



**The perspective of Stakeholders regarding access to ICT in rural communities  
of uMgungundlovu District Municipality**

**by**

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## DECLARATION

I declare that “The Perspectives of Stakeholders Regarding Access to Information Communication Technology in Rural Communities of uMgungundlovu District Municipality” is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

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## **ABSTRACT**

Understanding stakeholders' perspectives regarding access to information and communication technology (ICT) is a critical aspect of ICT for Development (ICT4D). The rural communities of uMgungundlovu District Municipality in KwaZulu-Natal in South Africa were studied to investigate the current means of accessing information using ICT; the factors that affect access to ICT in the rural communities; the literacy level and technological skills of local communities and the stakeholders. The challenges that have the potential to undermine the implementation of ICTs were also identified.

The study used a sequential mixed methods design that entailed the collection of qualitative data subsequent to the quantitative data collection to address the research questions. A non-proportional stratified sampling technique to collect data from 61 stakeholders was utilised. Self-administered questionnaires were used to collect quantitative data from 26 councillors, 5 municipal managers, 5 corporate services managers, and 5 ICT managers, while semi-structured interviews were used to collect qualitative data from 20 ward committee members. The quantitative data was analysed using SPSS statistical software and the qualitative data was analysed with thematic content analysis.

The findings of the study from the rural stakeholders' perspectives revealed that radio was used the most to access information followed by word-of-mouth, cellular phone, newspaper, community gatherings, while TV, letter writing and internet had the lowest usage. On the other hand municipal managers recognise the need for ICT for the economic advancement of the region, which requires the adoption of suitable ICT policies and their annual review. Furthermore municipal managers understood that current information on the municipality website and access to the municipality website were important. Almost all of the Ward committee members had knowledge of Community based digital hubs and all of them wanted the Community based digital hub (CBDH) to be established in their communities. The perspective of the committee Ward members on the technological and computer literacy levels of their respective communities shows an even distribution between the community members with knowledge of CBDH and those without. The

communities are not trained to use communication tools but their perception on youth training with respect to the use of communication tools were significantly different, since some of the youths have undergone some level of computer training on account of the schools they attended. The greatest challenge to the establishment of community-based digital hubs (CBDH) was lack of availability of land, followed by lack of electricity, shortage of skilled people to manage the CBDH, maintenance of the structure, difficulty of permission to build the CBDH and comunal land conflicts.

Recommendations based on the findings of the study are presented, while further research should focus on the factors and challenges that influence access to ICT in rural communities in South Africa from the perspectives of rural community members.

**Keywords:** Access to ICT, Rural Communities, Stakeholders Perspectives, Community-based digital hub

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## **TERMS AND ABBREVIATIONS**

BI	Behavioural Intention
CBDH	Community Based Digital Hub
CBOs	Community-based Organizations
CD-ROM	Compact Disc Read only Memory
CIC	Community Information Centres
CTAM-TPB	Combination of Technology Acceptance Model and Theory of Planned Behavior
DOI	Diffusion of Innovation
DPISA	Department of Public Service and Administration
GCIS	Government Communication and Information System
ICT	Information and Communication Technology
ICT	Information Communication Technology
ICT4D	Information Communication Technology for Development
IDT	Innovation Diffusion Theory
ISP	Information Search Process
IST	Information Society Technology
IT	Information Technology
ITU	International Communications Union
MDB	Municipal Demarcation Board
MM	Motivational Model
MM	Municipal Manager
MPCC	Multipurpose Community Centre
MPCU	Model of PC Utilization
NEGP	National eGovernance Plan
NEPAD	New Partnership for Africa's Development
NGO	Non Governmental Organizations

PBC	Perceived Behaviour Control
PC	Personal Computer
PDA	Personal Digital Assistant
PE	Performance Expectancy
PSTN	Public Switched Telephone Network
PU	Perceived Usefulness
SABC	South Africa Broadcasting Corporation
SCT	Social Cognitive Theory
SMMEs	Small, Medium and Micro-enterprises
SPSS	Statistical Package for Social Sciences
TAM	Technology Acceptance Model
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
TV	Television
USAL	Under-Serviced Area Licences
WWW	World Wide Web

## INTRODUCTION

### 1.1 Background to the Study

Developed economies have advanced information and communication technologies (ICT) that differentiate them from developing and less developed nations. The cost of initiating and supporting internet infrastructure projects is huge and African countries lag behind in allocating sufficient funds to massive ICT deployment (Agenor 2010; Calderon and Serven 2010; Policy Brief, 2015). There are enormous gaps in IT access not only between developed and developing countries, but also between urban and rural areas of developed and developing countries alike. Rural areas in the developing countries are far from accessing the needed technology for their development. Telephone and internet penetration in these communities are very low in comparison with the urban areas. A large population living in the rural areas in the world are isolated from the global economy (Gennaio, 2013; Khoir & Davison, 2014).

Rural communities in Africa constitutes a larger percentage of the population whose information and developmental needs are not adequately met and as a consequence, have been denied meaningful development due to policy implementation gaps artificially created by the national, regional and municipal governments. The consequence of this neglect resulted in rural communities lacking access to education, healthcare and information (Chugudu, 2015; Imurana, Haruna & Nana, 2014). The least expensive input for rural development is knowledge. Knowledge and information are basic ingredients for self reliance and are essential for facilitating rural development, bringing about social and economic change (Arbache & Page, 2007).

Thus, information if well articulated could eradicate ignorance and poverty within underdeveloped areas. Rural communities in Africa have invariably lagged behind in terms of any meaningful development. This constitutes to a greater extent the underdevelopment of African nations as a whole because rural communities form the nucleus of those nations. Lack of access to information to the rural communities undermines the efforts at improving the living conditions of the rural people by the government (Mchombu, 2003; Abrahams, 2011).

Access to information in rural communities of Africa is affected by a number of factors, ranging from lack of ICT infrastructure (Yu, 2002; Mtega & Malekani, 2009; Gcora, Gopeni, Tuswa,

Lwoga, & Chigona, 2015) to scarcity of resources and skills to use those resources (Warschauer, 2002; Chigona, Lekwane, Westcott & Chigona, 2011; Gcora et al., 2015). In urban communities, people are more literate and have easier access to resources (such as libraries, computers and Multipurpose Community Centre (MPCC's)) that can be used to access information. Many developing country governments and agencies are focusing on extending telecommunications services into rural areas, as they seek to alleviate poverty, encourage economic and social growth, and overcome a perceived 'digital divide' (Bhavnni et al., 2008; Bailey & Ngwenyama, 2010; Mbangala & Sumzigi, 2014).

The issues of inequality of access to information in South Africa has its roots in the apartheid era where access to information was marginalised to favour the minority ruling class. In the post apartheid era, provision of information still remains a problem with rural communities having poor information access (McKinley, 2003; Roling, 2014). Access to information is a basic fundamental human right promulgated in the constitution of South Africa (Cheadle, Davis & Haysom 2005; Belski, 2007; USAASA, 2016), giving every citizen the right of access to information at all times. Arko-Cobbah (2007) believes that recognizing citizens' right of access to information is fundamental to South Africa's democracy partly due to experiences of the past. Hence, the right of access to information is expected to bring equity in information provisioning to both urban and rural communities.

However, rural communities in South Africa have not had a fair share of information technology infrastructure vital for easy access to information. According to Mbangala & Sumzigi (2014) access to ICTs significantly influences opportunities of communities to participate effectively in economic, social and civic activities. Lokeswari (2016) reported incremental profit because farmer's cooperatives are well informed and are able to respond promptly to variations in the marketplace. They can compete with commercial farmers through communal viewing of agricultural programs on television and telephone conversations with distance friends and relatives, strengthening social ties. These people continue to develop themselves with the information they have acquired.

