communities. The reasons might be that of interest and affordability. Too many regulations may discourage business and competition. Business wants enabling environment for competition, to feel free and secure.

The Broadband and Market Report show that Telkom created an expensive operating environment in South Africa (2004:06).The majority of the people cannot afford to connect to the internet. Dyson also revealed that Telkom's monopoly perpetuates the high prices of telephone, internet and related services (Dyson, 2001:02). Dyson further shows that under the Telkom monopoly, South Africans pay for telephone a minute, including when they are surfing the internet, which makes access prohibitively

expensive for most people (Dyson, 2001:02). For the majority of people, particularly the poor, it will be difficult to access the internet services. Venezia also confirms “Africa the poorest continent in the world has the highest costs for the internet access” (Venezia, 2006:02). Gillwald et al,(2004:10) also identified that ADSL cost in South Africa is 139% more expensive than the average price out of 15 countries surveyed and local costs are 199% more expensive than the average price all countries surveyed and the cheapest broadband access from Telkom costs is approximately 1,75/kbps while Sentech’s My – Wireless is 2,93/kbps.

(Gillwald et al., 2004:10), further indicate that this is 286% and 480% more expensive than an Egyptian ISP (2004:10). Internet costs in South Africa are very high compared to the rest of the world. Ordinary people cannot afford them. High costs discourage a majority of people from using internet services. A possible solution is subsidized costs and negotiations for lower costs as stipulated by policy.

According to Simpson, (2001:5-7), one of the reasons for households who have a computer but without internet access for taking up online services is price/cost. Though growth is evident in developing countries like South Africa, the number of people who are surfing the internet remains very low compared to the developed countries. The reason is very obvious: the high costs of internet services.

It is obvious that high costs disadvantage the majority of South Africans from using internet services and this could have a direct bearing on internet growth.

According to Venezia, easy access to the internet can help strengthen educational and health services, local business, public participation, access to information, good governance and poverty eradication (Venezia, 1999-2007:02). There is no easy access to the internet at present. Easy access could improve education system, health services, governance, and business and this could also reduce the level of poverty in the country.

The National Research Foundation indicates very clearly that South Africa has a general shortage of ICT workers and to close the gap South Africa needs to educate, train and integrate a large proportion of its population who were previously

disadvantaged and give them opportunity to move into the emerging information ([http://respository.up.ac.za/upspace/btstream/2263/13208/1/lotriet-selective\(2009\).pdf](http://respository.up.ac.za/upspace/btstream/2263/13208/1/lotriet-selective(2009).pdf)). The challenge identified by the NRF is a shortage of ICT workers. To overcome the challenge South Africa needs to train people. It is the competency of government, business, NGOs and higher institutions of learning to train people along the ICT sector. Venezia adds, “Knowledge and skills enable people to use and shape the internet to meet their needs” (Venezia, 1999-2007:02).

The other challenge is to build enough infrastructures particularly in the rural areas. Lack of communication infrastructure like computers, electricity and telephone lines continues to retard political, economic and social growth. There is no way one could access the internet services without proper internet infrastructures such as electricity, telephony and computer. Scarcities of ICT infrastructure, the high costs of international bandwidth, are the hampering factors of internet access and ultimately internet growth, which determine the internet demand.

2.7 Opportunities

According to Arguez, the rollout of high-speed or broadband access by Sentech, and the healthy rand – dollar exchange rate, will significantly contribute to increase in ICT access in the country (Arguez, 2004:2-3). Arguez further indicates that the end of Telkom’s monopoly on the SAT-3 submarine cable in 2007 is expected to reduce the costs of telecommunications in S.Africa, which are currently among the highest in the world (Arguez, 2004:5). The cut of internet costs was anticipated but was not realized.

Arguez further indicates stimulus that was expected in 2007 from the launch of the Second National Operator (SNO) and expansion of 3G/HSDPA services by the country’s mobile network operators (Arguez, 2004:5). In fact, the introduction of the Second National Operator did not reduce costs since it still depends on Telkom’s infrastructure. A new policy, the Telecommunication Deregulation Plan allows Telkom to retain its PSTS license, thus continuing its role as infrastructure provider (Dyson, 2007:4).

The Broadband and Market Report discovered that, the launch of Asymmetric Digital Subscriber Line (ADSL) and wireless broadband services in 2004, has been followed by continuous price cuts in the following years, but according to Gillwald et al., ADSL is still expensive (2004: 10).

2.8 Effort to lower broadband costs

On 25 August 2004 in Johannesburg, the Internet Society of South Africa (ISOC-ZA) together with OPA (Online Publishers Associations) called for an urgent meeting with the government to discuss the high cost of bandwidth in the country as ISOC-ZA believes in the reduction of cost in order to stimulate the growth of internet usage and again claims that government should become actively involved in reduction of cost. (Argaez, 2004:5-6).

According to Ademic and Huberman (2002:55), the number of online users has grown exponentially well. In 1996 there were 61million internet users worldwide and at the end of 1998, more than 147million people were internet users worldwide (Ademic and Huberman, 2002:55). Ademic and Huberman further indicate that in 2000 the number of users was doubled to 400 million and this remarkable growth has popularized e-commerce, and as a result an increasing segment of the world's population conducts commercial transactions (2002:55). Many people show interest in the internet and are using it profitably. The International Telecommunication Community also indicates that by 2005, internet users penetration caught up with fixed penetration in LDC, providing access to a host of applications, such as e-education, e-health, e-business, e-agriculture and e-government (ITU, 13 September 2006:02).

Global internet users were 130million by the year 2000, but USA and Canada was having 50 million users, Africa had only 1,9million, which is only 1% of the world internet users (www.digital-m.co.za/seo-blog/2006/05/internet-usage-surges-in-africa.html). This reflects high digital divide which must be narrowed through the balancing of supply side and the demand side. According to Thomas, in 2005 the worldwide number of internet users broke the one billion barrier for the first time (2007:1). In June 2000, the number of mobile phone users worldwide reached one billion mark for the first time (Barnes and Huff, 2003:79).

2.9 Synthesis

Based on the literature review, experts agree that internet services growth is evident and demand is high in South Africa and other countries and that digital divide between the rich and the poor, the developed and the developing countries and between the rural and the urban is a major challenge. Current ICT initiatives are focused on infrastructure development and the extension of information and communication services from the center to the periphery.

Studies show how internet services bring meaningful developments such as business online, educational research, internet banking, internet games, e-mailing of messages and contribute towards job creation and the national income of the country.

The literature review indicates that lack of proper ICT infrastructure denies the majority of people from using internet services and monopoly by Telkom on provision of internet services perpetuates the high prices of which the majority are failing to afford and the environment provision of internet services in the country are suppressed by the monopoly practices of Telkom of which the government has shares.

The literature reveals that many people are still computer illiterate and training should be an area of focus. Policy and legislation framework emphasize universal services and access, availability of internet service infrastructure, consumer protection, environment that encourages competition for investors, provision of underserved area licenses and deregulation. The major challenges that face South Africa are policy implementations and delay, environment that is not conducive for competition and monopoly by Telkom that discourages competition.

2.10 The literature gaps

Most resources in South Africa do not cover the topic. The resources within the country address theory than real internet developments. The resources / publication that try to cover the topic are mostly from outside the boundaries of South Africa and Africa. The materials that are available are mostly articles and reports rather than books.

2.11 Conclusion

For South Africa to succeed in bridging the digital divide, attention should be paid to availability and affordability of internet services in both urban and rural areas. The government should attempt to neutralize the monopoly by Telkom and allow the competitive environment in the country. Internet service costs should be regulated. Regulations should not discourage but rather encourage competition.

Government and non-governmental structures should make a combined effort in reducing the computer illiteracy level through the establishment of sufficient training centers at reasonable costs throughout the country. Small businesses (SMMEs) should be also a target for workshops and training as internet services contribute toward economic growth.

CHAPTER THREE

Research Methodology

3.1 Introduction

The chapter discusses the research design, population and sample selection, data collection methods and data analysis methods in order to investigate the problem. On assessing the demand of internet infrastructure and services, the researcher used both quantitative and qualitative approach.

3.2 Research Design

According to Du Plooy (1996:38), a research design may be described as a “plan of procedures for data collection and analysis that are undertaken to evaluate a particular theoretical perspective”

The “evaluative research design” was used in this study. Evaluative research is defined as social science methodology that can be utilized to assess, among other things, the design, implementation and applicability of social interventions (De Vos, 2002:111). Neuman defines “evaluation research” as applied research in which one tries to determine how well a program or policy working or reaching its goals and objectives (Neuman, 2006:26). Both authors agree that “evaluation research” or “evaluative research” is a research with the objective to evaluate.

Evaluative research was the most preferred method because the researcher wanted to find out or to assess the use of the internet services and the nature of demand in the Nkowakowa community. Since the objective of the research is to determine how well or effective are the internet services in the community, the evaluative research was found to be more relevant.

3.3 Unity of analysis

The researcher interviewed individual schoolmasters and educators, students, home computer users, business owners (SMMEs), internet café owners, management in a health center and management in a police station, and the municipality about the problem in Nkowakowa community. The above individuals were carefully selected on the basis of knowledge about the challenge of the study and that they were representative of the community. The schoolmasters, management in a health center,

management in a police station were relevant because they had knowledge about the organisation and its needs. They could tell whether internet services were a need or not. Educators and students were selected because they were the ones that are engaged in a search for information. They were in a good position to inform as whether there was a demand for internet services or not.

3.4 Research Methodology

Both qualitative and quantitative research methodologies were used. Qualitative research methodology offers an in-depth study about the phenomena under investigation. Hakim says, “qualitative research offers rich descriptive reports of individuals perceptions, attitudes, beliefs, views, and feelings, the meaning and interpretations given to events and things, as well as their behaviour” (Hakim, 1997:26). The researcher preferred this method because he wanted to hear the respondents view, how they felt and their attitude towards internet services. The researcher was able to interact with his respondents directly, because he was part of the research field. Quantitative method was also used because numbers were involved in this study. As de Vos (2002:81) says, “where results appear in numeric form, are eventually reported in statistical language”. Hence the report was somehow compelled to take a statistical form, using quantitative methods was an option. The nature of research suited both qualitative and quantitative methods.

3.5 Area of study

Nkowakowa is a suburban township within the Greater Tzaneen Municipality in Limpopo. Nkowankowa is divided in into three sections, i.e., Sections A, B and C. The first section, Section A and half section B have an urban structure. Half Section B and the whole Section C looked semi-urban.

Nkowakowa had a total number of 3828 households (Statistics South Africa, November 2006). Nkowakowa community has a population of approximately 30515 (Greater Tzaneen Municipality IDP, 2005-2006:12). This number implies to households that have been captured. There are possibly a number of households who have not been captured, particularly in the last section (Section C). About 60% of the people in this area are employed in the public sector.

Nkowankowa is a township, but there are some challenges in accessing internet services in most of the areas. There is a landline problem in some of the areas within this community. Some of the community members/residents complain that since they have applied for landline infrastructure in 1999, they have not been getting any response and when they inquire, they are told to re-apply.

The residents are unable to access the internet services at ease. The residents, the business and students are finding it hard to access internet services because of very limited infrastructures and lack of centres that are open for public consumption. While internet services should be cost-effective, they turn to be expensive for the consumers in this area since they are bound to use them during the day and above all, they must have to pay the travelling costs to access them. Residents from this area travel between 100m and 5km to access internet service points.

There is only one ICT centre and few small businesses that are trying to offer internet services to the consumers. The ICT centre (TMPC) is only offering basic training to teachers on interval but is not open for public consumption at present.

After careful investigations, the sources that the researcher explored reveal that there is no single research that has been conducted in this area in the past about the topic under study. How will the study help? Since there is no indication of the research conducted about the topic in this area, the study will help to bring awareness of the nature of ICT services in the community of Nkowankowa and is also expected to inform the municipality about the state of affairs regarding the ICT services. The research may also serve as groundwork for further research on the role of ICTs in the development.

3.6 Secondary data sources

According to Neuman, secondary data sources are about events or settings that are documented or written later by historians or others who did not directly participate in the events or settings (Neuman, 2006:432). Hairstone, Maxine and Ruszkiewicz, agree with Neuman in his definition. They say, "Secondary sources offer an analysis or a restatement of primary sources" (Hairstone, Maxine and Ruszkiewicz 1996:547). Secondary sources simply attempt to describe or explain primary sources. The

researcher used newsletters, magazines, articles, reports, journals and books, published and unpublished written documents.

3.7 Primary data

Neuman defines primary sources as qualitative data or quantitative data about past events or social life that were created and used in the past time period (Neuman, 2006:431). Hairstone, Maxine and Ruszkiewicz, in their simplified definition, define primary sources as “records of events as they are first described, without any interpretation or commentary” (Hairstone, Maxine and Ruszkiewicz 1996:547). The researcher used interviews, tabulated, but not interpreted statistics, tape recorder as it carries the original information, speeches or presentations, dissertations and documents produced by government agencies as primary sources.

3.8 Population

According to Neuman (2005:224), population is described as a “large pool”. Neuman (2005: 115) further explains that population may be used interchangeably with universe which describes “the entire category or class of units that is covered or explained by a relationship”

The population of the study were the residents of Nkowankowa community. Nkowakowa is a community with approximately 3828 households (Statistics South Africa, November 2006) and a population of approximately 30515 (Greater Tzaneen Municipality, 2005-2006:12). Business owners (SMMEs), schoolmasters, school educators, students, municipal offices, ICT centers, computer home users, police station and health centre formed the population of the study because it is representative. These included youth, the disabled and old age (men and women). The researcher preferred to study the community of Nkowakowa because the challenge of internet services was observed in this community.

3.9 Sample selection

Purposive sampling was used for the study. Purposive sampling is non-probability sampling in which the researcher uses a wide range of methods to locate all possible cases for a special situation where the judgement of an expert in selecting cases shall be used (Neuman, 2006:222). Cohen, Mainon and Morrison (2003:103) add by saying

purposive sampling is a sample chosen for a specific purpose. According to du Plooy (1999:63), purposive sampling evaluates people's view on a particular service or view.

The sample was purposively selected to ensure the inclusion of those units in the population who were most likely to have same knowledge and interest on internet and related issues. The researcher considered that schools, both primary and secondary should be included, and that school managers or SMT members, learners and educators, were relevant for the study. Business owners (SMMEs), health centres/hospitals, police stations and the municipality are also relevant for the study.

A small sample of 40 respondents was selected based on the potential or likelihood that the respondents had same knowledge and interest on internet services. The researcher has selected the relative small sample because of the limited time frame

The sample of 40 consisted of the following categories of stakeholders who were randomly selected from their group:

- Four primary and four secondary schools.
- One school manager or SMT member from each of the 8 schools.
- Four learners from secondary schools.
- Four students from tertiary institutions.
- Eight business owners.
- Two respondents from management position in hospital, police station, internet café owners and municipality.
- Eight home-based computer users.

3.10 Data collection methods

3.10.1 Questionnaires

According to De Vos, the basic objective of questionnaires is to obtain facts and opinion about the phenomenon from people who are informed on the particular issue (De Vos, 2002:172). Questionnaires help a researcher to find facts about the subject. The researcher used both open and close questions. Open questionnaires give the respondents an opportunity of writing any answer in the open space (De Vos, 2002:179). Closed questions save time. De Vos says the results of the investigation can be available fairly and quickly (De Vos, 2002:180).

Both closed and open questionnaires were distributed to respondents to complete on their own, but the researcher was available in case the respondents needed clarity. The researcher preferred to use both closed and open questionnaires because with closed questions, answers are provided and respondents select the appropriate answers and they save time.

Open questionnaires allow the respondents to answer the question in their own words and they are important because they do not influence the respondents by giving list of possible answers to choose from. These two types of questionnaires, structured and semi-structured interviewed were so appropriate since they accommodated all the respondents.

The appointment with various respondents was secured. The appointment was very important since the researcher was dealing with very busy and learned groups. The researcher prepared questions beforehand and distributed to the respondents in time. Questionnaires were distributed to individual schoolmasters, educators, students, home computer users, business owners (SMMEs), internet café owners, management in hospital and management in police stations and to the municipality. The researcher explained the purpose of the questionnaires.

The researcher let the respondents complete questionnaires at their own time and the appointment of collection was secured, as De Vos suggests that “the appointment be made for collecting the questionnaires and again this should preferably not be more than 48hours after delivery” (De Vos, 2002:174). The researcher secured the appointment to collect the questionnaires within 48 hours. Novick indicates that the researcher’s selection criteria for use of evidence and external criticism of documents place a burden on integrity of the individual researcher (Neuman, 2006:452).

The researcher respected the integrity of the individuals and revealed the intention of the study. Permission where the study requires institutions was requested from the management. Confidentiality was respected and maintained throughout the study. The researcher operated within the boundaries of agreements.

3.10.2 Interviews

The researcher used both structured and semi-structured interviews. Interviews allow a follow-up question(s) for clarity. According to Du Plooy, structured interviews make tabulation of the answers an easy task (1996:130). In brief, they save time. The advantage of semi-structured interviews is that they allow the researcher to ask additional or probing questions if a response is unclear or incomplete (Du Plooy, 1996:131). The researcher used tape recorder to gather information from the respondents. The researcher tested the tape recorder as whether it was functioning well and had a good sound before taking it to the field.

The target group were individual schoolmasters, educators, students, home-based-computer users, business owners (SMMEs), management in hospital and management in police stations and municipality. Interview questions were prepared beforehand. Cohen, Manion and Morrison indicate that questions that form the main body of the schedule should be done in such a way that they adequately reflect what the researcher is trying to find out (Cohen, Manion and Morrison, 2003:274). The researcher collected information on the demand for internet infrastructure and services, the role of internet services to the community and the role of the municipality in provision of internet services to the community.

3.10.3 Observations

The researcher also used observations. According to Neuman (2006:396), the researcher “becomes an instrument that absorbs all sources of information” while observing. This data collection method was relevant because “you observe people and their actions i.e. age, sex, race and stature” (Neuman, 2006:397). Du Plooy says, “We here, see and experience events and reality as the participants do”. The researcher observed people at internet cafes while using the internet services. This helped in identifying the type of services mainly used, the participants (age, sex and education group) who use the internet café and whether they needed assistant from the internet café owner or not. The researcher was a participant observer

Permission in writing was requested from the owner and the purpose of the research was explained to both the owner and the participants. Participants participated on voluntarily basis. All the observations were recorded.

3.11 Data Analysis Methods

De Vos defines data as “the process of bringing order, structure, and meaning to the mass of collected data” (De Vos, 2002:339). Mouton claims that “analysis involves breaking up of data into manageable themes, patterns, trends and relationships” (Mouton, 2001:108). Analysis simply means the reordering or grouping of data. The researcher took in to considerations the aims and the objective of study while categorizing data into manageable themes. The researcher used open coding to break data into manageable themes. Data was analysed and findings were interpreted.

Open coding

The researcher used open coding. Open coding is part of analysis that pertains specifically to the naming and categorizing of phenomena through close examination of data (De Vos, 2002:346). Goffey and Atkinson define coding as “the assignment of tags or labels to data based on our concepts” (Goffey& Atkinson, 1996:26). The researcher grouped data into categories and gave them labels. According to Neuman, there are two simultaneous coding activities that are, namely, mechanical data reduction and analytic categorization of data (Neuman, 2006: 460).

According to Coffey and Atkinson, in coding, the bulk of data sets are condensed into analyzable units by means of creating categories with and from the data (Coffey and Atkinson; 1996: 45). Coffey and Atkinson further say, “Coding enables the researcher to recognize and contextualize data” (Coffey and Atkinson; 1996:45).

The researcher located themes and assigned initial codes in order to reduce the bulk of data sets into categories. Similar or closely related information was grouped into a category and given a label. Once the grouping was completed, the analysis was resumed and the findings were interpreted. The researcher held meetings with the respondents with an effort to reduce possible errors. Findings and aims were compared and then, the researcher drew some conclusions.

3.12 Ethical issues

The protection of the rights of human subjects was observed. The researcher respected human dignity and confidentiality of the participants. The researcher entered into an

oath of secrecy with the participants. The participants willingly took part and the right to withdraw was explained to them. In terms of organizations, permission was requested beforehand in writing and the purpose of research was explained.

CHAPTER FOUR

Presentation, analysis and interpretation of findings

4.1 Introduction

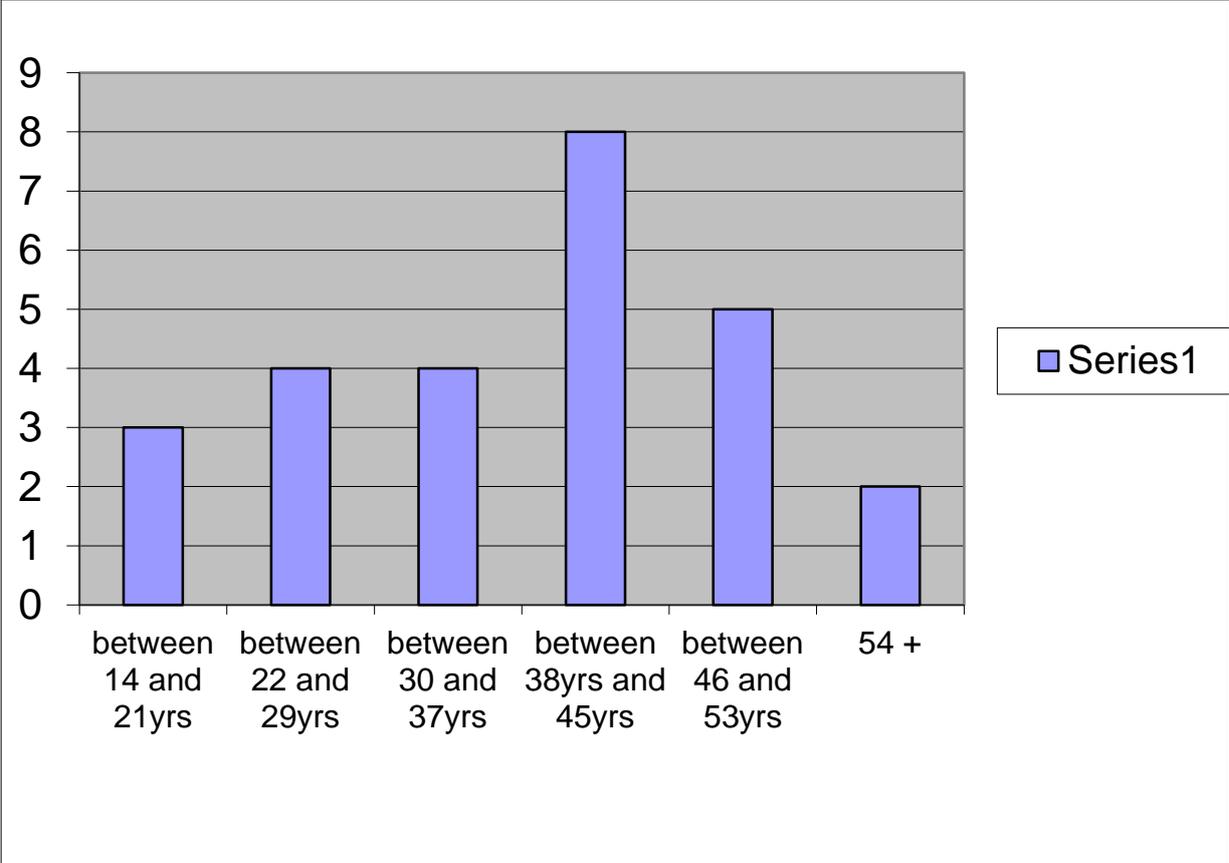
This chapter focuses on presentation, analysis and interpretation and findings of data collected from the respondents in order to establish the nature of demand for internet services at Nkowankowa community. The chapter also examines the use of internet services; i.e., what are internet services needed for and the role of the Greater Tzaneen Municipality in the development of Nkowankowa community. The chapter describes and summarised the main results using tables and graphs. The researcher discusses the main trends and patterns in the data with reference to the research questions. Main findings are interpreted and main results are highlighted.

The data was analysed and interpreted from a sample size of 40 respondents i.e. business owners (SMMEs), school managers, hospital, police station, students (both high school and tertiary), home users and municipality.

4.2 Table 1: Use of internet services by age

Respondents	Between 14 and 21years	Between 22 and 29years	Between 30 and 37years	Between 38 and 45years	Between 46 and 53years	54 and +
School	0	0	2	0	3	0
Home users	1	2	0	2	1	0
Hospital	0	0	1	0	0	1
Students	2	2	1	0	0	0
Business	0	0	0	5	0	1
Police station	0	0	0	1	1	0
Total	3	4	4	8	5	2

Graph 1

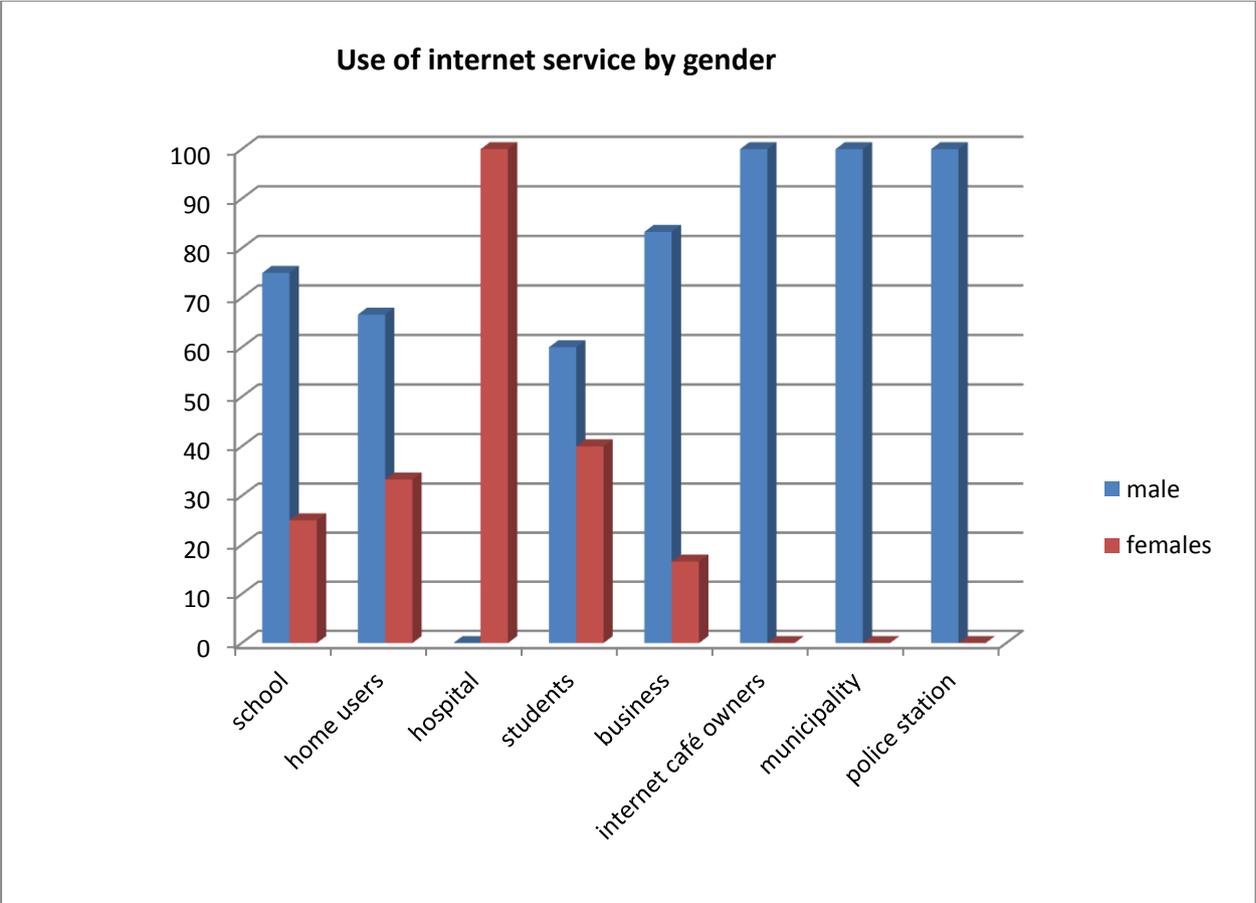


The results show that the dominant age group is between 38 and 45 and followed by 46 and 53. The highest age group is 54 and above whereas the smallest age group is between 22 and 29. Age shows some influences in the usage of internet services. Age and affordability seem to show some relationships. Respondents, who dominate the internet services, are the working group because they are able to afford some internet infrastructure and services.