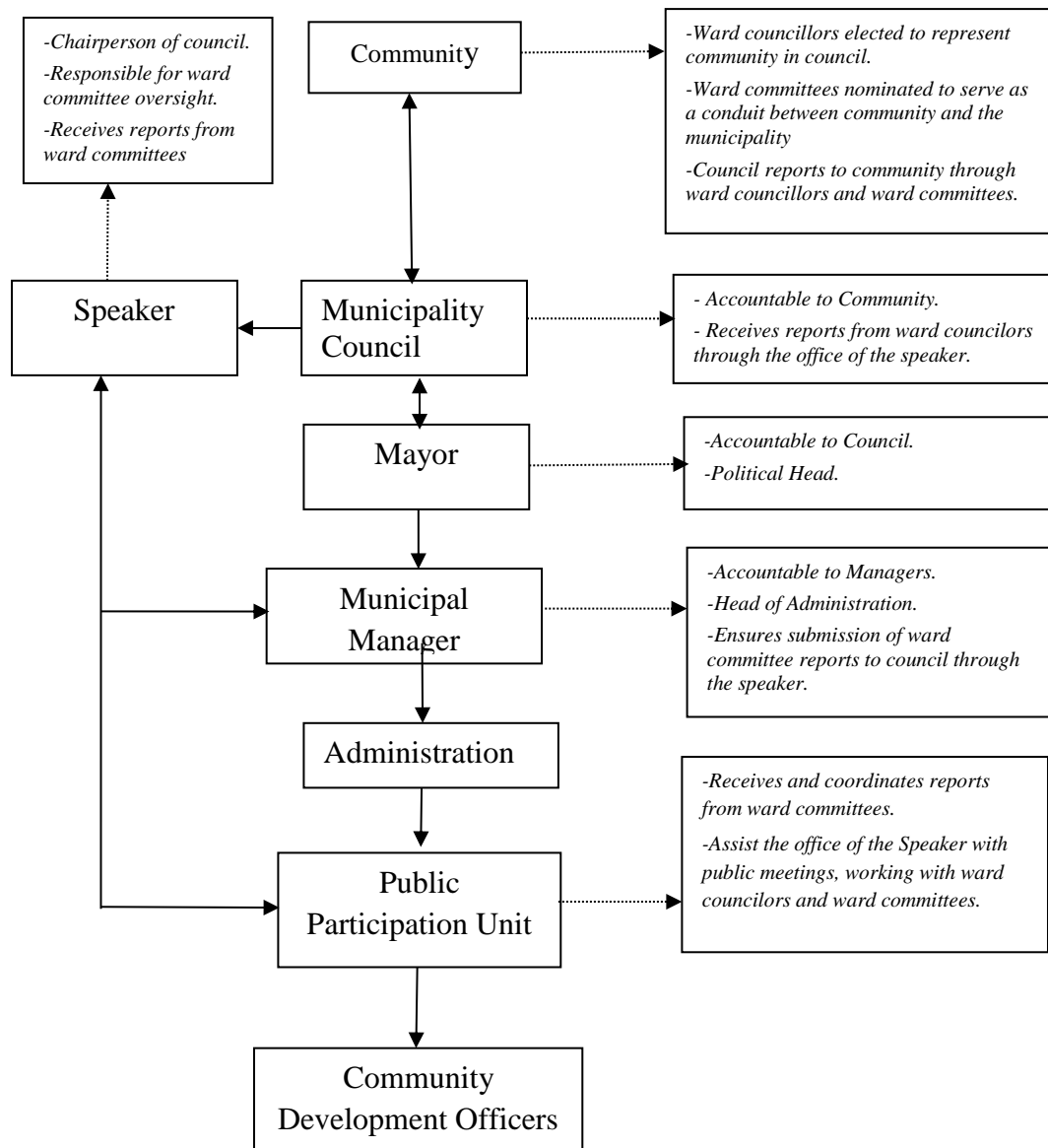
Information is a vital element of rural development. Rural areas are often characterised as information-poor and information provision has always been a central component of rural development initiatives. The rural communities typically lack access to information vital to their livelihoods (Chapman & Slaymaker, 2002 and Mtega & Malekani, 2009). In the context of poor rural communities, (Moshapo & Hanrahan, 2004) affirmed that geographical distance

is the most significant barrier to acquiring effective services that are available in the more affluent urban areas. These services can however be made accessible to poor rural communities in the form of telemedicine, e-government and distance-education solutions.

To address the accessibility gap, South Africa government has pioneered the introduction of Multi-Purpose Community Centre (MPCC's) through the Universal Service Agency of South Africa (USAASA) into communities, bringing services closer to people in rural areas (USAASA, 2016). The Universal Service Agency launched an ICT centre pilot project in the form of telecentres, with the objective of providing universal access to telecommunications in South Africa. Those ICT centres are managed and operated by approved franchisees and are located in disadvantaged communities, particularly rural areas. The objective of the ICT centre project is to provide universal access through public facilities such as telecommunications, internet and telephone (USAASA, 2016; Alao, Lwoga & Chigona, 2017).

South Africa's poor rural areas are characterised by people with low literacy and skills (Chigona, Lekwane, Westcott & Chigona, 2011; Mbatha, 2015). In this regard, Osman & Tanner (2017) suggest the training and transfer of ICT skills to the rural poor and an awareness campaign on the benefits and potentials of ICT to improve their livelihoods is necessary.

The Municipal Ward Councillors as Public Representatives are voted into office to represent their constituencies from urban and rural areas of the municipal boundary. Their responsibility is that of exercising their executive and legislative authority in the council on matters that affect the communities they represent. Ward Committees on the other hand are nominated to serve as a conduit between the community and the municipality on matters of community development, while the Municipal Senior Management are employed in the municipality to provide technical guidance to the political leadership on all operations of the municipal business that involves, amongst others, community development.



**Figure 1.1 Relationship between the various Municipal Structures**

It is expected that all the stakeholders mentioned above would know and understand the community they represent and serve and also would be familiar with the challenges that are existing in their communities. These challenges are believed to have the potential of stifling development in the rural areas. Much emphasis has been placed on the development of ICTs for deployment to communities, and studies have looked at the impact of this deployment. However, it is equally important to know the perspectives held by local authorities and stakeholders who are responsible for the deployment of ICTs in these communities, with respect to the level of accessibility of ICT to rural communities, their literacy levels, and challenges faced in accessing information. Knowing their views can improve future strategies

on the provision of ICTs to rural communities. Their perspectives could also provide guidance on policy directives in addressing the pitfalls inherent in the present strategy.

This study therefore explores the perspectives of stakeholders regarding access to ICTs by rural communities of Umgungundlovu district municipality using the diffusion of innovation theory. Furthermore, the study will explore the views of the stakeholders on the computer literacy levels that exists in rural communities, in addition to the challenges that have the potential to undermine the implementation of ICT in the rural communities of Umgungundlovu district municipality.

## **1.2 Problem Statement**

South Africa has two economies in one country. The first is highly developed with skilled manpower and becoming more competitive globally; the second is characterised as mainly marginalized, unskilled and underdeveloped (Akinsola, Herselman & Jacobs, 2005). A significant proportion of the population, due to historical factors and monopolistic policies, does not have equitable access to ICTs. One of the factors identified was the cost of telecommunications, which in turn, determines accessibility to ICTs and economic growth (Fourie, 2008). Without decisive government intervention, rural communities could lag behind even further. To address the imbalance, the Universal Service Agency was set up with the objective of providing universal access to telecommunications in South Africa. It has since launched a number of ICT centre pilot projects in the forms of telecentre and Multipurpose Community Centre (MPCC's) in many disadvantaged municipalities in provinces across South Africa, including Umgungundlovu district municipality. However, in order to gauge the overall success of these project implementations in the various municipalities, the stakeholders opinions and perceptions of the existing projects and how it has fared in serving the intended communities will assist in gauging the overall success of these projects as well as provide directions on future implementation strategies. Moreover, there are insufficient empirical studies that have documented stakeholders perspectives with respect to Universal Service Agency ICT projects deployed in various rural communities. Wafula-Kwake and Ocholla (2007) explored the feasibility of ICT use in the rural areas of South Africa with results suggesting that problems of access and exclusion are still predominant.

Sikhakhane, Lubbe & Klopper (2005) showed that a high unemployment rate, low level of literacy and lack of infrastructure contributes to problem of information access in rural areas of KwaZulu-Natal province. Mashinini (2008) examined the challenges of ICT policy for rural

communities in South Africa and observed that the lack of leadership for integrating multiple policy initiatives and evidence of a culture of non-compliance with policies are major challenges of ICT access in rural communities. The reviewed studies depict a paucity of studies on access to ICT in rural communities with respect to stakeholders' views. This study will therefore fill a knowledge gap in empirical literature by examining the perspectives of stakeholders regarding access to ICT in rural communities of uMgungundlovu District Municipality in KwaZulu-Natal province.

### **1.3 Objectives of the Study**

The focus of the study is to investigate the state of access to ICT by rural communities of uMgungundlovu District Municipality in KwaZulu-Natal province. The specific objectives are:

1. To determine (from the perspective of the stakeholders) the current means of accessing information using ICT by rural dwellers in uMgungundlovu District Municipality.
2. To determine (from the perspective of the stakeholders) factors that affect access to ICT in rural communities of uMgungundlovu District Municipality.
3. To determine (from the perspective of the stakeholders) the literacy level of local communities and municipal leadership as far as technological skills are concerned.
4. To identify (from the perspective of the stakeholders) challenges that have the potential to undermine the implementation of ICTs in the rural communities, which could compromise their development.

### **1.4 Research Questions**

The study is guided by the main research question **“What are the perspectives of stakeholders regarding access to ICT by rural communities in of uMgungundlovu District Municipality in KwaZulu-Natal province?”**

The primary research question is addressed through the following sub-questions:

1. How do residents in the rural community of uMgungundlovu District Municipality use ICT to access information?
2. What are the factors that affect access to Information Communication Technology in uMgungundlovu District?
3. What is the level of technological skills of local communities and leaders in the municipal?

4. What are the challenges that have the potential to undermine the implementation of ICTs in the rural communities which compromise their development?

### **1.5 Significance of the Study**

Information provision to rural communities in South Africa is a gateway towards having a well-informed citizenry who will make well informed decisions and engage in developmental activities for sustainable developmental growth (Dick, 2005; Belski, 2007). In South Africa, the majority of the rural populace are excluded and are denied right of access to information necessary for economic and social integration into the broader society. Access to information can improve the standard of living in poor rural communities and make them self sufficient thereby facilitating rural development.

This study is significant as understanding the various ways by which the rural communities seek information, will assist stakeholders in designing and providing more efficient and reliable information sources and services that will meet the specific information needs of the communities. It will help information planners to revisit their model and provide tailored solutions that will meet precise local requirements of a community rather than a one-size-fits-all model. Understanding factors that affect access to ICT in the rural communities will guide stakeholders on future pitfalls and in providing effective ICT solutions for the rural communities. Knowing the level of skills of the rural populace is necessary as it will help stakeholders and information planners to deliver solutions that will meet their skill levels, while on the other hand, provide skill development training through hands-on practical workshops to enable them maximize the benefits of the deployed ICT solutions. The recognition of the challenges that can undermine the implementation of ICT in the rural communities will be a valuable yardstick to benchmark future ICT projects in order to avoid drawbacks that can hinder projects. Overall, the outcome of this study can provide very useful indicators that will inform future policy on more effective and efficient ways to meet the information access provisions of rural communities in South Africa.