4.3 Table 2: Use of Internet services by gender

Respondents	Males	Females	Male percentage	Female percentage
School	3	1	75	25
Home users	4	2	66,6	33,3
Hospital	None	2	0	100
Students	3	2	60	40
Business	5	1	83,3	16,6
Internet café owners	2	None	100	0
Municipality	2	None	100	0
Police station	2	None	100	0
Total	21	8	70,4	29,6

Graph 2



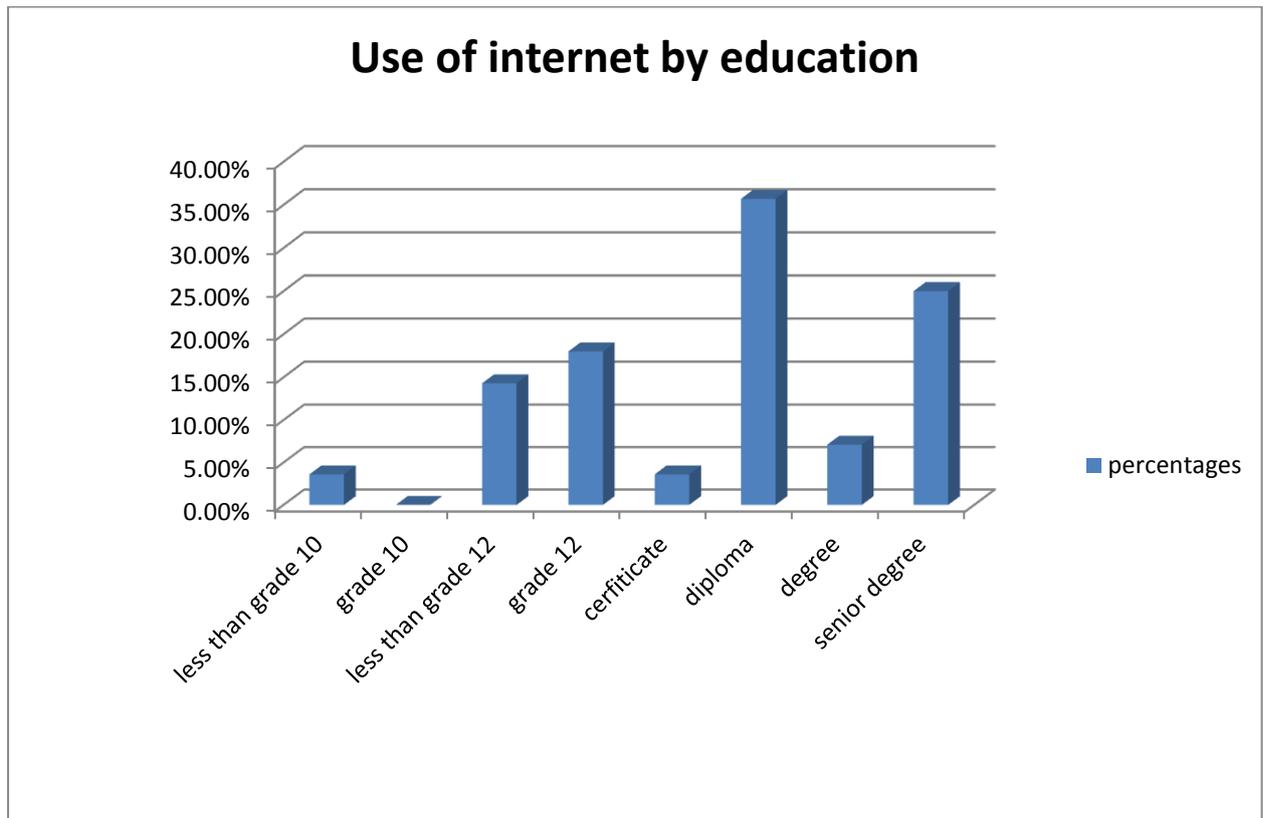
Approximately 21 out of 29 (72, 4%) of the interviewed respondents are males against 8 (27, 6%) of their counterparts (females). The number of females who are using internet services is still very low compared to males. The reason was directly linked to lack of

interest. Household responsibilities of women also contribute to the lesser percentage of women using the internet services. The issue of culture had also some negative consequences towards women empowerment. Culture did not allow women to advance in education but only to do household works like cooking and cleaning, consequently, this created a mediocre impression on women skill. Lesser percentage may still be linked to the element of culture. Most women are less exposed and are hesitant to participate in development due to the past cultural background.

4.4 Table 3: Use of internet services by education

Respondents	Less than grade 10	Grade 10	Less than grade 12	Grade 12	Certificate	Diploma	Degree	Senior degree
Schools	0	0	0	0	0	2	1	2
Home users	0	0	1	2	0	1	0	2
Hospital	0	0	0	0	0	1	1	0
Students	0	0	3	1	0	1	0	0
Business	1	0	0	1	1	0	0	3
Internet café owners	0	0	0	1	0	1	0	0
Municipality	0	0	0	0	0	2	0	0
Police station	0	0	0	0	0	2	0	0
Total	1	0	4	5	1	10	2	7
Average percentage	3.6%	0%	14.3%	18%	3.6%	35.7%	7.1%	25%

Graph 3



In order to find if there was an apparent relationship between education and usage, data was collected on the level of education (table 1.3). The results show that most respondents who use the internet are the learned group. About 7 out of 28 (25%) have senior degree certificates, 2 out of 28 (7.1%) have degrees and 10 out of 28 (35.7%) have diploma certificates. The results show that people who are using the internet are generally the learned group. 1 out of 28 (3.6%) of the business owners have education below grade 12.

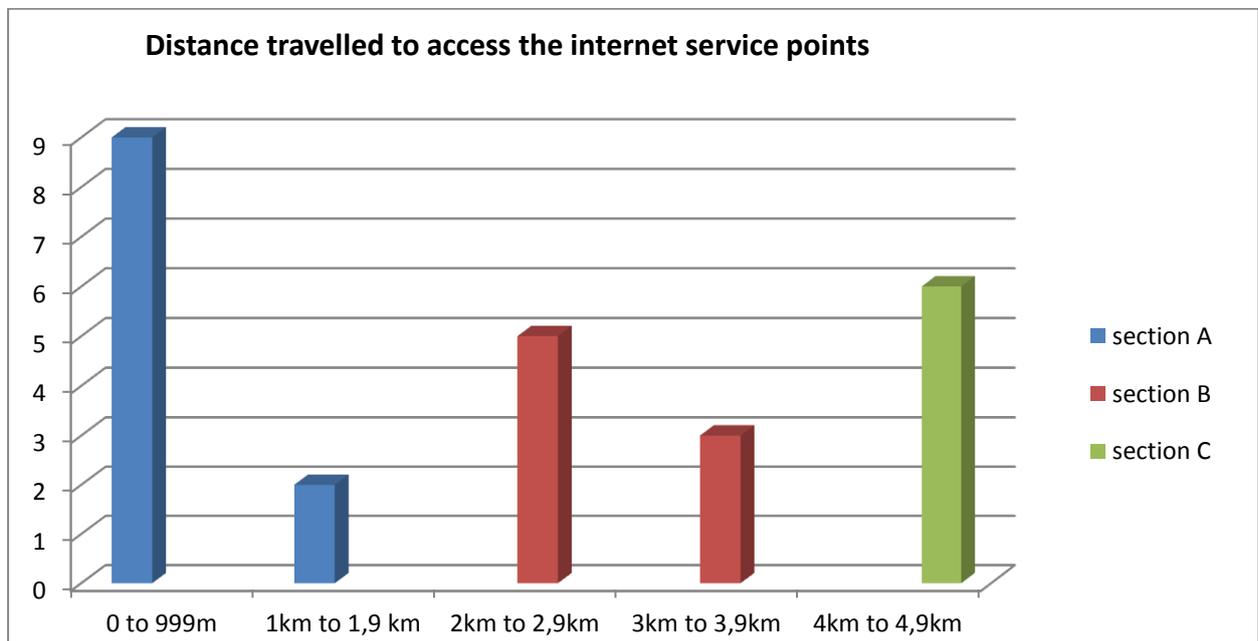
There seems to be some relationship between users and education level since the respondents who are using the internet services are generally the learned group. This is interesting since the level of education does seem to show some connection with the level of utilization. Indeed, education is a precondition for using internet services. The educated group is able to understand technology and has money to afford some infrastructure and services. People who cannot read have a serious problem in using the internet services. Education has an effect on utilization of internet services since

majority of respondents who use internet services are learned and have diplomas and degrees.

4.5 Table 4: Internet usage measured by distance

Km	Section A	Section B	Section C
0 to 999m	9	0	0
1km to 1,9km	2	0	0
2km to 2,9km	0	5	0
3km to 3,9km	0	3	0
4km to 4,9km	0	0	6
Totals	11	8	6
Percentages	44	32	24

Graph 4



The distribution of users, population and the resulting percentage of the population using the internet cafes by distance are shown in the tables above. The results show that most of the internet users from Section A live within few kilometers from the internet

cafés between 0 and 1,9km followed by Section B between 2km and 3,9km and Section C between 4 km and 4,9km.

The data collected show that the closer respondents to the internet cafes, the more the usage. Section A is living near the internet cafes and benefit more than two sections; i.e., Section B and Section C. Section A recorded a significant number of users than the two Sections (Section B and C).

The research results show that distance was a factor when using the internet cafe services. In summary, from the research results data, there is a clear linkage between respondents closer to internet cafes and the degree to which they utilize it. Intuitively, one would expect a trend for higher usage if the internet services are closer and a higher customer base. This is most obvious in the case of Section A, where, the total number of users was the highest against Section B and C, where the users were lower. The ease of access to the cafes appears to have an effect on the utilization. This is most apparent in the case of Section A, which is closer to the internet cafes and has recorded the highest number of users. In the 4 km and 4,9km distance, the effect of access problems was expected to become apparent.

The results have revealed the same. If internet services can be spread over the three sections, the usage is likely to increase as shown at Section A. Distance discourages the use of internet services.

4.6 Computer availability at home or work place and internet connection

4.6.1 School managers

All the respondents interviewed have computers at their respective schools. Only 3 out of 8 schools (37, 5%) that have computers are connected to the internet and 5 out of 8 (62.5) are not connected to the internet. Educators and learners use computers at schools although some schools do not allow learners to use the computers. Educators use internet services to improve learning and teaching. Learners use internet services to get information for their home works and assignments. From the results, it is clear that on average the high number of the respondents have not connected to computers at their respective schools. The situation on the ground is appealing for more internet connection at schools, as learners and teachers may not be able access a pool of information from their computers without internet connection. Some schools indicated

that internet services improved performances at their schools. Internet services are significant at schools because they have an impact on good results.

4.6.2 Hospital

The hospital has an information center where there are enough computers that are connected to the internet. The hospital has intranet as well. The human resource staff is responsible for the operation of the information centre. The internet and intranet services are helping the hospital with the general administration of the hospital, communication and information. They are able to order medicine for patients, send and receive messages from head office and register patients.

4.6.3 Home users

The study shows that 5 out of 8 (62, 5%) have computers at home. From the respondents who have computers, only 2 out of 8 (25%) are connected and 3 out of 8 (37, 5%) are not connected. 1 out of 5 (20%) percent of the respondents who have computers do have computers both at home and at work. Computers at work are connected to the internet. Approximately 3 out of 8 (37, 5%) do not have computers at all. Learned parents and tertiary students mostly use computers at home. Computers are used for communication purposes, i.e., sending and receiving information and study purpose. The research results clearly show that there are a high percentage of respondents who are not connected to the internet. 1 out of 3(33%) is relying on the computers at work for internet services. The status quo is appealing for more internet connections. The community need to mobilize for more internet infrastructure and services.

4.6.4 Business

About 5 out of 8 (62, 5%) of these business owners have computers at home and at work and their computers are all connected to the internet. About 2 out of 8 (25%) do not have computers at home and have access to computer at work. The computers at the work place are connected to the internet. Business owners and managers mainly use internet services for on-line business. Business owners use internet services for online ordering of goods, communicating with customers and other business owners.

The above results suggest that most business owners are connected and on average, they have a skill to use internet services. The reason for connection is that their business activities compel them and they are able to afford it.

4.6.5 Police station

The police station has got computers in the top management offices that are connected to the internet. The station commissioner and his assistants use computers for communication, data search and to link the station with other police stations. One would expect the smooth running of the station, but conversely, there are only few computers and other police officials find it difficult to access them. Internet services are not utilized to the maximum level. Budgeting for more computers and internet services for all police officers should be a priority.

4.6.6 Students

The results show that 3 out of 8 (37, 5%) of respondents do have computers at home. Only 1 out 3 (33%) of those who have computers is connected to the internet. About 2 out of 8 (25%) students access internet services at their institutions. Only 2 out of 3 (60%) of those who have computers are able to access internet services both at the institution and at home. 3 out 8 (37,5) cannot operate computers. They do not have the skill. The students use internet services mostly for assignments, home works, research works and communications. The percentage having computers is too little and a larger percentage of students are still struggling to access the internet services. The reason for not being connected ranges from costs to internet infrastructure unavailability. Subsidized internet connection at institutions such as schools and of higher learning can alleviate the situation.

4.6.7 Municipality

All respondents from the municipality have computers that are connected to the internet. The human resource management staff uses computers. The internet services help the municipality to communicate with clients (internet enabled clients), to better the administration and data search; i.e., to access government policies. The municipality as

the custodian of service delivery and development has got a financial strength to buy enough computers and to maintain internet services. It should partner with NGOs and community based organizations to deliver services to the community.

In summary, the availability of computers at home and at work shows some relationships with the usage. The higher percentage of respondents from business, municipality, hospital, and police station recorded a higher use of internet services whereas respondents from school and from home recorded an average use of internet services. Availability of computers also shows some relationship with affordability. The respondents who cannot afford may struggle to get internet infrastructure like a computer.

4.7 Computers accessibility by employees

All respondents from different organizations indicated that their computers are accessible to employees; however, the respondents from police station and the hospital indicated that certain important files are accessible only by the top management. All schools showed that their computers are accessible to educators, but only 3 out of 8 (37,5%) make their computers accessible to learners. These show that a large percentage of working groups is not restricted from using computers at work and organizations are ready to empower them. The accessibility of computers to the employees can help employees to develop their computer skills and reduce the number of people who are not trained. Accessibility also increases the numbers of internet users and ultimate internet service demand.

4.8 How internet services help individuals and organizations.

The researcher asked the respondents to give the main reasons for using internet services. The respondents were asked to indicate as many reasons as possible. The following were the results:

4.8.1 Home users

Professionals such as medical doctors, bank cashiers, educators, and students predominantly use internet services at home. Internet services help home users in their studies, to do assignments and home works, improve their jobs, search for information,

read news and communicate with friends. The respondents also indicated that internet services helped them to improve their jobs. They are able to research more about their jobs from the internet services. They also mentioned that internet services improved their general knowledge and made communications with friends and institutions simpler.

Respondents find the internet services interesting and though services are expensive, they are willing to pay. To avoid paying more money that they cannot afford, the respondents use the prepaid services. Those who do not have computers rely on the internet services at institutions.

Most of the respondents use dial-up internet services from Telkom. The respondents complain that services are slow and at times get disconnected while busy working. The possible solution is to improve the computer capacity or to use ADSL. Other respondents indicated that they are using 3G from MTN and Vodacom, which last them at least a month and do not experience problems. The level of usage and the type of activities they use internet for, is appealing for more connection.

4.8.2 Hospital

The hospital information staff uses internet and intranet services for multiple opportunities. The introduction of internet and intranet services has absolutely changed the landscape of the hospital. The intranet services help the hospital to improve its administration: i.e., to register patients (PDSX) and to issue salary advices. The hospital use internet services to link with the head office for administration purposes. The hospital is also able to send messages and reports to head office and able to receive the same from head office. Internet services serve as a link between the hospital and head office and communication becomes ease. The hospital is able to access government policies from the department through the use of internet services.

The respondents from the hospital also use internet services for ordering of medicines. They use online services for ordering medicines (medicom). Internet services also help the hospital to claim medical expenses incurred by patients from their medical scheme. The hospital is able to research how other medical health centres/ hospitals around the world are doing to achieve the best services. The hospital is also able to see how other hospitals / health institutions progress.

The respondents from human resource indicated that it was not going to be easy to execute all services at a required rate without the internet services. Paying of internet services was not mentioned as a problem at all. Internet services run smoothly and benefit the hospital for a great deal. Usage is at a satisfactory level. The level of usage is an important measure of demand. Internet services in hospital are in very important and highly needed.

4.8.3 Students

Variations of answers were found from the respondents. Students use internet services mostly for information that is relevant for their studies. Internet services help them to do their home works, assignments, and research studies. Internet services also help them in career search. The respondents also indicated that they are able to send and receive assignments from the institutions through the use of internet services. Respondents indicated that the internet helps to reduce transportation costs. They are also able to communicate with their lecturers, family, and friends about their studies. Data search is the most compelling reason to use the internet services.

Respondents indicated that they do not have funds to pay for internet services. They rely on free internet services from their institutions. They depend on their parent's financial stability to pay for the internet services when they are at home. Parents do not have a problem to assist them however not all the time they are able to get such assistance. It is very difficult to study without the use of internet services and therefore internet services are very important for the students and are highly needed.

Some respondents indicated that internet cafes are far and not reliable. Sometimes you travel from a distance only to find that they are not working. To overcome the above challenge, Telkom needs to service its infrastructure and upgrade services in order to give quality services. Café owners should also buy enough airtime since this is sometimes an observable challenge.

4.8.4 Business

Business owners and business managers use internet services to order goods, communicate with customers and other business owners. They also use internet services to pay accounts. Some businesses have got a head office, and they use

internet services to link with their head office. Chand et al also found the same results (2005, 41). According to Chand et al, internet services were used to get information, to develop business customer contacts, find out the price of goods, supply stock, find out shopping schedules, and liaise with banks for financial transactions (2005:41). Internet services help business to make on-line SARS tax returns or submissions. Respondents indicated that they are able to look for information regarding their business from the internet services. One respondent, who is a pharmacist, indicated that he is able to claim medical expenses from the Medical Aid schemes/groups through the use of internet services. The respondent further indicated that it is a quickest way of being refunded. Some respondent indicated that they are able to buy the flight tickets through the use internet services.

None of the respondents did indicate any problem with regard to paying and maintenances of internet services. They are paying their bills every month; however, some indicated their internet services being slow. The possible solution to this problem is to use the ADSL, which is assumed to be faster than dial-up services. The level of use is satisfactory and respondents show skill of using the services. The level of use and the nature of services are appealing for more internet infrastructure and service demand. The nature of their work compels them to use internet services. The income/affordability seems to have an influence on usage hence they are able to afford internet infrastructure and services.

4.8.5 Police station

Respondents from the police station indicated that they have intranet and internet. Internet services help them to improve their work, as they are able to access information from the internet and see how other safety and security work around the world. The respondents use intranet to trace the wanted criminals within the organizations and with statistics. The intranet services also help respondents to link the station with other police institutions and share information. The respondents indicated that it is easy to perform work services with the help of internet services. The top police officials have more privilege to access computers since computers are in their offices and other offices do not have computers. Their position and nature of work as the top official seems to influence the use of internet and intranet services. The empowerment should

be extended to other police officers. Computers are not enough and the focus should be to add enough computers to enable access to all police officers.

The respondents did not indicate any problem with regard to payment of services. The government pays for the services.

4.8.6 Municipality

The human resource staff, cashiers, administration clerks and managers are using internet services for general administration, data search: e.g., they are able access governmental policies and to send and receive messages. They also use the internet services to liaise with the provincial government to send and receive e-mails and to communicate with already internet-enabled clients. The municipal manager is always expected to send and receive e-mails that need immediate attention.

Though the internet services are not open for public use, the municipality is able to assist the students who need information from the internet, particularly to access government policies. The researcher anticipated the use of online services from the municipality, as clients/customers will be able to pay accounts/services through these services. Unfortunately these important services are not available. The internet infrastructures are enough, but not used to the maximum level to benefit the community as stated above. They only help the municipality for administration purposes.

However, customers can pay services at selected service points such as shops and banks and money paid will reflect at their computers. Position at work and expertise seem to influence the use of internet services. The nature of work requires the use of internet services. Internet services are extremely needed.

4.8.7 Schools

Teachers use internet services to access additional information to help them in their preparations of lessons and learners use internet to retrieve information that help them to write their homework and assignments. Generally, data search is the most commonly used internet service. Some schools indicated that the introduction of internet services have helped to improve performances as educators and learners are able to access information they require. Schools that have connected to the internet did not show any problem for budgeting internet services. They are able to pay services.

Internet services also help the management to retrieve or access departmental policies to help the school run smoothly. There is minimal skill to use the internet services. Educators and learners are interested to use the internet skill. Learners use the internet services under the guidance of educators or else an educator retrieve materials for them. Internet services are used to the maximum level. The level of education, interest and basic skill seem to influence usage since educators and learners have a particular level of skill and are able to communicate to the computer.

4.8.8 Internet café owners

Respondents indicated business as the main reason. Computers are used as means of their survival since there are no jobs. They use the internet services to generate the income of the family and they are also able to employ one or two assistants. Residents of Nkowankowa use the computer for multiple reasons. They use internet services for data search, send and receive messages from their email boxes. The high costs of internet service by the ISP are the greatest challenge. They sometimes run short of airtime, but battle to maintain the customers. Respondents stated computer virus as a challenge and that from time to time they have to service computers to control the problem. The other challenge is that computers are not enough but indicated to purchase some computers when they are established. The income from the internet services seems to be the motivating factor for internet café owners to offer internet services to the community.

In summary, the research results from various respondents in different institutions show that internet services were used for communications with friends and family, education, business purposes, remittance of money, medical, government administration, travel, enforce law and order, online services, etc. The research results reveal that those who are connected to the internet use the services in a manner that benefit the organizations they serve and individual internet users. The research results also tell that internet services are impacting positively towards development, to site a few; the results show improved services, business and relationships. The uses of internet services depend on skill, position at work, the nature of work and on individual respondents. Teachers use internet services to improve teaching and learning, students use internet services for assignments and home works. Organizations like hospital and municipality use them for

administrations; police stations use them for knowledge and investigations; business for online business; and internet café owners use them as their means of survival.

4.9 Reasons for not being connected

The results from various respondents at different institutions indicated that they could not afford to connect because they earn low salaries. Others indicated that they did not work and some were students. Some respondents indicated that they were not aware of the internet, and it is was not long that they heard about it and showed interests to connect in the future while others did not see importance of internet services. Government and community based organizations should join hands in doing internet awareness campaigns and schools should assume its role of teaching and guiding learners towards the use of internet services.

Organizations like schools indicated that they were afraid that learners may abuse the internet services but they intended to connect to the internet in the near future. Some schools indicated that they were still looking for the best Internet Service Provider (ISP) in terms of quality of service and affordability. From the above statements, it is very important for schools to educate learners to use internet services responsibly, and schools can add fees for such services to help maintain them. Schools that wanted to connect could ask guidance from those that already were connected.

Some schools indicated that they wanted to first train someone who would take charge of computers. Some were afraid that they would run short of funds to maintain the services. The idea of training someone to take care of the computers is right, but it delays the schools privileges of the multiple opportunities brought by internet services. Budgeting and using the computers responsibly could help maintain internet services

The reasons given for non-connection reveal that there is a need for infrastructure; training and that people need motivation or inspiration to realize the importance of the internet services. More training and demonstration of information access should be planned by role players such as the Department of Education to address the problems, especially to the interested group. Affordability and lack of necessary knowledge and skill seem to be the main reasons for non-connection; however the respondents showed interest in internet services.

4.10 Table 5: Computer training

Respondents	Respondents that received training	Respondents that didn't receive training	Percentage of respondents that received training	Percentage of respondents that did not receive training
School managers	5	3	62,5	37,5
Home users	5	3	62,5	37,5
Hospital	2	None	100	None
Students	4	4	50	50
Business	6	2	75	25
Police station	2	None	100	None
Internet café owners	2	None	100	None
Municipality	2	None	100	None
Total	28	12	70	30

Graph 5



4.10.1 Schools

The research results show that 5 out of 8 (62, 5%) of educators received a basic literacy computer training certificates and 3 out of 8 (37, 5%) did not have computer training. 5 out of 8 (62, 5%) of schools are offering basic computer literacy training to their learners and 3 out of 8 (37, 5%) do not have computer training at their various institutions. The researcher anticipated a much smaller percentage of the respondents who do not offer training to their learners, but the percentage is still high. Infrastructures such as computers and classrooms and educators are reasons for lack of computer training at some schools.

Skill is also an important factor for demand. One cannot have interest in a computer without the necessary skill. Computer operation requires a particular level of skill. Skill

to use a computer is a priority to use internet services. On average the respondents are promising to be future potential users. Management also lacked proper planning since schools are offered norms and standard funds. Government, business, community based organizations should make awakening call to schools and give them a marginal support.

4.10.2 Municipality

The study conducted shows that all the municipal staff in the information center is computer literate. Respondents interviewed hold diploma certificates in computer. This suggests effectiveness and efficiency of service delivery and good administration; but it has not yet reached the desired level, as one should be expecting services such as e-governance, which are not apparent. Residents should be able to pay accounts online and checking their bills, but such services are not available. The municipality should enquire from the successful municipalities such as Knysna to address the issue of delivery.

4.10.3 Business

6/8 (75%) had opportunity of receiving basic computer training. Friends, relatives, and children of the respondents taught business owners and some received an in service training from their employers. The results reveal that informal training is being used effectively and efficiently to impact on development. Lack of formal training did not influence utilization hence friends, family members, and relatives stood in the gap.

4.10.4 Home users

The study revealed that 5 out of 8 (62,5%) respondents received computer basic training and 3 out of 8 (37,5%) did not receive computer training. From the number that did not receive training, 2 out of 3 (67%) are able to operate a computer. The respondents revealed that they have been assisted by their children, family members and friends to operate the computer. One (1) out of 3 (33%) does not have computer skills at all. Informal training has once again proved to be a workable mechanism and lack of formal training did not influence utilization.

4.10.5 Police station

Respondents did not go through formal computer training, but they indicated that they had received computer training through in-service training at work. This tells that in-service training by an institution can help people acquire computer skill. Organizations can equip their workers through workshops and in-service training. Formal training did not have effect on utilization.

4.10.6 Students

The research results reveal that 3 out of 8 (37, 5%) of the respondents receive basic computer literacy lessons at their institution, 1 out of 8 (12, 5%) follow computer as a course and 4 out of 8 (50%) do not have computer skills at all. The percentage of students that lacks computer skills is still very high. The introduction of computer literacy at some of the schools has helped the students in the training in computers and ultimately the use of internet services. This implies that schools can help in the training in computers through the introduction of computer related courses. Computer training seems to have effect on utilization since the introduction of computer literacy triggered the use of internet services.

4.10.7 Internet café owners

One respondent from one internet café indicated that he has received computer training through in-service training and the other one has got a diploma certificate in computers. Their knowledge of computers enables them to help their customers who lack skill to operate computers. In this case, computer training seems to have an effect on internet services because internet owners use the acquired skill to help incompetent customers.