### **1.6 Scope of the Study**

The study focused only on stakeholders (councillors, municipal managers, corporate services, and ICT managers) in uMgungundlovu District Municipality in KwaZulu-Natal province. The study did not consider the opinion of end users of ICT in the municipality.

## **1.7 Conclusion**

The chapter presented the background to the study, the problem statement, research questions, significance, scope and limitations of the study. The next chapter presents the review of the literature.

## **CHAPTER TWO**

### **LITERATURE REVIEW AND THEORETICAL FRAMEWORK**

#### **2.1 Introduction**

This chapter is divided into two sections. The first section presents the review of literature and the second segment presents the theoretical framework that guides the study. The literature review is based on the themes of the research questions guiding the study, namely issues surrounding access to information, factors affecting access to ICT, challenges to access to ICT in rural areas and the digital divide. The second segment reviews theories of use of technology. The Diffusion of Innovation theory (DOI) was used as the dominant theory to measure the stakeholders' perception regarding access to ICT in the rural communities. DOI is a widely used theoretical framework in the area of technology diffusion and adoption. The section discussed DOI theory alongside with other models and theories of use of technology. Those discussed include: (1) Technology Acceptance Model (TAM); (2) Theory of Reasoned Action (TRA); (3) Motivational Model (MM); (4) Theory of Planned Behaviour (TPB); (5) a combination of Technology Acceptance Model (TAM) and TPB model (CTAM &TPB); (6) Model of PC Utilization (MPCU); (7) Social Cognition Theory and (8) Innovation Diffusion Theory (IDT)

#### **2.2 Literature Review**

##### **2.2.1 ICT in South Africa**

South Africa has the characteristics of both an advanced and a developing economy. It has access to technology, sophisticated institutions including research bodies and universities, and a strong private sector and fiscal resources. At the same time, half of the 50 million people in South Africa live below the poverty line, and a large proportion of South Africans have weak educational qualifications. These apparent anomalies play themselves out in the ICT sector. South Africa is characterised by early adoption of leading-edge technologies by high-income users (both individuals and corporations) that were in parallel with developed economies; while at the same time the majority of the population, the public sector, and most small and micro enterprises reflect the slower adoption patterns typical of developing countries (Gillwald, Moyo & Stork, 2012)

A relatively sophisticated ICT sector has emerged in South Africa over two decades of telecommunications reform since the mid-1990s, with the currently two national fixed-line operators (Telkom and Neotel), five mobile operators (Vodacom, MTN, Cell C, Telkom Mobile and mobile virtual network operator [MVNO] Virgin Mobile), and hundreds of Internet service providers (ISPs) and value-added network service providers (VANS). In its first ICT Satellite Account, as drawn from the National Accounts, Statistics South Africa reports that in 2005, the ICT total output was valued at more than ZAR153 billion, and calculates the value of the ICT sector's contribution to GDP (i.e. the ICT gross value-add to GDP) at 4.3% (Stats SA, 2013). Because the ICT sector has grown significantly since the year 2005 on which the Stats SA ICT Satellite Account data are currently based (while other major sectors have slowed), it is believed that the figure for the ICT sector's contribution to South African GDP is now closer to 6%. The Department of Communications (DoC) reported in 2010 that the total South African telecommunications market had grown from ZAR 131 billion in 2007 to ZAR179 billion in 2010 (DoC, 2010, p. 18).

Growth in South Africa's ICT sector has not, however, been accompanied by a realisation of the primary policy objective of affordable access, for all, to the full range of communications services that characterise modern economies. South Africa has lost its status as continental leader in internet and voice connectivity, and its place on global ICT indices has been taken by former comparator countries such as Malaysia, Turkey and South Korea. Where South Korea and South Africa were comparatively placed on International Telecommunication Union (ITU) ratings 20 years ago, South Korea is now a top global performer (Gillwald, 2011), while South Africa's ranking on the ITU ICT Development Index has slipped from 72nd in 2002 to 90 in 2010 (ITU, 2002, 2012). Despite South Africa's sub-optimal ICT policy and regulatory environment, its ICT sector continues to grow year-on-year. In the aforementioned landmark ICT Satellite Account generated off the National Accounts by Stats SA in 2013, Stats SA established that ICT capital formation as a portion of total capital formation in the country was 7% in 2005 (Stats SA, 2013).

### **2.2.2 ICT Market Overview**

Characterised by duopoly and effective duopoly, the South African fixed and mobile markets have in recent years featured price-matching, poor service quality, and anti-competitive behaviour, making competitive pressure from new entrants in both the fixed and mobile markets very difficult to exert. Although a horizontal licensing regime was introduced through

the Electronic Communications Act (ECA) of 2005 in order to deal with convergence within the ICT sector, the market remains structured around a number of vertically integrated operators. In terms of the ECA, old public switched telephone network (PSTN), mobile land communications systems (MLCS), VANS and broadcasting signal distribution licences, and public, commercial, and community broadcast licences, were converted into network, service, and content licences. However, the incumbents have tended to simply acquire multiple licences, thus preserving the vertically integrated entities they operated before the ECA of 2005 (DoC, 2010)

There is a duopoly in the fixed-line market with incumbent Telkom claiming the lion's share of the market over Neotel. Telkom maintains dominance over the backbone and competes downstream with its competitors (formerly licensed as VANS and ISPs) in the electronic communications service (ECS) and electronic communications network service (ECNS) licence categories. The services market includes both managed data network providers and first-tier internet access providers such as Internet Solutions, MTN Business Solutions, MWEB, and Telkom. This market also includes hundreds of smaller ISPs who hold class licences only (Gillwald, Moyo & Stork, 2012).

Neotel, the second PSTN operator, only became operational in 2006, following licensing delays. The company, which primarily offers fixed-wireless solutions, has targeted corporates, and has won over some large clients and small and medium enterprises (SMEs) from Telkom. But Liquid Telecommunication has made few inroads into the residential market. The fibre optic networks of the parastatal railway network run by Transnet, and the parastatal power network run by Eskom – which were originally set aside for the second network operator (the eventual Liquid Telecommunication) – were reclaimed by the state (as the Liquid Telecommunication licence was being finalised) and were subsequently transferred into a state-owned broadband company, Broadband Infraco (Gillwald, Moyo & Stork, 2012).

Initially, there was some concern that Infraco would squeeze out private sector investment, but having fallen victim to the lack of coordination between its shareholder the Department of Public Enterprises and the DoC – which was responsible for locating Infraco's licence in the liberalised competitive market into which it was being inserted – Infraco's entry was delayed and it could not keep the interest of its target clients, the network operators. These delays in the entry of an Infraco low-cost-access carrier network resulted in MTN, Neotel, and Vodacom co-building an alternative national infrastructure network, undermining the viability of the

Infraco business model. Liquid Telecommunication also faces competition from unlicensed Dark Fibre Africa, which, starting in 2007, installed a carrier-neutral, open access ducting infrastructure in South Africa. Through this underground infrastructure, any operator with a communications licence can run a fibre optic network (Gillwald, Moyo & Stork, 2012).

Some provincial governments, such as those in Gauteng and the Western Cape, have instituted broadband plans and proceeded with metropolitan networks and government e-services services, as have the major metros; Johannesburg, Cape Town, and eThekweni municipality (greater Durban). The result has been significant duplication in metropolitan areas (where multiple cables, including that of Dark Fibre Africa and Fibreco, have been laid); some duplication on the main intercity routes; and very little extension of the network off of the main routes to smaller towns and villages.

The mobile market, though it has four operators and one MVNO, is dominated by the two incumbents, MTN and Vodacom, who jointly command a market share of more than 80%. With the belated reduction in mobile termination rates, the market has become more competitive as the smaller operators have slashed prices in an attempt to gain market share. Incumbents have responded by offering various airtime promotions, including successful dynamic pricing discounts, bundled services, and flat rates on regional roaming. They also provide airtime promotions and sales of smart phones. However, market dynamics in the mobile market did not change significantly with Telkom Mobile's entrance into the market in 2010. In 2006, Cell C entered into a partnership with Virgin (as an MVNO) and got a foothold in the market by targeting lower-income subscribers, though more recently it has adopted a more aggressive pricing strategy and tried to erode the share of the incumbents' contract market (DoC, 2013).