4.10.8 Hospital

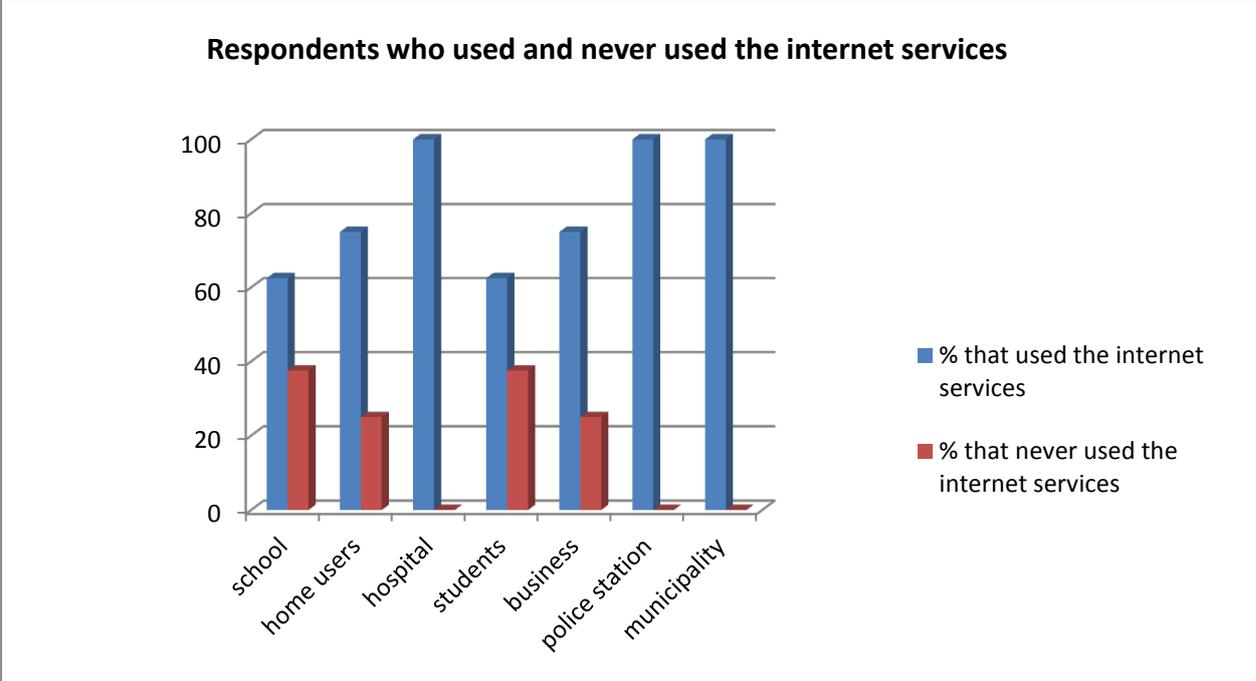
Respondents from the hospital are well skilled and have diplomas in computers. This has helped to change the status quo in hospital and improved services. Computer training seems to have an influence on utilization. From section 4.8.2, the hospital shows a great success in using internet services. Training seems to influence utilization.

The numbers of respondents who did not receive training show some relationship with the usage of internet services as shown below on tables, 6 and 7, respectively. They show a particular pattern of relationship.

4.11 Table 6: Respondents who used and never used the internet services

Respondents	Used internet services	Never used internet services	Percentage used the internet services	Percentage never used the internet services
School	5	3	62,5	37,5
Home users	6	2	75	25
Hospital	2	None	100	None
Students	5	3	62.5	37.5
Business	6	2	75	25
Police station	2	None	100	None
Municipality	2	None	100	None
Total	28	10	73,7	26,3

Graph 6



4.12 Table 7: Respondents that used and never used internet cafes.

Respondents	Used internet café	Never used internet cafe	Percentage used the internet cafe	Percentage never used the internet café
School	2	6	25	75
Home users	3	5	37,5	62,5
Hospital	None	2	0	0
Students	3	5	37,5	62,5
Business	1	7	12,5	87,5
Police station	None	2	0	0
Total	9	27	25	75

Graph 7

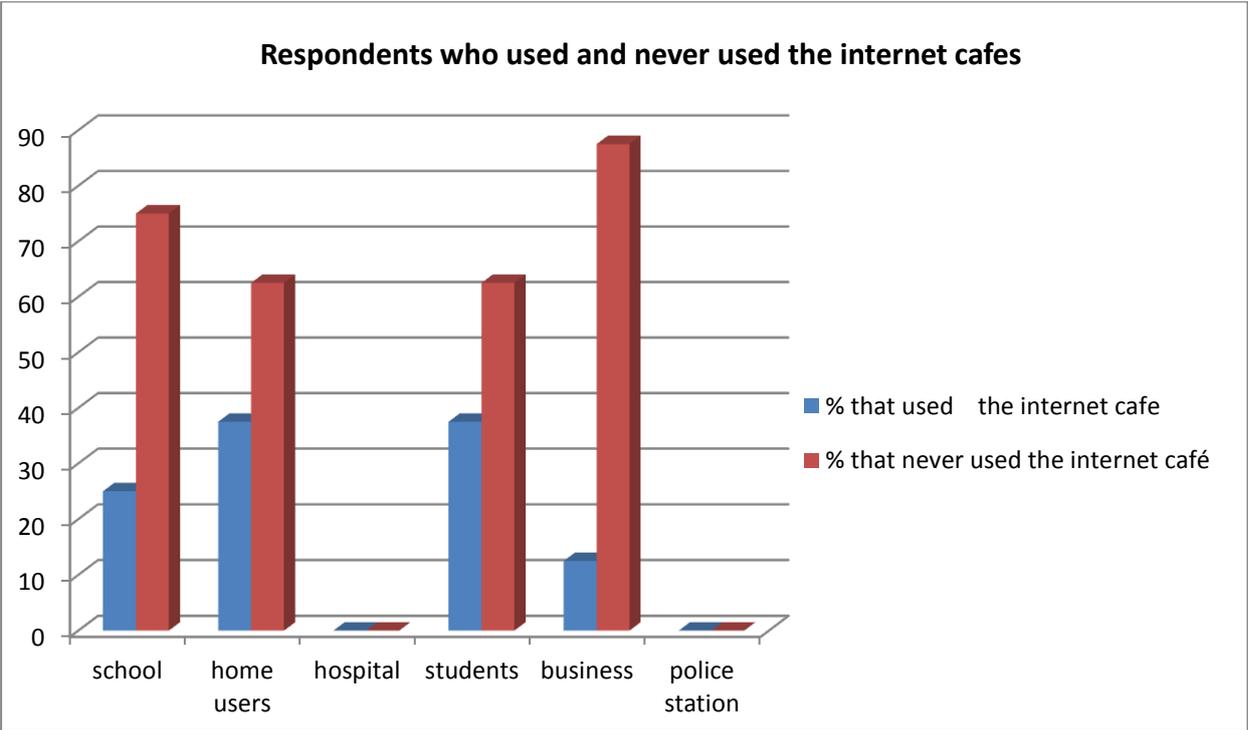


Table 6 and 7 show the results of the respondents who have never used internet services and internet cafés and those who have used them. The results from the respondents indicate clearly that 10 out of 38 (26, 3 %) have never used internet services, 28 out of 38 (73, 7%) got an opportunity of using the internet services. The

percentage of respondents who used the internet services is promising. Organizations such as the hospital, the police station, and the municipality have a high percentage of respondents who are using the internet services and therefore organizations play an important role in internet access.

Conversely, the results indicate that 9 out of 36 (25%) used the services offered by the internet cafes and 27 out of 36 (75%) never used them. Apart from the internet cafés, respondents use internet services from home, institutions and work place. This contributes to 75% who never used internet cafés. The percentage of the respondents using the internet cafes is worrying. Internet café owners should look at a working mechanism to let the community be aware of internet cafes as internet café awareness seems to affect the internet café usage.

There are some discouraging factors such as inconsistency of services that results in to lower number of people using internet cafes. The 75% percent who never used the services offered by the internet cafés might have increased by people who are having access to the internet services at work and at home. Lack of marketing skill by the internet café owners and lack of skill to use the internet services by the respondents might also have contributed to this higher percentage.

The number of people that use the internet services is an indication of higher demand. There are approximately 73.7% of respondents who used the internet services, which is the indication of a serious internet infrastructure and services demand. The number of internet potential users is promising.

4.13 Reasons for non-use

The results were collected from different respondents at different institutions. Respondents showed that they do not know about internet services and others indicated that they don't have knowledge how to operate them. The issue of knowledge is attributed to interests. Family members and colleagues can help in imparting skills to others. The internet service points also need to improve their marketing skills. Municipal interventions and the community are also necessary.

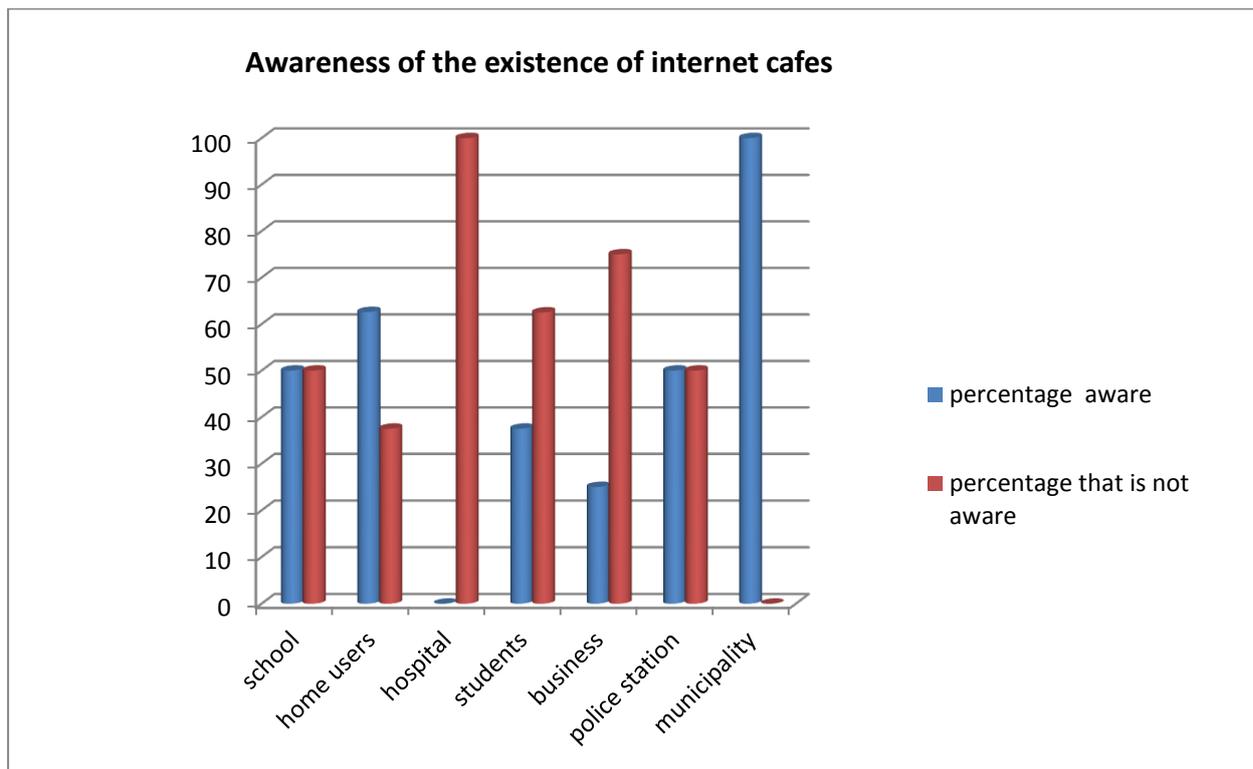
Some respondents indicated that internet services are far away and expensive. Distance discourages them and transportation fee is implicated. Internet service café

should spread rather than being concentrated in one place to encourage people to use them. Some old respondents indicated that it is too late to learn. The skill, infrastructure availability, distance, affordability, and interest show an effect on non-use of internet services, but the central reason is affordability. Lack of knowledge, skill, interests, and high tariffs can ultimately reduce the internet usage. People cannot use internet services if they are not interested. Interest increases the possibility of internet usage

4.14 Table 8: Awareness of the existence of internet cafes

Respondents	No. Aware	No. Not aware	Percentage aware	Percentage not aware
Schools	4	4	50	50
Home users	5	3	62,5	37,5
Hospital	None	2	-	100
Students	3	5	37,5	62,5
Business	2	6	25	75
Police station	1	1	50	50
Municipality	2	None	100	-
Total	17	21	44,7	55,3

Graph 8



The researcher sought to find out if the respondents knew or were aware of the existence of Internet cafés. The results show that the majority of respondents; i.e., 21 out of 38 (55,3%) did not have an idea about the internet cafés within their vicinity. The percentage is too high, and it contributes to low usage of internet cafe services. From the research results, it is evident that awareness of internet services has an impact on utilization. The research results show that the respondents lacked information about the existence of the internet service points. Why are people not aware? The community lacked awareness campaigns about the internet services. The internet café owners also lacked marketing skills to publicize the internet services in the area and the respondents did not bother to inquire about such services in the community; i.e., they were not interested and ignorant. To close the gap, the internet café owners, the municipality, community based organizations and the community at large should launch an awareness campaigns about internet services.

Internet awareness determines the internet usage. The level of awareness increases the possibilities of more internet usage and vice versa. The level of awareness seems to

have influence on the level of use. Those who knew about the internet cafes show a particular pattern of relationship with those who use them as shown in tables 6 and 7.

4.15 How respondents came to know about the existence of Internet cafes within their area.

From the respondents who knew about the existence of the internet cafés, family members friends and relatives spread messages, and some discovered them while taking a walk. This simply tells that family members, friends, relatives, and self-discovery, spread knowledge about the internet cafés, but it was not enough.