### **2.2.3 Mobile Operators**

#### **Vodacom**

Vodacom is South Africa's biggest mobile operator. The company has delivered robust performance despite the low economic growth environment. Vodacom has extended its market lead over its competitors, with an approximate 43% share of customers in South Africa, widening the gap between it and struggling rival, MTN (Biztech, 2017). Vodacom released its preliminary result for the year ended 31 March 2018 revealing the network performance. Service revenue increased 4.9% to R54.6 billion, supported by strong customer additions, a higher contribution from data revenue and growth in enterprise services. Revenue grew

strongly by 8.1% to R70.0 billion, as a result of equipment revenue growth of 15.2%, underpinned by smart device sales which constitute 70.0% of total devices sold, in-line the company's strategy of pushing up sales of smart devices. Data revenue grew strongly at 12.8% to R23.4 billion, contributing 42.8% of service revenue, while enterprise service revenue grew 10.8% contributing 25.7% of service revenue (Vodacom 2018). Vodacom experienced positive outcomes from segmented acquisition strategy, with their Youth Initiative "Next Level" (NXTLVL), (a youth brand aimed at South Africa youth under the age of 25 is designed to enable and support youth on their journey to success through technology) attracting over 3.3 million new and existing Youth customers. The expansion of the new *Siyakha* platform is helping to improve the lives of customers, through products such as zero rated career portals, Facebook Flex, free health information for expectant mothers and prepaid funeral cover. These propositions, supported by personalised value offers their '*Just 4 You*' platform have seen Vodacom attracting 4.5 million new customers in the first quarter of 2018, closing at 41.6 million subscribers, up 12.1%. Vodacom's capital expenditure of R8.9 billion was focused on widening network coverage, improving network performance to support increased data demand and enhancing overall customer experience. Significant investment was made in IT systems with deep machine learning capabilities aimed at providing a seamless and personalised customer experience, enabling Vodacom to deliver on its strategic ambition of being the leading digital telco in South Africa. The company extended their 3G population coverage to 99.4% and 4G coverage to 80.1%, up from 75.8% in 2017. Over the past three years (from 2018), Vodacom have effectively reduced voice and data prices by 36.3% and 42.5% respectively, while maintaining revenue growth. The company's accelerated rural coverage programme was instrumental in Vodacom becoming the continent's first operator to reach 80% population coverage on a 4G network (Vodacom 2018).

## **MTN**

MTN has consistently remained one of the top two players in the South Africa mobile telecommunication industry after Vodacom with a subscribers base of 29.5 million at the end of year 2017. Service revenue increased by 3.9% in the same year, while data and digital revenue increased by 25.8% and 22.3% respectively. MTN South Africa reported improved profitability with EBITDA (Earning Before Interest, Tax, Depreciation and Amortization) up by 9.5%. However at 3.9%, the growth in service revenue was lower than management expectations. While the lead indicators for the post-paid business are encouraging, it is taking longer for the post-paid revenue improvement to impact the reported numbers. Prepaid service

revenue increased by 7.7%, while post-paid service revenue declined by 0.6%, largely because of the underperformance of the enterprise segment. Total revenue increased by 3.0% from the previous year, while capital expenditure increased by 4.4% to R11 470 million by the end of 2017 financial year. The increased investment in the network resulted in MTN South Africa having the leading data network in the country, according to My Broadband and P3, and co-best according to Ookla (MTN, 2017)

### **Cell C**

Cell C is the third largest mobile network operator in South Africa, with about 16 million subscriber's base after MTN. Cell C's rise between 2013 and 2015 have put a dent in the overall market figures of the dominant operators (Vodacom and MTN) (Biztech, 2018). Cell C's aggressive price reductions have certainly pressured the dominant operators into reducing their prices, and the significant investment Cell C received from shareholders Saudi Augar17 suggests it remains serious about growing the mobile market and eroding some of the market share of the dominant players. However, Cell C's official data released in December 2017 show that it's 'massive' growth story over the past six years isn't as large as initially expected, though it remains one of the biggest winners. Cell C is the dominant MVNO network in the country, with FNB Connect, Virgin Mobile, Me & You Mobile, Hello Mobile and many other smaller players using the operator's network. In mid-2016, Cell C revealed that MVNOs on its network accounted for just over one million subscribers. As at December 2017 financial year, the company's total revenue stood at R15.7 billion, an increase of 7%, with a subscriber's base of 16,300,000 accounting for 17.3% of the overall telecom's market share (Cell C, 2017).

### **Telkom Mobile**

Telkom is fourth in ranking of mobile services provider in South Africa. In its group interim result for year ended 2017, Telkom showed strong growth in its mobile division with mobile service revenue recording a 43.2% growth to R2.28 billion, supported by a 35.9% increase in the active subscriber base to 4.4 million with a blended average revenue per user (ARPU) stable at R92. This growth according to Telkom was underpinned by an investment of R1.2 billion in network extension of distribution channels, increased store footprint and innovative data-led product suite launched in the previous year and now gaining traction. Post-paid subscribers increased 36.3% to 1.3 million, with an ARPU of approximately R184. Prepaid subscribers grew 35.7% to 3 million, with ARPU holding steady at R53. Telkom's mobile broadband delivered a strong performance with mobile data revenue increasing 59.8% to R1.627 billion supported by 108% growth in data usage. The reframing of 1800 MHz spectrum is paying

dividends with smartphone subscribers increasing by 28.4% to 2.1 million. The company's fixed wireless LTE Smart Broadband offerings continue to do well with an increase of 72% in LTE subscribers, driven by the popular "Deal of the Month" and an improved quality and footprint expansion of 2300 MHz LTE network. Overall, Telkom reported a marginal decline (0.6%) in the group interim operating revenue for the period ended September 2017, to R20.10 billion. Net operating revenue was down 0.9% to R15.79 billion. Capital expenditure improved 9.2% to R3.97 billion, while headline earnings per share was down 7.4% to 303.9 cents per share.

## **2.2.4 Overview of South Africa ICT Landscape**

South Africa offers wide spread ICT infrastructure in the country and adoption is high amongst the population. South Africa ranks in the top twenty countries globally for the provision of international Internet bandwidth (World Economic Forum, 2016). It has a growing population currently at 55.6 million people (Statistics South Africa, 2016) and the ownership of mobile phones and Internet use are rising (Statistics South Africa, 2012). In 2016, 93.8 per cent of households in South Africa own a mobile phone; only ten years ago, less than a third of the households had such possession (Statistics South Africa, 2016). The adoption of computers has been substantially lower, with computer ownership at only 24.5 percent amongst households in 2016, while in 2011, 64.8 per cent of households remain without Internet access (Statistics South Africa, 2016). Yet, South Africans are embracing mobile and smart phones as well as hand held tablets (My broadband, 2016).

In terms of standards of living, South Africans have seen a slight improvement in income poverty, a notable improvement in non-metric asset measures (such as in education, health and living standards), but persistently high inequality (Leibbrandt et al., 2016). The working poor constitute a significant proportion of the South African population, 36 per cent of South Africa's workforce live in households that cannot afford R1400.00 (just over \$100 USD) of goods and foods per month (Rogan & Reynolds, 2015). Yet high income inequality, unemployment and poverty levels have also not deterred low income users from mobile phone ownership. Low income households have mobile ownership rates of 74.8 per cent (Gillwald et al., 2012). The high cost of telephonic or broadband connectivity put budgetary pressure on low-income users communication expenses and make up a substantial proportion of their income compared to high-income users (Gillwald & Stork, 2008). Given high individual investments required to participate in a digital-enabled society, the pace of citizen use of ICTs for development is slow

(Abrahams, 2011). The resource constrained continuously push away low-income earners from opportunities for a better life including the chance to extend their capabilities through ICT use.

### **2.2.5 South Africa Policy on ICT infrastructure**

South Africa has a new National Integrated ICT Policy. The Minister of Telecommunications, Dr. Siyabonga Cwele pointed out at a media briefing on 2 October 2016 that the ICT White Paper is an integrated and holistic policy that covers the ICT sectors. It sets out the framework of how government intends to provide access to modern communications infrastructure and services to facilitate the entry of new players and meaningful participation of all citizens, including those in rural areas. He also said that the cabinet approval marks the latest milestone in South Africa's journey towards using technology to build "a seamless information infrastructure by 2030 that will underpin a dynamic and connected vibrant information society and a knowledge economy that is more inclusive, equitable and prosperous" as envisaged in the National Development Plan (NDP) (BizNews, 2017).

Amongst many of the issues addressed in the White Paper is the creation of wireless open access network (OAN) which will be a public-private sector-owned and managed consortium, and will consist of entities that are interested in participating. Participants may include current holders of electronic communications services (ECS) and electronic communications network service (ECNS) licences, infrastructure companies, private equity investors, SMMEs, internet service providers, and mobile virtual network operators. The White Paper brings certainty in the market, a key ingredient as the South African government seeks to use ICTs to facilitate faster shared economic growth, improve service delivery and radically transform our society (ICT White Paper, 2016). The new policy will curb the influence of the current operators, according to the minister, the participation of existing ECNS licensees will speed up the ability of the wireless OAN to meet its coverage objective. The objectives of open access networks include creating a clear access regime that is enforceable. This will ensure that operators with significant market power do not leverage access to their infrastructure and critical resources to maintain dominance and deny market access to competition (Biznews, 2017).

This new policy necessitates a revised licensing framework to accommodate more players and open up the market for more competition. The new policy approach will promote the extension and deployment of networks in rural and underserved areas to support inclusive economic growth. This will in turn facilitate universal service and access and meet the national target of broadband access to all. Regulatory functions such as licence conditions to advance universal

service and access and monitoring of rollout of networks currently residing with USAASA will be transferred to the regulator. The Universal Service and Access Fund will be replaced by the Digital Development Fund, which will focus on the extension of infrastructure, end user and equipment subsidies, supporting digital literacy and skill development, funding to extend access to digital government services, and support for innovative use of ICT by SMMEs to improve productivity, sustainability and competitiveness (Biznews, 2017).

## **2.2.6 E-participation in South Africa**

Prior to the contemporary policies that are in place, much of the historic emphasis was on citizen participation indirectly through the provision of ICTs for all, taking a techno-centric approach (Moodley, 2005). The supply side approach was meant to alleviate the digital divide of the 1990s and early 2000s. More specifically, the telecentre movement was the main strategy for universal access in South Africa and the telecentres themselves had taught policy makers many lessons. Challenges of cost with a policy for not-for-profit delivery of service (Gomez et al., 2012), and ineffective operations of the past (Parkinson, 2005) have been barriers faced by telecentres in meeting the everyday digital needs of citizens. Lessons from South Africa reflect the need to incorporate multiple structural components (human, political and technical), rather than solely the 'Internet connection', as necessary for a successful telecentre (Attwood et al., 2013). The evolution from the previous access policy to current ICT policy show increased emphasis on people's participation (Diga et al., 2013).

Today, telecentres and e-Services centers have been consolidated for citizens into a 'one stop shop' titled Thusong Services Centres. The 'one-stop shop' is a physical place which provides subsidized computer and internet usage for all South Africans as well as face-to-face assistance on the provision of government information, library services and feedback (Vivier et al., 2015). Non-government organizations are also able to use the space for meetings and help to address community needs. The consolidation of telecentres within institutional structures help to ensure stable government telecom infrastructure (USAASA, 2016). Community-designed training (both computer and goal-setting), which fit their specific, needs have been shown to effectively improve the lives of telecentre users in KwaZulu-Natal (Attwood et al., 2014). In some urban areas, there are more exploration of mobile applications by both government and non-governmental organizations to reach citizens on public issues (Vivier et al., 2015). Infrastructural upgrades in the city space, as well as more visibility of mechanisms for citizens to reach government digitally are indicative of enhancing the government citizen ICT space.

The main approach of e-participation has been based on addressing the ICT supply gap, ensuring inclusivity of Internet access across rural and urban divides as well as various socioeconomic divides. As the approach has concentrated on consolidated infrastructure provision, little is known of whether these evolved telecentres or Thusong centres are succeeding in aiding citizens with digital tools for government services or democratic processes. The supply side provision of ICT infrastructure has however created some policy thinking on creating an enabling environment for citizens. In the back end of government information systems, standardization of government websites, information provision for citizens and some mechanisms for citizen feedback on the websites are readily available. From the front end or citizen view, the consolidated telecentres within the Thusong centres as well as the provision of Wi-Fi and personal mobile phone devices have now moved the historic e-participation supply strategy to one that is embracing holistic community needs, including e-Services. The holistic centres can help citizens with an inclusive platform to address some of their service delivery issues with government, either online or face-to-face and create a space for gathering for the community. Despite these meaningful government efforts, there is a risk that certain ICTs are not well utilized by the poor and marginalized and will further the digital divide due to time and high costs (Vivier et al., 2015).

#### **2.2.7 Access to ICT in South Africa**

For more than a decade, the South African government has committed itself to achieving universal ICT access, particularly for the poor in under-serviced areas. The Universal Services and Access Agency of South Africa (USAASA) established through the Electronic Communications Act No. 36 of 2005, was given the mandate to ensure that everyone living in any part of South Africa can be able to connect, speak, explore and study using ICT (USAAAS, 2017). This mandate is the fulfilment of the Bill of right enshrined in the South African constitution to provide access and service that will ensure freedom of expression for the people of South Africa. The right to free expression has been interpreted as a right to the resources, facilities and equipment to enable free expression. It follows that the right to have access to telecommunication resources, facilities and equipment is a basic right in South Africa. In addition, Section 32 of the Bill of Rights also describes the “Right to Information” and, if access is limited due to a lack of ICT resources, facilities and access, this right cannot be fulfilled (USAAAS, 2017: 11).

USAASA directly operates in the ICT space. Its constitutional priorities include the need to rapidly expand access to, and use of, ICT infrastructure through investment in a comprehensive plan to expand broadband access throughout the country and substantially reduce the cost of communication. In addition, its priorities include to connect all schools, public health and other government facilities through broadband by 2020 and at least 90% of communities should have substantial and super-fast broadband capacity by 2020; and support and develop free Wi-Fi areas in cities, towns and rural areas to improve universal access (USAASA, 2017).

### **2.2.8 ICT for Development**

Over the years, a proponent of Information and Communication Technologies (ICTs) for development agenda claims technology creates opportunities for social and economic development of poor communities in developing nations (Mukerji, 2013). Hudson (1999) claims that, if information is critical to development, then ICTs, as a means of sharing information, are not simply a connection between people, but a link in the chain of the development process itself. ICT is perceived to not reach the underprivileged but, rather, the privileged in the society, which widens the socio-economic gap within developing countries (Heeks, 2010). ICTs enhance inequalities and potentially lead to social exclusion (Adera, 2014). On the other hand, technological empowerment is achieved by supporting the individual use of technology for personal needs and goals (Aji et al., 2010). Individuals who have the opportunity to be empowered using technology usually have the confidence; high self-esteem; feelings of self-efficacy; control over their life; increased critical awareness; and increased civic participation (Clark, 2001). According to (Röger, 2011), technologies contribute to the multiplier effects across income levels and innovative capacity. Modern technologies can support the empowerment of individuals and contribute to community development. ICTs are vital for the development of both the urban and rural areas. However, accessibility and impact of ICTs in deprived areas such as the urban poor and the rural areas is limited, due to challenges such as availability, affordability and accessibility (Chisango, 2014). Shared ICT facilities such as telecentres offer opportunities to people to access the digital technologies. The shared technologies have the potential to facilitate different spheres of socio-economic development of communities. This is particularly important in rural areas where the citizens are less likely to own their own technologies. ICT skills development has been integrated as part of the service of telecentres to overcome the challenges of learning computer skills. Lack of ICT skills in remote areas is one of the reasons telecentres are established in rural communities (Hettiarachchi, 2006). Thus, the aim of the telecentre was to support the community to access

ICT facilities and information via the internet or computer training skills offered at the telecentre to improve the livelihood and self-development of users (Aji, et al., 2010). Access to ICT initiatives, such as telecentres in themselves, cannot be a solution to poverty but can be adopted as a tool in poverty reduction initiatives. Although the number of computers and Internet users have increased over the past years in developing countries (ITU, 2011), the under-served areas of developing countries have, to a large extent have failed to fully realise the potential of this technology.

### **2.2.9 The Emergence of Telecentres**

The emergence of telecentres in the world dates back to 1985 when the first telecottage (telecentre) was established, specifically in Velmdalen, Sweden (Farjallah, 2007). Their primary purpose was to overcome the remoteness of rural and isolated locations, often characterized by low purchasing power and poor quality of telecommunication infrastructure (Mahmood, 2005; Mukerji, 2008; Ariyabandu, 2009). The emergence of the first telecentre in Sweden caused the mushrooming of telecentres in other parts of the world and, by 1987, rural telecentres started to be introduced in Western Europe, Australia and Canada. In Brazil, telecentres started in 1990. The Multipurpose Community Telecentre (MCT) pilot projects were adopted by the International Telecommunications Union (ITU) in East Sumatra, Indonesia in 1993 (Farjallah, 2007). Generally, telecentres were established as the main source of access to information and communications technology (ICT) services to rural, isolated and underserved communities, where personal access is impossible.

### **2.2.10 Telecentres in Africa**

Poor information amenities are among the reasons that add to African poverty. Francis (2001) and the Global Poverty Report (2000) point out that lack of access to information as well as illiteracy contributes to the poverty of Africans. Hence telecentres were introduced in Africa in the 1990s in order to improve access to information and communication services with the support of the United Nations Development Programme (UNDP), United Nations Educational, Scientific and Cultural Organization (UNESCO), the International Institute for Communication and Development (IICD), the International Development Research Centre (IDRC), the 6 International Telecommunications Union (ITU), the World Bank (WB), and the Economic Commission for Africa.

### **2.2.11 Telecentre Overview**

A telecentre is a public facility where people access computers, the Internet and other digital technologies, often at a subsidised fee. Services provided at telecentres include public phone facilities, computer typing, faxing, printing, photocopying, laminating, access to Internet services, and computer training courses (Bunescu, 2010; Wandila, 2013). Telecentres are mainly established to provide benefits of ICTs in rural and marginalized areas where individuals cannot afford to have ICTs (Ariyabandu, 2009; Aji et al., 2010; Mbangala & Sumzigi, 2014; Lashgarara et al., 2012). Telecentres are also called televillages, cybercafés, electronic village halls, telecottages, phone shops, telestugens, public access points, teleboutiques, digital clubhouses, telekiosks, infocentres, community access centres, cabinas publicas, telehaus, community learning centres, community technology centres, MCTs, community multi-media centres, community media centres, multi-purpose access centres and multi-purpose community centres (Etta and Wamahui, 2003; Harris, 2007). There exist different kinds of telecentres ranging from micro telecentres that are usually housed in a shop providing access to payphones with built-in web browser, a smart card reader and a receipt printer to a full service telecentre that offers access on a range of services that include many phone lines, multi-media computers with Internet connectivity, colour as well as black and white printers, photocopiers, a scanner, a digital camera, a video camera, television, overhead projector, laminator, meeting and video conferencing room (Jensen & Esterhuysen, 2001). MCTs offer different services to different groups within the communities that they serve. Their services mainly include telephone, fax, e-mail, Internet access, word processing and photocopy, training on the use of these technologies and library (Islam & Hasan, 2009; Jensen & Esterhuysen, 2001; Rose, 1999). Telecentres may be established by individuals or by governments as projects of national agency. As such, their ownership differs. Some of them are run by individuals while some, like MCTs are managed by communities (Dahalin, Yusop, Ibrahim, Kasiran, & Mat, 2009; Jensen & Esterhuysen, 2001). Despite the different models that exist, all telecentres aim at providing public venues which are open to all categories of people in the communities and offer access to ICTs services at low costs (Jensen & Esterhuysen, 2001).