4.16 Services offered at the internet cafes

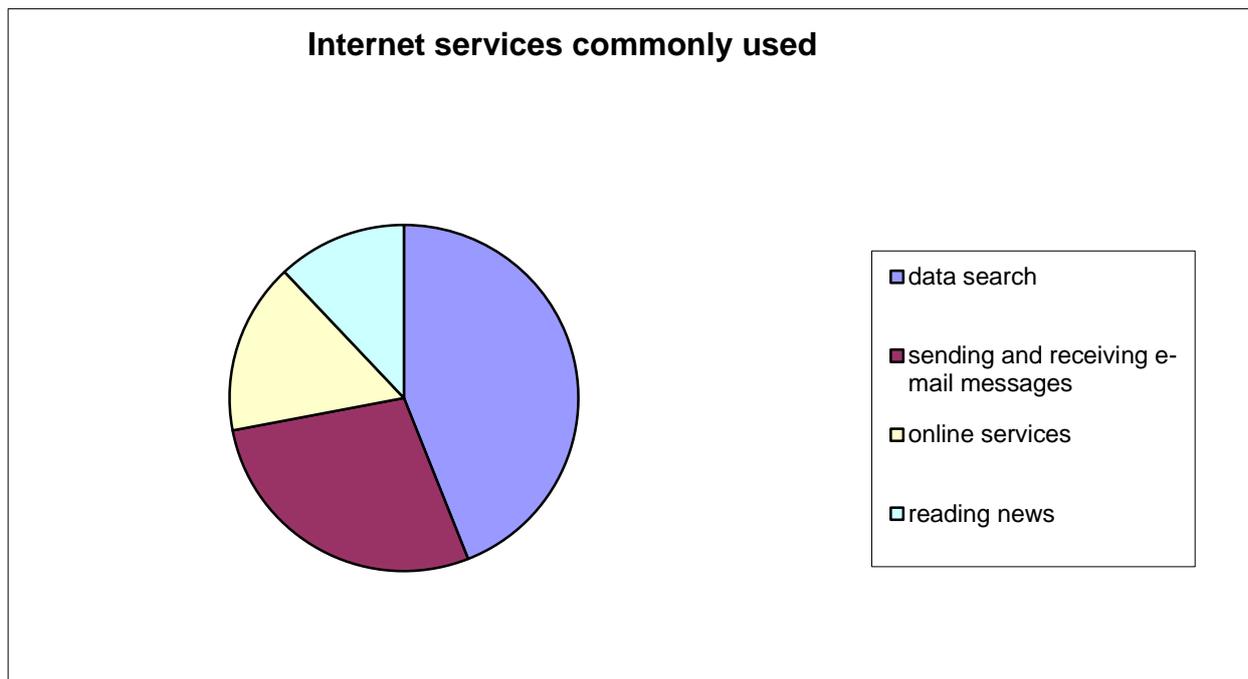
The research results revealed the following services offered at the internet cafés.

- Sending and receiving e-mail messages,
- Data search,
- Faxing and photocopying, and
- Printing and typing

4.17 Table 9: Services commonly used from internet services

Type of services	No of respondents using the services	Percentage using the services
Data search	11	44%
Sending and receiving e-mail messages	7	28%
Online services	4	16%
Reading news	3	12%
Total	25	100%

Graph 9

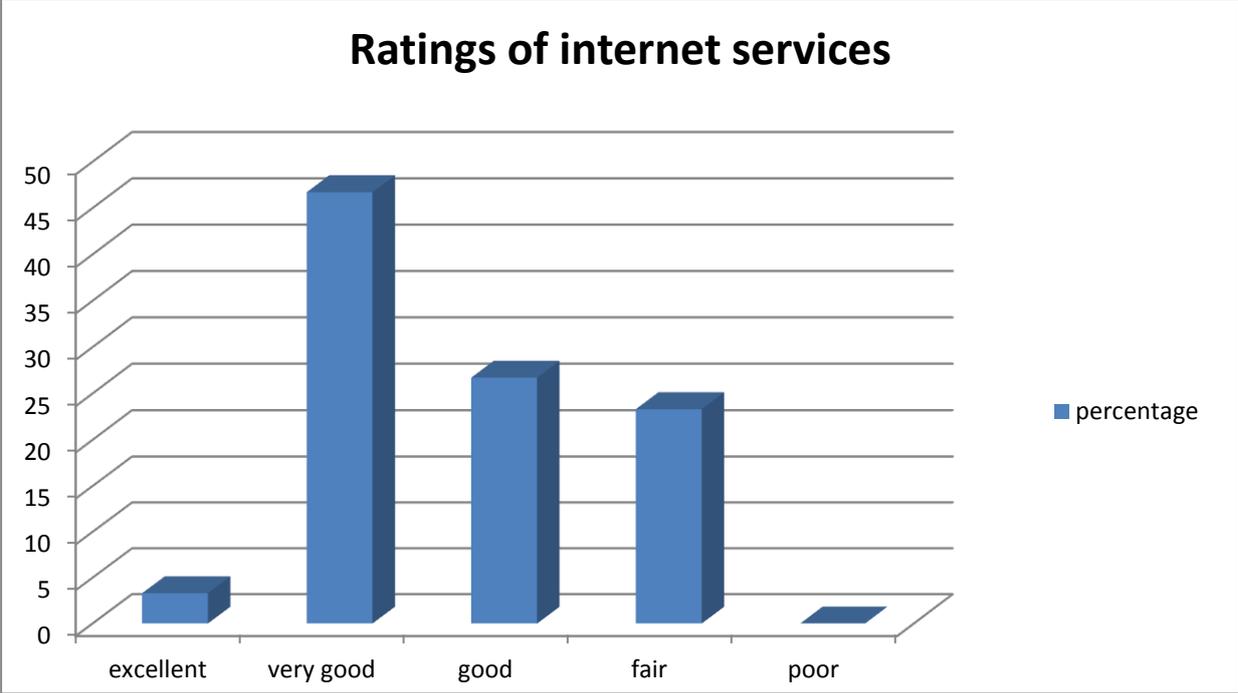


The user group was asked to indicate the types of services commonly used. The results are shown on the table above. The results show that a high proportion of the respondents of 44% use data search followed by e-mail messages with 28%, online services with 16% and reading of news with 12%. Observations from Internet cafés also revealed the same. It is clear from the results that the common reasons for respondents to use internet services are information and communications. The variation in use shows the level of knowledge and skill and the optimum use of internet services and thus high demand.

4.18 Table 10: Ratings of internet services offered at home and institutions.

Respondents	Excellent	Very good	Good	Fair	Poor
School	1	2	1	1	0
Home users	0	2	0	4	0
Hospital	0	2	0	0	0
Students	0	1	3	1	0
Business	0	3	2	1	0
Police station	0	2	0	0	0
Municipality	0	2	0	0	0
Internet café owners	0	0	2	0	0
Total	1	14	8	7	0
Percentages	3,3%	46,7%	26,7%	23,3%	0%

Graph 10



The results show that 14 out of 30 (46, 7%) respondents rated the internet services very good, 8 out of 30 (26, 7%) good, 7 out of 30 (23, 3%) fair and 1 out of 30 (3, 3%) excellent. Institutions such as hospitals, municipality, and police station have a high percentage of very good since they do not experience problems with their internet services. The internet services offered at different institutions are generally good. Respondents who indicated fair pointed out that at times one do not get the internet services at the internet cafés being functional and if asked, they tell that airtime get finished. The other problem is that computers are slow to open files. The implication is that internet users may be discouraged by the above-mentioned constraints and ultimately reduce the number of internet users at internet cafes.

On average, 22 out of 30 do not experience problems with the internet services. The majority of respondents who do not experience any difficulties are from organisations such as hospital, municipality and police station and those who rated fair are the respondents using the internet cafes. In total, 23/30 (77%) rated the internet services “good” and “very good”, which translate into higher demand for internet services.

4.19 Cost of internet services

The results vary from cheap, reasonable, to very expensive. In total, a very high proportion percentage of users indicated that the costs of sending and receiving emails are reasonable whereas the costs of data search are expensive. They say searching information takes longer time than e-mailing. The respondents also indicated that services are expensive during the day and reasonable from 6 P.M. It is clear from the results that different respondents from different background experience things differently, but the fact remains that the majority of the people complain of high costs of the internet service. Simpson also found the same results. According to Simpson, one of the reasons for households who have a computer but without internet access for taking up online services is price / cost (2001:5-7).

Gillwald et al (2004:10) also discovered that ADSL cost in South Africa is more expensive than average price from other countries. Dyson further shows that under the Telkom monopoly, South Africans pay for telephone per minute, including when they are surfing the internet, which makes access prohibitively expensive for most people (2001:02).

To reduce costs, people should use them during weekends and in the evening. Government should also negotiate reasonable/affordable costs as the ICT policy emphasizes.

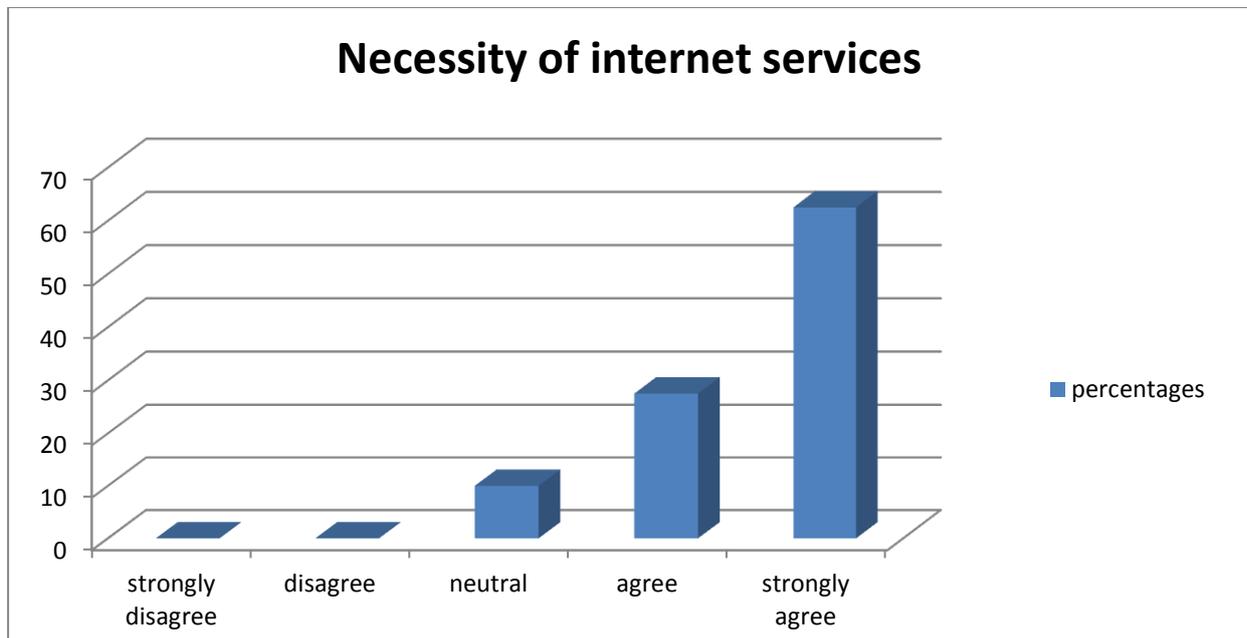
In this case, costs for internet services do not seem to have a major bearing on the use of internet services as usage of internet services is at more than average besides high costs. However, reasonable costs encourage internet usage and high costs discourage usage.

4.20 Table 11: Necessity of internet services.

Respondents	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
School	0	0	0	3	5
Home users	0	0	2	2	4
Hospital	0	0	0	0	2
Students	0	0	1	4	3
Business	0	0	1	2	5
Internet café owners	0	0	0	0	2
Municipality	0	0	0	0	2
Police station	0	0	0	0	2

Total	0	0	4	11	25
Percentage	0	0	10	27,5	62,5

Graph 11



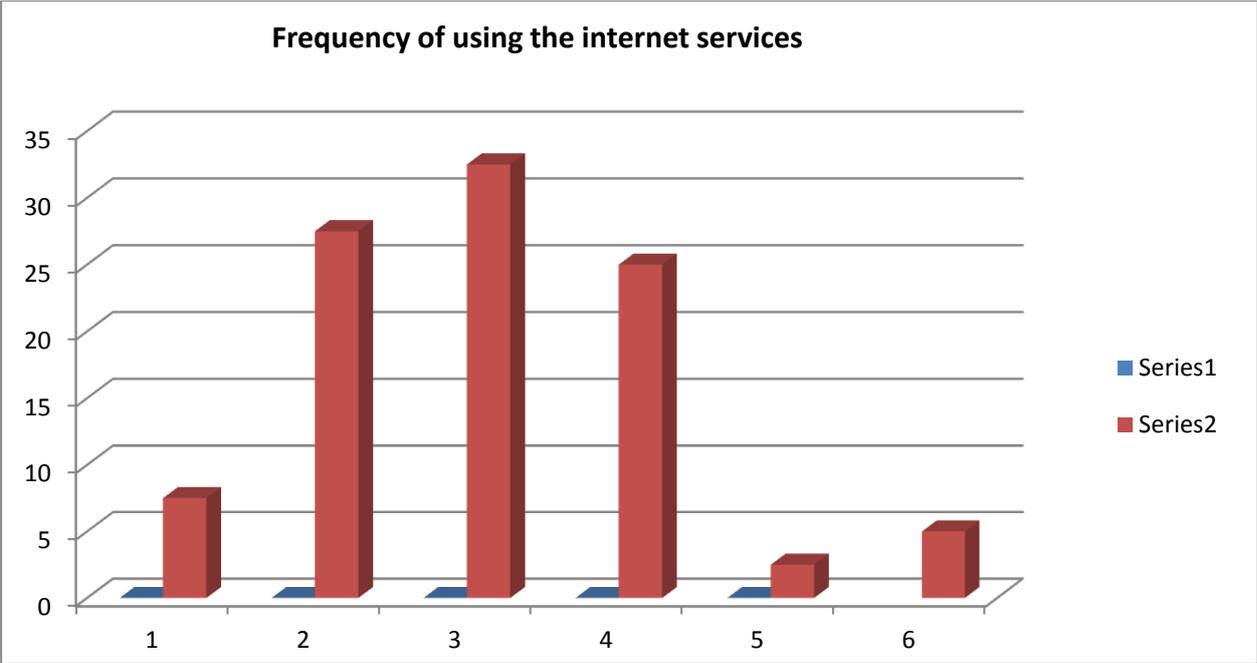
All respondents from different institutions strongly agree that internet services are a need. The highest proportion of 25 out of 40 (62, 5%) strongly agrees that internet services are a need these days. Generally, 36 out of 40 (90%) of the respondents agree that internet is a need these days. There is no shadow of a doubt that the majority of the respondents see the needs of internet services. 4 out of 40 (10%) respondents who are neutral can be attributed to respondents who do not have knowledge about how the internet services work. The high proportion of the respondents who strongly agree that internet services are a need, are potential internet users.

Interests and will to use internet services increases the possibility of internet usage. A number of respondents strongly agrees that internet services are a need. This shows an interest to use internet services. The high number of respondents who strongly agree that internet services are a need is translated into respondents who have interest and interests is good measure of demand. They are future potential internet users.

4.21 Table 12: Frequency of using internet services.

Frequency of using internet services		No.	Percentage
1	Occasionally	3	7,5
2	Never	11	27,5
3	Daily	13	32,5
4	Weekly	10	25
5	Once a month	1	2,5
6	No response	2	5
Total		40	100%

Graph 12



The results show the high proportion of 32, 5% of respondents that are using Internet services daily, followed by 27, 5 of the respondents who never used the internet services and 25% who are using them weekly. Other percentages are just drops. From table 12, it is evident that the high number of internet users is able to access internet services on regular basis. Different respondents use internet services differently to address their immediate needs.

Frequency of using internet services also determines the nature of demand. On average, 27 out of 40 use internet services. The number is promising.

Frequency of use reveals interest and the nature of demand for internet services. A number of respondents who use them daily and on weekly basis are promising and give hope for more potential users.

4.22 Exposure to internet users.

The research results have revealed that most internet café users are less exposed to the internet, and they are dependent on the help of the internet shop owners. This reflects a high number of people who are not well skilled to operate the internet services. They might be having just basic computer certificates without internet knowledge. The respondents also indicated that the more the people visit to the internet service points, the more they gain internet skills.

Though skill is an important measure of demand, the help offered by internet owner encouraged people who are struggling to use the internet services. Exposure to internet services does not directly have an influence on internet services usage hence the internet café owners are able to assist respondents who lack internet exposure.

4.23 Assistance with costs

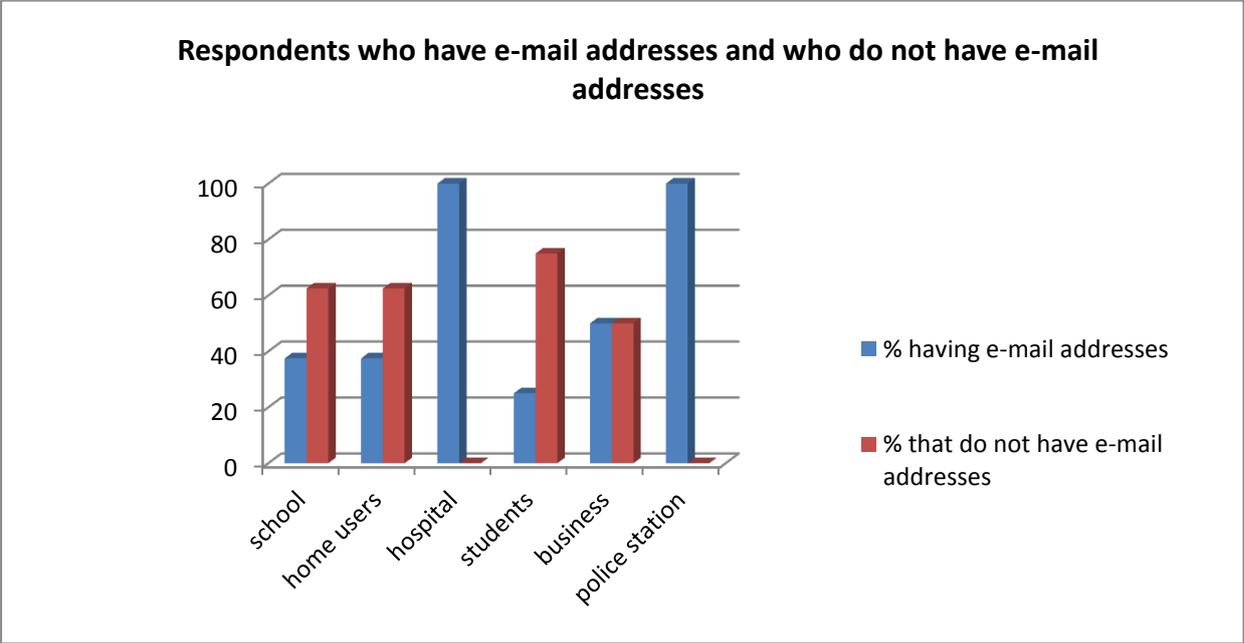
Respondents from the internet cafes responded differently. One respondent offers help with extra cost while the other one offers it freely. The majority of the people liked free services and the internet café that gave free services gained more people than the other.

Business is a competition. It has been found that the internet café owner who helps the respondents without cost has recorded a higher number of respondents who use the internet this also accounts for increase in internet users.

4.24 Table 13: Respondents who have e-mail addresses and those who do not have them.

Respondents	Have e-mail address	Do not have e-mail address	Percentage having e-mail address	Percentage do not have e-mail address
School	3	5	37,5	62,5
Home users	3	5	37,5	62,5
Hospital	1	None	100	None
Students	2	6	25	75
Business	4	4	50	50
Police station	1	None	100	None
Total	14	20	41,2	58,8

Graph 13



On average, the research results show that 58, 8 % of the respondents do not have e-mail addresses against only 41,2% who have e-mail addresses. The study has found that only 38% of the respondents do have personal e-mail addresses. The number of respondents who have e-mail addresses is low, and these show that there are still a lot

of people who cannot communicate by e-mail messages. They may be possibly using other means of communications.

Possession of e-mail addresses is a signal of regular internet user. Those who have e-mail addresses will automatically be compelled to check if there are messages in their e-mail boxes and respond accordingly. Possessions of e-mail addresses promote the use of internet services and internet demand. A large percentage of respondents who use internet services daily correspond to those who have e-mail addresses.

4.25 Reasons for not having e-mail addresses

Reasons for not having e-mail addresses differ from one individual respondent to the other, but the results show that the majority of the respondents do not have knowledge about e-mail addresses. Some respondents never heard about the e-mail address and some heard about it, but they did not have an idea how it works. Lack of knowledge prohibits people from using internet services.

4.26 E-governance, effective and efficient way of bringing the services

The question was directed to the municipality.

Respondents showed that they do not have an idea as how the e-governance works. The municipality should enquire from the well-established municipality such as Knysna.

4.27 Contributions of municipality to make e-governance work

There was no response on this question. The level of knowledge determines the response regarding the e-governance.

4.28 Contribution by the municipality to increase accessibility among community members

The respondents indicated that Multipurpose or Thusong centers have been established with the intention to give information services to the people, but at the present, internet facilities are not available in most of these centers. The government officials delay to implement the plan. The delay may be because of a shortage of funds or competency along the lines of internet services. Quality and quantity of services promote the use of internet services. Demand is also measured against quality and quantity of services.

People need quality and quantity of services. Inadequate infrastructures lead to people being congested and to some losing interests.

4.29 Internet awareness programme

The respondents indicated that they did not have an internet awareness programme as yet. The municipality, as the supplier of services should have a programme to let the community be aware of such emerging development. The level of awareness determines the level of usage. Awareness campaigns will help raising the bar of potential internet usage.

The level of awareness has got an effect on utilization and this is true taking into considerations the number of people who are using the internet cafes. The level of internet café utilization seems to show a particular pattern of relationship with the level of awareness since the majority of 75% were not aware of the internet.

4.30 Advertisement of goods on the internet

No respondent indicated to be advertising goods from the internet. The reasons are lack of knowledge, lack of interest, and the use of other methods of advertisement.

4.31 Internet bank transaction.

Only 1 out of 8 (12, 5) respondents indicated that he is using internet bank transactions. The majority of respondents do not use this service.

4.32 The reason for not doing internet bank transaction

Reasons given were lack of knowledge and fear. One respondent cited an incident where somebody was robbed through the use of online services. According to the respondent, that is what generated fear of use.

4.33 Challenges

4.33.1 Internet café owners

The respondents indicated lack of competition among internet providers that led to service being expensive. Respondents further stated customers who are less exposed to the internet as a challenge because they sometimes use the services and fail to pay

the full cost. The reason is that they take more time struggling to use the services. The research results suggest that services provided by the ISP are expensive and internet users need training to improve the internet skills.

4.33.2 Municipality

The respondents indicated internet infrastructure challenge by TELKOM and ESKOM. TELKOM fails to supply telephony and ESKOM fails to supply electricity. Shortages of infrastructures like electricity and landlines delay the development by the municipality to reach ordinary people' but the municipality needs to be very strategic to mobilize services to the community.

Challenges of the infrastructure availability such as telephony and electricity do have a negative impact on utilization since affected by such challenges will not be able to use internet services. Section C does not have a landline infrastructure and the only possibility is mobile connection, which is expensive.

Insufficient internet infrastructures prevent the majority of the residents to utilize internet services. Internet infrastructure has a direct bearing on the usage of internet services. The number of population should correspond with the available number of infrastructures. The case in Nkowakowa community is 30515 against 2 internet café shops (Greater Tzaneen Municipality IDP: 2005-2006:12). This discourages the use of internet services.

CHAPTER 5

Summary, conclusion, and recommendations

5.1 Introduction

This chapter focuses on the summary, main conclusions based on the findings of the study, and recommendations. The chapter further takes into considerations the objectives of the study; i.e., to investigate the demand for internet infrastructure and services, to explore the strategies that may be more cost effective and affordable and to recommend strategies in which the municipality can improve internet infrastructure and services.

The chapter further examines the nature of demand (the extent to which the community demand for internet infrastructure and services), the use of internet services and the role of the municipality in the development of the community along the internet infrastructure and services. Factors that determine demand such as employment status, position at work, availability of internet infrastructure, level of use, affordability, readiness to pay services, distance, and level of education and ownership of business were examined. In examining the nature of demand for internet services, questionnaires (both open and closed), structured and semi-structured interviews were used. The researcher also used the observation method. Observable important measures of demand such as age, sex, types of services used and skill were the issues under investigation.

5.2 The state of internet service in the area

The study has revealed that Nkowankowa has a high shortage of internet infrastructure such as telephony. The entire Section C does not have a landline infrastructure and the only possibility is mobile connection, which is expensive. The internet cafés, stand at 2 against the population of 30515 (Greater Tzaneen Municipality IDP: 2005-2006:12). The community depends on those two internet café.

Individuals and businesses that are able to afford it have also connected. A certain percentage of the population depends on internet services from their institutions, work place and internet cafes from the nearest town (Tzaneen). There is also one multipurpose center, which is not presently open for public consumption in terms of

internet services. It was assisting in terms of training the computer skill to teachers in particular. Challenges of the infrastructure availability such as telephony have a negative impact on utilization since those affected by such challenges will not be able to use internet services. This discourages use of internet services.

5.3 The purpose of internet services to institutions and individuals

In summary, the research results from various respondents in different institutions show that internet services were used for communications with friends and family, education, business purposes, remittance of money, medical, government administration, travel, enforce law and order, online services, etc. The research results reveal that those who are connected to the internet use the services in a manner that benefit the organizations they serve and individual internet users. The research results also tell that internet services are impacting positively towards development.

The use of internet services depends on skill, position at work, nature of work and on individual respondents. Teachers use internet services to improve teaching and learning, students use internet services for assignments and homework. Organizations like hospital and municipality use them for administration; police stations use them for knowledge and investigations; business for online business; and for the internet café owners, it is their means for survival.

5.4 Key factors that determine demand.

The driving factors of demand such as employment status, position at work, availability of internet infrastructure, level of use, affordability, readiness to pay services, distance, and level of education and ownership of business were found to be apparent.

The study discovered that there are some relationships between users and education level since the respondents who are using the internet services are generally the learned group. Indeed, education is a precondition for using internet services. The educated group is able to understand technology and has money to afford some infrastructure and services. People who cannot read have a serious problem in using the internet services. Education has an effect on utilization of internet services since

majority of respondents who use internet services are learned and have diplomas and degrees.

The availability of computers at home and at work shows some relationships with the usage. The high percentage of respondents from business, municipality, hospital, and police station recorded a high use of internet services whereas respondents from school and home recorded an average use of internet services. Availability of computers also shows some relationship with affordability. Respondents who cannot afford may struggle to get internet infrastructure like computers. It is the responsibility of business, NGOs and government to increase quality and quantity of infrastructures. The number of Multi-purpose Centers should be increased and they should be well equipped to provide people with quality of services.

The research results have also revealed that most internet café users are less exposed to the internet, and they are dependent on the help of the internet shop owners. This reflects a high number of people who are not well skilled to operate the internet services, however the more the people visit to the internet service points, the more they gain internet skills. Skill is an important measure of demand, the help offered by internet owner encouraged people who are struggling to use the internet services. The national, provincial, local and business should be responsible to up-lift the community skills.

The frequency of using internet services also determines the nature of demand. Besides the internet services barriers, most respondents are using the internet services. Frequency of use reveals interest and the nature of demand for internet services. The respondents who use them daily and on weekly basis are promising and give hope for more potential users.

Interests and will to use the internet services increase the possibility of internet usage. Many respondents strongly agree that internet services are a need. This shows interest in using internet services. The high number of respondents who strongly agree that internet services are a need is a sign of interests to internet services. Interests are a good measure of demand.

In this case, costs for internet services do not seem to have a major bearing on the use of internet services as usage of internet services is at more than average besides high

costs. However reasonable costs encourage internet usage and high costs discourages usage.

77 rated the internet services “good” or “very good”, which translates into higher demand for internet services.

From the respondents who knew about the existence of the internet cafés, family members, friends, and relatives spread messages and some discovered them while taking a walk, but it was not enough.

Why are people not aware? The community lacked awareness campaigns about the internet services. The internet café owners also lacked marketing skill to mobilize the internet services in the area and the respondents did not bother to inquire about such services in the community; i.e., they were not interested and were ignorant. To close the gap, the internet café owners, municipality and the community based organizations and the community at large should launch an awareness campaigns about internet services.

Internet awareness determines the internet usage. The level of awareness increases the possibilities of more internet usage and vice versa.

The skills, infrastructure availability, distance, affordability, and interest show an effect on non-use of internet services, but the central reason is affordability. Lack of knowledge, skill, interests and high tariffs can ultimately reduce the internet usage. People will not use internet services if they are not interested. Interest increases the possibility of internet usage

The number of people that use the internet services is an indication of higher demand. There are approximately 73, 7% of respondents who used internet services, which is the indication of a serious internet infrastructure and services demand. The number of internet potential users is promising.