### **2.2.12 The Role of Telecentres**

Telecentres play a great role in communities with poor access to telecommunication infrastructure. Various studies have highlighted the significance of telecentres in poor rural communities. Macome and Cumbana (2000) in their study of Manhiça and Namaacha

telecentres at Maputo in Mozambique reveal that telecentres have assisted users to save money. Telecentres help users to be well informed on various issues within and outside of their environment through various informational services provided such as email, telephone, wall newspapers, internet and library (Tokali and Wanas, 2007). Norton et al (2000) show that telecentres have caused the economy to grow through enabling farmers to be informed of recent trends in crops cultivation and market rates. Tokali and Wanas (2007) opine that telecentres have enabled users to increase their productivity. For instance, farmers that used Technology Access Community Centers were able to increase their agricultural productivity through investing in better methods of production and fertilizers. In most instances' telecentres are aimed at supporting communities in socio-economic development activities such as education, agriculture and health (Bailey & Ngwenyama, 2010). Telecentres can empower communities through various ways including: providing a platform for common projects; bringing people of different social and economic backgrounds together; delivering community services; drawing young people into community life and giving them new opportunities; and capturing and building on community history (Bailey & Ngwenyama, 2010). Telecentres can help communities through the use of technologies to improve their lives by taking the opportunity to innovate, and become stronger and more connected to each other. Telecentres have a varied range of potential for development in rural areas. They can help rural communities overcome computer literacy barriers by providing computer training and allowing the people an opportunity to improve their ICT skills (Kapondera, 2014). Hansson, Mozelius, Meegammana and Gaina (2010) added that telecentres provide employment opportunities in the rural areas – these include working at the telecentre. Furthermore, they provide rural communities with access to information and knowledge. The rural communities can also save on travelling costs and time to access services which are normally in urban centres (Kapondera, 2014). Telecentres in rural areas can also be used for educational purposes. Here students registered with educational institutions who reside in rural areas can use the centres to access their study work (Andrew, 2007).

The majority of telecentres in South Africa are run by government and are based in rural areas. Telecentres were introduced in provinces in South Africa to promote ICT use and propel economic, educational and social development in rural areas (Andrew, 2007). They were meant to facilitate rural development process through the use of ICT applications in the telecentres. These telecentres provide sources of employment and income in the rural areas (Jozanc & Van Dijk, 2011). Some telecentres in South Africa are based in Thusong Service Centres. Thusong

Service Centres are one-stop centres meant to address the inequalities in accessing government services such as Social Development and Home Affairs. These centres house a wide range of government services including Health, Social Development and Home Affairs (Kapondera, 2014).

### **2.2.13 Users and Uses of Telecentres**

Research on telecentre users and uses places much emphasis on the categories of people using the telecentres and purposes for using them. Literature shows that generally, most users are males, young and with average incomes (Neville, 2012; Chigona, Lekwane, Westcott, & Chigona, 2011; Dahalin et al., 2009). Having many people with low income levels as users of telecentres is a good development since telecentres target the disadvantaged communities where individuals cannot afford ICTs (Mbangala & Samzugui, 2014; Islam & Hasan, 2009). There are mixed findings on educational levels of users. While some studies reveal that most users are educated (Neville, 2012; Chigona et al., 2011; Dahalin et al., 2009), others have established that telecentres are used by the less educated because the community served by these telecentres have very few people with tertiary qualifications (Kapondera & Hart, 2016; Lashgarara et al., 2012). Telecentre users visit and use telecentres and their services for different purposes. Some community members use telecentres for social purposes; educational purposes (Mbatha, 2015; Chigona et al., 2011; Bailey, 2009). Others visit the telecentres to seek jobs online; and to look for job advertisements in newspapers. Some community members, especially farmers, use the telecentres to access information on market prices on various agricultural products; and access information on best farming practices (Buhigiro, 2012). News, Sports and entertainment are also accessed in telecentres (Chigona et al., 2011).

### **2.2.14 Challenges of Telecentre Users**

Telecentre users face many challenges. Inadequacy of facilities is a common problem that telecentre users face. Some telecentres do not have enough computers and in the context of developing countries, slow Internet speed which frustrates users at the end (Mtega & Malekani, 2009; Hassan Yusof, Seman, & Sheik, 2010; Gcora, Gopeni, Tuswa, Lwoga & Chigona, 2015). Another challenge that telecentre users face is that telecentres are usually operational for a few hours in a day (Hassan et al., 2010; Gcora et al., 2015). This might be attributed to the fact that most telecentres keep formal government working hours. Some other challenges include shortage of staff (Gcora et al., 2015), lack of materials in local languages within the centre, poor staff attitude (Mtega & Malekani, 2009) and complexity and cost of using some services

like the Internet (Buhigiro, 2012), lack of appreciation by community members thereby leading to telecentres low usage (Sey, 2009; Kapondera, 2014); In countries where electricity is also an issue, the power cuts are a serious challenge to the users of telecentres (Taulo, Gondwe, & Sebitosi, 2015). If telecentres are to be successful, there is a need to address the challenges because they negatively affect the use and effectiveness of telecentres.

### **2.2.15 Telecentres Contribution to Rural Development**

Telecentres are established to contribute to the development of rural communities thereby contributing to the development of a country at large. Literature shows telecentres are indeed helping in developing rural communities. One of the ways is through human skills development. Through services like Internet access and computer training where people are taught basic computer skills, telecentres are reducing computer illiteracy (Sey, 2009, 10). These computer skills help telecentre users to find jobs. Furthermore, some telecentres improve human skills by providing farmers with information on livestock and poultry (Buhigiro 2012; Lesame 2014). Telecentres are increasing the finances of communities they serve by employing people thereby reducing poverty levels of rural communities (Buhigiro, 2012; Kapondera 2014, 65) and by providing users with information on available jobs which helps users secure jobs (Sey, 2009, 11; Chigona, Lekwane, Westcott & Chigona 2011). Telecentres also provide information on market demand and supply which helps farmers to know the best time to sell their products and better farming practices thereby yielding huge profits (Soriano 2007; Buhigiro 2012). The ICTs in the telecentres help to strengthen the social life of the communities they serve because ICTs helps users communicate with their friends, relatives, peers, colleagues and many more (Rothernberg-Aalami & Pal, 2005; Mbangala & Samzugui, 2014). Interaction at the telecentres when people are accessing telecentre services also leads to stronger social cohesion (Ibrahim & Ainin 2009; Kapondera 2014). Most rural areas in developing countries are characterized by poor road networks and limited means of transport (Isaacs, 2007). As such, rural community dwellers always face problems to access ICTs which are mostly located in urban areas. Telecentres help to overcome geographical barriers by bringing ICTs to rural communities (Soriano, 2007).

### **2.2.16 Previous Studies**

Ibrahim & Ainin (2009) examined the impact of the establishment of telecentres on community building in Malaysia. The results reveal that the telecentre has helped to improve the ICT skills

and knowledge of community members, as well as their social networks. The general view of the respondents is that the telecentre has greatly improved their community wellbeing.

Mtega & Malekani (2009) analysed the usage patterns and challenges of telecentres among rural communities using four selected telecentres in Tanzania as a case study. The findings show that not many rural communities use the services optimally. The level of use of the four studied telecentres was very low in addition to the limited access to information faced by people in the areas. Very few people can afford to use the telecentres mostly due to long distance and service-associated fees. There are also a number of factors influencing the use of the telecentres such as the type of services offered, the number of services and the quality of services provided. Other factors are distance from the telecentre to the user's resident, occupation, cost of services provided and level of education of users.

Chigona, Lekwane, Westcott & Chigona (2011) explored the actual use of shared computing facilities, the benefits and challenges faced in using the shared facility in a disadvantaged community in Cape Town. The outcome revealed that the demand for the shared facilities is still high and the centre is used for both business and leisure purposes. In addition, the study observed that there are economic, social and psychological benefits from using the facilities. However, it was observed that a number of challenges, which includes, limited resources at the centre, inadequate ICT skills, and perceived lack of privacy while using the centre, besets use of the facilities.

Sumbwanyambe, Nel, Clarke (2011) evaluated the sustainability of telecentres in Zambia and South Africa and proposed possible solutions to the problems of telecentres. The main challenges concern pricing structure unaffordable for ordinary users, lack of public awareness of these telecentres, poor regulatory and policy framework and lack of innovative business initiatives. As possible solutions to the dominant problem to telecentre sustainability, the paper recommends a competitive pricing strategy that can promote the utilization of telecentre services, since pricing is directly linked to users' willingness to pay and a function of income. A public policy that projects telecentres as a catalyst for social and economic growth and by involving all stakeholders to take the right to support the policy directives is imperative to telecentre sustainability. Lastly, the paper recommends the reconceptualization of the current business models through the promotion of joint entrepreneurial initiatives that involves collaboration with learning institutions, government departments and the local communities.