Computer training at schools contributed to the level of utilization since the introduction of computer literacy triggered the use of internet services.

The results reveal that informal training is being used effectively and efficiently to impact on development. Lack of formal training did not influence utilization; hence friends, family members, and relatives filled the gap.

The research results show that distance was a factor when using the internet cafe services. There is a clear linkage between the respondents closer to internet cafes and the degree to which they utilize it. Intuitively one would expect a trend for higher usage if the internet services are closer and have higher customer base. This is most obvious in the case of Section A, where, the total number of users was the highest against Section B and C, where the user numbers were lower. The ease of access to the cafes appears to have an effect on the utilization.

Age shows some influences in the usage of internet services. Age and affordability seem to show some relationships. Respondents, who are dominating the internet services, are the working group who are able to afford some internet infrastructure and services.

5.5 The role of municipality

The municipality is a custodian of service delivery, but in this case the municipality has done nothing to promote the availability, utilization of internet infrastructure and services. The Municipality as the supplier of services, it should have a programme to let the community be aware of such emerging development.

The municipality failed to convert the existing Multipurpose /Thusong center for public internet point as multipurpose centres have been established with the purpose to give information services to the people. The government/municipality officials delayed to implement the plan. The delay may be because of shortage of funds or competency along the lines of internet services. It is the responsibility of the national and the provincial governments to assist the municipality with finances to implement policies and programmes.

Lack of internet infrastructure in Multi-Purpose Centers/Thusong Centers delays the majority of residents to utilize internet services, and this affects the number of internet usage. E-governance can address major issues related to service delivery, access to

information and other developmental issues. For the municipality to run effectively and effectively e-governance is a necessity. People will be able to access services online and they will stay informed of the current issues taking place within their municipality. People will again be able to pay through online services and this will reduce /minimize the level of congestion within the municipality. The municipality should investigate how the e-governance works to already advanced municipalities who are using the systems. The researcher anticipated the use of online services from the municipality, as clients/customers will be able to pay accounts/services through these services. Unfortunately, these important services are not available.

One also expected the use of e-governance from the municipality. The municipality does not have an idea how the e-governance works. E-governance is a key catalyst and stimulus of transition towards economy. It allows the individual citizen to interact and transact online with a government department. E-governance could address major issues related to service delivery, access to information and other developmental issues. For the municipality to run effectively and effectively e-governance is a necessity. People will be able to access services online and they will stay informed of the current issues taking place within their municipality. People will again be able to pay through online services and this will reduce /minimize the level of congestion within the municipality. The municipality should investigate how the e-governance works to already advanced municipalities who are using the systems.

5.6 Conclusions

This research has examined the demand of internet services in Nkowakowa community. It is evident from the research results that the overwhelming majority of the people in Nkowakowa community need internet services, but there are still a number of constraints such as insufficient infrastructure, lack of proper training and high internet cost identified by this study that need to be considered. These constraints pin down the number of internet potential users. On average, the number of internet users and internet potential users is appealing for increase in Internet infrastructures.

The study has also brought about awareness of internet services such as e-mails, online services, reading news, internet banking, e-governance and surfing a pool of

information within a twinkle of an eye through the use of these services. The study has also made people aware of internet cafes that are within their area.

5.7 Recommendations

With regard to infrastructure, the municipality should partner with NGOs and community based organizations to deliver internet and related services to the community. The national and provincial governments should provide financial assistance to the local government for the implementation of policies and programmes.

Computer skill is a pre-condition for internet operation. Government, business and community based organizations should make awakening call to schools and give them a marginal support to establish internet services. The Department of Education should focus on training teachers along the lines of computers; particularly, to those in the management. Computer training should be emphasized amongst the community members particularly, the youth group. The Department of Education at national, provincial, district and local levels has the responsibility to make sure that education is accessible to all irrespective of where they live. It is the responsibility of all stakeholders in the Department to make awareness on the importance of education. The Department has good policies and programs to educate the nation, but the problem is the implementation. Monitoring should be strengthened for proper implementation to take place.

Joint venture by Telkom, Eskom, and the government to provide basic infrastructure like electricity and landlines to underserved areas with subsidized reasonable cost should be reconsidered. The government should play a major role in controlling tariffs and bringing down the cost as reasonable as possible through penetrating negotiations with service providers.

The competent role players such as municipality, business and NGOs should make a joint effort to close a distance gap amongst the internet users and distribute infrastructures to the communities. This can be done through the provision of infrastructure at a reasonable distance. Multipurpose / Thusong Centers should offer

internet services at subsidized and reasonable cost. Internet awareness campaign should be conducted.

Improved marketing skill, regulated costs, motivation of potential users can help increase the number of internet users. Internet shops should have a better way of marketing themselves. Government, private, business and NGO should make computer literacy a priority. Basic computer training should be offered at a very reasonable cost or free at all. Computer literacy should be introduced as a compulsory learning area from the intermediate phase. Teachers should be offered in-service training in basic computer literacy. Schools should be encouraged to use certain percentage of norms and standards funds for internet connection and maintenance.

5.8 Recommended area for further study

This study has explored just a piece of information in a pool of information. It is important for research advice the future researchers to explore the field of cellular radio networks, internet services on TV and radio (audio visual systems) and the development impacted by the ICTs.

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ANNEXURE 1: QUESTIONNAIRES

Questionnaires for home computer users/business owners and students

1. Gender

Male	1
Female	2

2. Indicate your age group from the following categories:

14 and 21	1
22 and 29	2
30 and 37	3
38 and 45	4
46 and 53	5
54 and +	6

3. Highest level of education achieved

Less than grade 10	1
Grade 10	2
Less than grade 12	3
Grade 12	4
Certificate	5
Diploma	6
Degree	7
Senior degree	8

4. Do you have a computer at home/work place?

Home	1
Work place	2
Both	3
I don't have	4

5. Is your computer connected to the Internet?

Yes	1
No	2

6. If your answer is "NO", why is it not connected?

7. If your answer is "YES", what was the main purpose for connection?

Business	1
Education	2
Messages (social)	3
News	4
Other (specify)	5

8. If you selected one above, how do internet services help you in your business?

9. Do you use internet for bank transactions?

Yes	1
No	2

10. Do you order goods through the internet services?

Yes	1
No	2

11. Do you advertise goods through the internet services?

Yes	1
No	2

12. Did you receive computer training?

Yes	1
No	2

13. What qualification did you attain?

Certificate	1
Diploma	2
Degree	3
Other	4

14. Have you ever used the Internet services?

Yes	1
No	2

15. If you answered "NO", please give your reasons for not using the services?

(If not connected, answer questions 16, 17, 18,19,20,21 and 22)

16. Are you aware of the existence of the Internet café in your area?

Yes	1
No	2

17. Have you ever used the Internet services offered at the Internet café?

Yes	1
No	2

18. If you answered "NO", please give your reasons for not using the services?

19. If your answer is "YES", what are the services offered at the Internet cafe?

20. Which one do you commonly use?

21. How do you rates the services offered at the Internet café?

Excellent	1
Very good	2
Good	3
Fair	4
Poor	5

22. Are the Internet café costs reasonable?

Yes	1
No	2

23. What distance do you travel to access the Internet café?
(Between)

0 and 999m	1
1km and 1,9km	2
2km and 2,9km	3
3km and 3,9km	4
4km and 4,9km	5

24. Internet services are a need these days, do you agree?

Strongly disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly agree	5

25. How often do you use the Internet services?

Daily	1
Weekly	2
Often	3
Occasionally	4
Never	5

26. Do you have e-mail address?

Yes	1
No	2

27. If no, what is the reason for not having it?

Don't know about it	1
Don't know how to get it	2
Don't have interest	3
Don't need it	4
Other reason (specify)	5

Questionnaires to internet shop owners

1. Gender

Male	1
Female	2

2. Which age group do you follow?

14 and 21	1
22 and 29	2
30 and 37	3
38 and 45	4
46 and 53	5
54 and +	6

3. Highest level of education achieved

Less than grade 10	1
Grade 10	2
Less than grade 12	3
Grade 12	4
Certificate	5
Diploma	6
Degree	7
Senior degree	8

4. What are the internet services mostly used for?

Business	1
Education	2
Messages (social)	3
News	4
Other (specify)	5

5. How exposed are the internet users?

Less exposed	1
Exposed	2
Fully exposed	3
Not exposed	4

6. Do you offer help to those who do not have exposure to internet?

Yes	1
No	2

7. If yes, do you offer help at the extra cost?

Yes	1
No	2

8. Which age group is the most dominant internet user?

10 and 17	1
18 and 24	2
25 and 32	3
33 and 40	4
41 and 48	5
49 and 56	6
57 and +	7

9. What percentage of people does come for internet services?

Between 90 and 100% are skilled	1
Between 70 and 80	2
Between 50 and 60	3
Between 30 and 40	4
Between 10 and 20	5
Between 0 and 9	6

10. What are the challenges that you experiences in your internet café?

11. How are the ISP costs?

Reasonable	1
Expensive	2
Cheap	3

12. Internet services are a need these days, do you agree?

Strongly disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly agree	5

13. What distance do your customs travel to access the Internet café?
(Between)

0 and 999m	1
1km and 1,9km	2
2km and 2,9km	3
3km and 3,9km	4
4km and 4,9km	5

Questionnaires to management in health section

1. Gender

Male	1
Female	2

2. Which age group do you follow?

14 and 21	1
22 and 29	2
30 and 37	3
38 and 45	4
46 and 53	5
54 and +	6

3. Highest level of education achieved

Less than grade 10	1
Grade 10	2
Less than grade 12	3
Grade 12	4
Certificate	5
Diploma	6
Degree	7
Senior degree	8

4. Did you receive computer training?

Yes	1
No	2

5. What qualification did you attain?

Certificate	1
Diploma	2
Degree	3
Other	4

6. Do you have computers at your institution?

Yes	1
No	2

7. If no, do you intent having them?

Yes	1
No	2

8. If yes, are your computers connected to the internet/intranet?

Yes	1
No	2

9. If your answer is "NO", why are they not connected?

If your answer is yes to question 8, answer question 10-22

10. How do internet services help you?

Research	1
Admin	2
Messages	3
Linkage	4
Other (specify)	5

11. Are there other ways internet/intranet services able to help you?

Yes	1
No	2

12. Mention them.

13. Are your computers accessible to workers?

Yes	1
No	2

14. If your answer is "NO", why are they not accessible?

15. What is the most internet service you usually use?

E-mail messages	1
Data search	2
Marketing	3

Research	4
News	5
Other (specify)	6

16. How do you rates the internet services offered at your institution?

Excellent	1
Very good	2
Good	3
Fair	4
Poor	5

17. Internet services are a need these days, do you agree?

Strongly disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly agree	5

18. How often do you use the internet services?

Daily	1
Weekly	2
Often	3
Occasionally	4
Never	5

19. Do you have e-mail address?

Yes	1
No	2

20. If no, what is the reason for not having an e-mail address?

Don't know about it	1
Don't know how to get it	2
Don't have interest	3
Don't need it	4
Other reason (specify)	5

Questionnaires to management in police station

1. Gender

Male	1
Female	2

2. Which age group do you follow?

14 and 21	1
22 and 29	2
30 and 37	3
38 and 45	4
46 and 53	5
54 and +	6

3. Highest level of education achieved

Less than grade 10	1
Grade 10	2
Less than grade 12	3
Grade 12	4
Certificate	5
Diploma	6
Degree	7
Senior degree	8

4. Did you receive computer training?

Yes	1
No	2

5. What qualification did you attain?

Certificate	1
Diploma	2
Degree	3
Other	4

6. Do you have computers at your institution?

Yes	1
No	2

7. If no, do you intent having them?

Yes	1
No	2

8. If yes, are your computers connected to the internet/intranet?

Yes	1
No	2

9. If your answer is "NO", why are they not connected?

If your answer is yes to question 8, answer question 10-22

10. How do internet services help you?

Research	1
Admin	2
Messages	3
Linkage	4
Other (specify)	5

11. Do internet/intranet services help to investigate crime?

Yes	1
No	2

12. If yes, how do they help to investigate crime?

13. Are there other ways internet/intranet services able to help you?

Yes	1
No	2

14. Mention them.

15. Are your computers accessible to workers?

Yes	1
No	2

16. If your answer is "NO", why are they not accessible?

17. What is the most internet service you usually use?

E-mail messages	1
Data search	2
Marketing	3
Research	4
News	5
Other (specify)	6

18. How do you rates the internet services offered at your institution?

Excellent	1
Very good	2
Good	3
Fair	4
Poor	5

19. Internet services are a need these days, do you agree?

Strongly disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly agree	5

20. How often do you use the internet services?

Daily	1
Weekly	2
Often	3
Occasionally	4
Never	5

21. Do you have e-mail address?

Yes	1
No	2

22. If no, what is the reason for not having an e-mail address?

Don't know about it	1
Don't know how to get it	2
Don't have interest	3
Don't need it	4
Other reason (specify)	5

Questionnaires to Municipal Management

1. Age

Male	1
Female	2

2. Which age group do you follow?

14 and 21	1
22 and 29	2
30 and 37	3
38 and 45	4
46 and 53	5
54 and +	6

3. Highest level of education achieved

Less than grade 10	1
Grade 10	2
Less than grade 12	3
Grade 12	4
Certificate	5
Diploma	6
Degree	7
Senior degree	8

4. Did you receive computer training?

Yes	1
No	2

5. What qualification did you attain?

Certificate	1
Diploma	2
Degree	3
Other	4

6. E-government is an effective and efficient way of bringing services to the people, do you agree?

Strongly disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly agree	5

7. How do internet services help you?

.....
.....
.....
.....
.....

8. How do you increase accessibility amongst the community members?

.....
.....
.....

9. Do you have any internet awareness programmes intended for the community?

Yes	1
No	2

10. If yes, what are the programmes?

.....
.....
.....
.....

11. What percentage of people does reach you through the use of internet services?

0-20	1
21-40	2
41-60	3
61-80	4
81-100	5

12. What are the challenges for bringing internet services to the people?