Mbatha (2015) used diffusion of innovation theory to investigate the usage and types of ICTs accessible to community members in four selected telecentres in KwaZulu-Natal. The telecentres that participated in the study were Nhlazuka, Mbazwane, Dududu and Malangeni. The results indicated that a variety of ICT tools have been adopted in the telecentres to provide the local community with the much-needed access to information and improved communication. The study advocates the need for government to put policy in place to train the local community to use these ICTs effectively.

Gcora, Gopeni, Tuswa, Lwoga, & Chigona (2015) examined the challenges rural women face in using telecentres in Eastern Cape Province in South Africa. The authors noted that one of the major challenges facing the telecentres was financial sustainability, where the government provided the equipment for the centres but did not provide funding to cover operational cost. Shortage of staff was another challenge related to financial sustainability. Since the telecentres cannot generate enough income, they cannot afford to pay more staff to sufficiently attend to users, since the level of skills amongst the users is low. Another challenge affecting the telecentres is the lack of resources in the centres and poor telecommunication infrastructure affecting rural areas. Particular challenges are insufficient space in the telecentres and the small number of computers. Sometimes the telecentres get full especially during school holidays. This means the clients must wait for a while or come back later. The challenge with space sometimes arises because of short courses that are offered in the telecentres. The women's perceptions of themselves and of the technology shaped how they engaged and used the technology and the telecentres. The perception among the women in the rural areas is that using a computer is complicated. Some women feel their fingers are too rigid to use the computers. Respondents noted that women believe that anything to do with complex systems such as computers is the purview of men. In addition, the women believe that men are more educated than they are and they believe that telecentres are for the educated, the working members and students. This perception leads to the women not using the telecentres as expected. The perception that telecentres are for the educated individuals is perpetuated by the fact that most of the regular users of the centres are UNISA students. There is a limited knowledge of what telecentres are and how they can be of help to the women. While the UNISA students have a general appreciation of the technology, the women's views of the telecentres are mainly limited to photocopying documents for use at Home Affairs or Social Development Departments.

Kapondera & Hart (2016) used a case study of Lupaso community telecentre to examine the factors influencing the use of telecentres in rural areas in Malawi. The results reveal that a large

majority of users view the telecentre as an empowering project and are satisfied with its services. They perceive it to be improving human skills, helping the economy and strengthening the social capital of the surrounding community. It seems the telecentre benefits only a small percentage of the community. The factors that negatively affect the use of the telecentre are lack of internet searching skills, unstable electricity supply, lack of local contents and service fees charged.

Osman & Tanner (2017) studied the influence of telecentre components on the psychological empowerment of underserved community members in the Western Cape Province in South Africa. The research was guided by a conceptual model depicting constructs (intrapersonal factors, interactional factors and behavioural factors) related to the psychological empowerment of telecentre users. The research findings confirm that the various components of telecentres such as services, computer training and entrepreneurial support can positively influence and contribute to the perceived psychological empowerment of community members.

Kapondera & Namusanya (2017) examined the uses, benefits and challenges of using rural community telecentres as tools for development in Malawi. The findings suggest that users are improving their skills and knowledge, school performance, finding new friends and saving money. The community uses the telecentre to improve work related skills, keep in touch with friends and families and look for jobs. The users face a number of challenges, which includes; inadequate facilities, slow internet connection, high cost of services, overcrowding, lack of local content, and poor attitude of staff.

Alao, Lwoga, Chigona (2017) used a case study to examine how three rural telecentres in Western Cape empowers women in the community. The results show that the telecentres have empowers women in several ways. They have use the telecentres to create curriculum vitae for job seeking application with evidence of success stories of getting employment. Some women entrepreneurs have used the computers at the telecentres to source and apply for grants for their personal businesses using the internet. The telecentre have trained women that signed-up to be trained. The trained women were issued certificates, which they used to apply for jobs within their community and some in neighbouring communities, and some were fortunate to get jobs. Some of the women became more confident in using the computer and could overcome their fear of digital literacy.

### **2.2.17 Summary and Gap in Literature**

The literature reviewed various issues surrounding community ICT particularly from its usage point, benefits and challenges faced by users from different countries including South Africa. Overall, the literature indicate that ICT have been adopted by telecentres to provide the rural communities with access to information and communication. The benefits have contributed in improving personal, social and economic development. Challenges faced by the telecentres includes limited resources, poor infrastructure, and inadequate ICT skills on the part of users to maximise the benefits of the telecentres (ICT), amongst others.

The review of literature highlights apparent gaps to be filled by this study. Most of the literature examined the use of telecentres (ICT) from users' perspective. None of the literature considered the perspectives of the stakeholders with regards to use of ICT by community members. The literature examined placed much emphasis on the use telecentres to access information by the rural community, but did not investigate the current means by which the rural community access information using ICT. This gap in literature is filled by research question one of this study "How do residents in the rural community of uMgungundlovu District Municipality use ICT to access information?" The literature did address factors that affect access to ICT. This gap in literature is filled by research question two "What are the factors that affect access to ICT in uMgungundlovu District?" The literature reviewed did not examine the technological skills of community stakeholders. At best, the literature only highlights lack of technological skill as an inhibitor to ICT usage. The present study filled this gap by "examining the level of technological skills of local communities and leaders in the municipal". In terms of challenges, as much as the reviewed literature looked at the challenges of telecentres (ICT), challenge is highly context based, and could vary depending on situational circumstances. The challenge that could undermine ICT implementation in uMgungundlovu District Municipality may be different and therefore warrants a unique empirical investigation. This perspective is addressed by research question four "What are the challenges that have the potential to undermine the implementation of ICTs in the rural communities which compromise their development?" This study will fill the gaps highlighted in the review of literature by investigating the "The perspective of Stakeholders regarding access to ICT in rural communities of uMgungundlovu District Municipality".

## **2.3 Theoretical Framework**

### **2.3.1 The Diffusion of Innovation Theory (DOI)**

One of the most popular adoption models is Rogers Theory of Diffusion of Innovations (Sherry & Gibson, 2002). The Innovation Diffusion Theory (Rogers, 1995) has been used to study a variety of innovations. Much research from a broad variety of disciplines has used the model as a framework. Dooley (1999) and Stuart (2000) mentioned several of these disciplines as political science, public health, communications, history, economics, technology, and education. Rogers' theory is a widely used theoretical framework of technology diffusion and adoption.

According to Rogers (2003), adoption is a decision of “full use of an innovation as the best course of action available” and rejection is a decision “not to adopt an innovation” (p. 177). Rogers defines diffusion as “the process in which an innovation is communicated thorough certain channels over time among the members of a social system” (p. 5). As expressed in this definition, innovation, communication channels, time, and social system are the four key components of the diffusion of innovations. “An innovation is an idea, practice, or project that is perceived as new by an individual or other unit of adoption” (Rogers, 2003, p. 12). An innovation may have been invented a long time ago, but if individuals perceive it as new, then it may still be an innovation for them. The second element of the diffusion of innovations process is communication channels. For Rogers (2003), communication is “a process in which participants create and share information with one another in order to reach a mutual understanding” (p. 5). This communication occurs through channels between sources. Rogers states that “a source is an individual or an institution that originates a message. A channel is the means by which a message gets from the source to the receiver” (p. 204). Rogers states that diffusion is a specific kind of communication and includes these communication elements: an innovation, two individuals or other units of adoption, and a communication channel. Mass media and interpersonal communication are two communication channels. While mass media channels include a mass medium such as TV, radio, or newspaper, interpersonal channels consist of a two-way communication between two or more individuals. On the other hand, “diffusion is a very social process that involves interpersonal communication relationships” (Rogers, 2003, p. 19). Thus, interpersonal channels are more powerful to create or change strong attitudes held by an individual. In interpersonal channels, the communication may have a characteristic of homophile, that is, “the degree to which two or more individuals who interact are similar in certain attributes, such as beliefs, education, socioeconomic status, and the like,”

but the diffusion of innovations requires at least some degree of heterophile, which is “the degree to which two or more individuals who interact are different in certain attributes.” In fact, “one of the most distinctive problems in the diffusion of innovations is that the participants are usually quite heterophilous” (Rogers, 2003, p. 19). According to Rogers (2003), the time aspect is ignored in most behavioural research. He argues that including the time dimension in diffusion research illustrates one of its strengths. The innovation-diffusion process, adopter categorization, and rate of adoptions all include a time dimension. The social system is the last element in the diffusion process. Rogers (2003) defined the social system as “a set of interrelated units engaged in joint problem solving to accomplish a common goal” (p. 23). Since diffusion of innovations takes place in the social system, it is influenced by the social structure of the social system. For Rogers (2003), structure is “the patterned arrangements of the units in a system” (p. 24). He further claimed that the nature of the social system affects individuals’ innovativeness, which is the main criterion for categorizing adopters. Rogers identifies five attributes of an innovation that influence the adoption and acceptance behaviour: relative advantage, complexity, compatibility, trialability, and observability.

Rogers (2003) defined relative advantage as “the degree to which an innovation is perceived as being better than the idea it supersedes” (p. 229). The degree of relative advantage may be measured in economic terms, but social prestige, convenience, and satisfaction are also important factors. It does not matter so much if an innovation has a great deal of objective advantage. What does matter is whether an individual perceives the innovation as advantageous. The greater the perceived relative advantage of an innovation, the more rapid its rate of adoption.

Rogers (2003) stated that “compatibility is the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters” (p. 15). An idea that is incompatible with the values and norms of a social system will not be adopted as rapidly as an innovation that is compatible. A lack of compatibility in IT with individual needs may negatively affect the individual’s IT use (McKenzie, 2001; Sherry, 1997). If an innovation is compatible with an individual’s needs, then uncertainty will decrease and the rate of adoption of the innovation will increase.

Rogers (2003) defined complexity as “the degree to which an innovation is perceived as relatively difficult to understand and use” (p. 15). As Rogers stated, opposite to the other attributes, complexity is negatively correlated with the rate of adoption. Thus, excessive

complexity of an innovation is an important obstacle in its adoption. If hardware and software are user-friendly, then they might be adopted successfully (Martin, 2003).

According to Rogers (2003), “trialability is the degree to which an innovation may be experimented with on a limited basis” (p. 16). Also, trialability is positively correlated with the rate of adoption. The more an innovation is tried, the faster its adoption. New ideas that are simpler to understand are adopted more rapidly than innovations that require the adopter to develop new skills and understandings. Rogers stated that earlier adopters see the trialability attribute of innovations as more important than later adopters.

The last characteristic of innovations is observability. Rogers (2003) defined observability as “the degree to which the results of an innovation are visible to others” (p. 16). The easier it is for individuals to see the results of an innovation, the more likely they are to adopt it. Such visibility stimulates peer discussion of a new idea, as friends and neighbours of an adopter often request innovation-evaluation information about it. Role modelling (or peer observation) is the key motivational factor in the adoption and diffusion of technology (Parisot, 1995). Similar to relative advantage, compatibility, and trialability, observability also is positively correlated with the rate of adoption of an innovation.

Rogers (2003) argued that innovations offering more relative advantage, compatibility, simplicity, trialability, and observability will be adopted faster than other innovations. Rogers does caution, “getting a new idea adopted, even when it has obvious advantages, is difficult” (p. 1), so the availability of all of these variables of innovations speed up the innovation-diffusion process. Innovation diffusion research regards individuals’ perceptions about these characteristics of an information technology as important factors in influencing an individual’s acceptance behaviour (Agarwal and Prasad, 1997, 1998; Karahanna et al., 1999; Plouffe et al., 2001).

In summary, diffusion of innovation describes the process by which innovation is communicated through certain channels over time among the members of a social system. The innovation characteristics determine the extent of adoption. The more an innovation possesses these characteristics the more the rate of adoption. The strength of this theory lies in its rich and detailed description of how technology innovation is diffused and accepted in a social system.

### **2.3.2 Technology Acceptance Model (TAM)**

Technology Acceptance Model, (TAM) (Davis, 1989; Davis, Bagozzi & Warshaw, 1989) derived from the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975) is one of the most popular research models to predict use and acceptance of information systems and technology. The model proposed that system use is a response that can be explained or predicted by user motivation, which in turn, is directly influenced by an external stimuli consisting of the actual system features and capabilities. The model suggests that users' motivation can be explained by three factors: Perceived Ease of Use, Perceived Usefulness, and Attitude towards using the system. The author hypothesized that the attitude of a user toward a system was a major determinant of whether the user will actually use or reject the system. The attitude of the user, in turn was considered to be influenced by two major beliefs: Perceived Usefulness and Perceived ease of use, with perceived ease of use having a direct influence on perceived usefulness. Both are hypothesized to be directly influenced by the system design characteristics. Davis defines perceived usefulness (PU) as the subjective probability that using a specific system will enhance job performance. Perceive ease of use (PEOU) can be defined as the degree to which a user expects the system to be free of effort. According to TAM, ease of use and perceived usefulness are the most important determinants of actual system use. These two factors are influenced by external variables. In this study, these two variables, ease of use and perceived usefulness are hypothesized to influence the stakeholders' perception that users in the community will use ICT.

On the other hand, attitude which influenced by Perceived Usefulness and Perceived ease of use, is also hypothesized as a variable capable of influencing use of ICT. TAM has been used by researchers worldwide to understand the acceptance of different types of information systems.

Park (2009) used TAM in understanding university students' behavioural intention to use e-Learning system. The general structural model, which included e-learning self-efficacy, subjective norm, system accessibility, perceived usefulness, perceived ease of use, attitude, and behavioural intention to use e-learning, was developed based on the technology acceptance model (TAM). The result proved TAM to be a good theoretical tool to understand users' acceptance of e-learning. E-learning self-efficacy was the most important construct, followed by subjective norm in explicating the causal process in the model. Sharma and Chandel, (2013) used TAM to study the use of learning through websites among students in Oman university,

findings from the study reveal that attitude and behavioural intention to use websites to learn was influenced by perceived usefulness and perceived ease of use, perceived website quality and computer self-efficacy. Alharbi & Drew (2014) used TAM in understanding academics behavioural intention to use learning management systems, findings show that perceived usefulness, perceived ease of use and attitude were crucial factors in influencing intention to use learning management system. TAM is one of the most influential models widely used in the IS/IT user acceptance studies. Many previous studies have adopted and expanded this model which was empirically proven to have high validity.

### **2.3.3 Combination of Technology Acceptance Model (TAM) and TPB Model (CTAM &TPB)**

Technology Acceptance Model is one of the most popular theories that is used widely to explain Information System usage. So many studies have been conducted which has led to the changes in the originally proposed model. A new model called combined TAM-TPB model which integrates the technology acceptance model and theory of planned behaviour was proposed by Taylor and Todd (1995). Venkatesh and Davis (2000) proposed a new version of TAM called TAM2, which added new variables to the existing model.

TAM2 theorizes that there are four cognitive instrumental determinants of perceived usefulness: job relevance, output quality, result demonstrability, and perceived ease of use. TAM2 retains perceived ease of use from TAM as a direct determinant of perceived usefulness. TAM2 theorizes that “people use a mental representation for assessing the match between important work goals and the consequences of performing the act of using a system as a basis for forming judgments about the use-performance contingency (i.e., perceived usefulness)”(p.191). Based on the theories on the mental matching process, a potential user’s judgment of job relevance goes through a compatibility test (Venkatesh and Davis, 2000). Job relevance is defined as “an individual’s perception regarding the degree to which the target system is applicable to his or her job” (p.191). TAM2 posits that job relevance has a positive effect on perceived usefulness. Output quality is another determinant of perceived usefulness. Output quality refers to an individual’s perception about how well the system performs the tasks. Venkatesh and Davis (2000) suggest that judgments of output quality take the form of a profitability test, “in which, given a choice set containing multiple relevant systems, one would be inclined to choose a system that delivers the highest output quality” (p.192). TAM2 posits that output quality has a positive effect on perceived usefulness. Result demonstrability is the

third determinant of perceived usefulness. It is defined as the “tangibility of the results of using the innovation” (Moore and Benbasat, 1991, p.203). TAM2 posits that result demonstrability has a positive effect on perceived usefulness.

Several studies conducted by researchers have also tried to modify the TAM by adding new variables to it. Agarwal and Prasad (1998a, 1998b) modified TAM by adding the construct of compatibility in the Technology Acceptance Model. Moon and Kim (2001) has added a new variable playfulness factors to study acceptance of the World Wide Web. Lim (2000) proposed to modify TAM by adding variables like experience, self efficacy, perceived risk and social influence. Another study done by Agarwal and Karahanna added cognitive absorption, playfulness and self-efficacy to the TAM model. Chau and Hu (2002) in a study reviewed TAM by included two types of perceived usefulness. Van der Heijden (2000) after analyzing the individual acceptance and usage of the website added two new constructs to TAM: perceived entertainment value and perceived presentation attractiveness.

Chau and Hu (2002) combined the factor of Peer Influence with Technology Acceptance Model. According to study by Franco and Roldan (2005) the relationship between perceived usefulness and behavioural intention was strong among goal-directed users. Chau and Hu (2001) compared three models Technology Acceptance Model (TAM), the Theory of Planned Behaviour (TPB), and a decomposed TPB model that is potentially adequate in the targeted healthcare professional setting in Hong Kong. The results indicated that TAM was superior to TPB in explaining the physicians’ intention to use telemedicine technology. The study conducted by Sun and Zhang (2003) found voluntariness could be a factor in determining the behavioural intention to use technology.

#### **2.3.4 Motivation Model**

The motivational model was developed by Davis et al. (1992) to study information technology adoption and use. Motivation refers to “the reasons underlying behaviour” (Guay et al., 2010, p. 712). The Motivation Model suggests that individuals’ behaviour is based on extrinsic and intrinsic motivations. Researchers often contrast intrinsic motivation with extrinsic motivation, which is motivation governed by reinforcement contingencies. Extrinsic motivation is defined as the perception that users want to perform an activity “because it is perceived to be instrumental in achieving valued outcomes that are distinct from the activity itself, such as improved job performance, pay, or promotions” (Davis et al., 1992, p. 1112). Perceived usefulness, perceived ease of use, and subjective norm are examples of extrinsic motivation.

Intrinsic motivation is motivation that is characterized by personal enjoyment, interest, or pleasure. Deci et al. (1999) states, “Intrinsic motivation energizes and sustains activities through the spontaneous satisfactions inherent in effective volitional action. Users want to perform an activity “for no apparent reinforcement other than the process of performing the activity” (Davis et al., 1992, p. 1112). It is manifest in behaviours such as play, exploration, and challenge seeking that people often do for external rewards” (p. 658).

Quite a handful of studies have used the motivational theory in their research. Yoo, Han & Huang (2012), examined the roles of intrinsic motivators and extrinsic motivators in promoting e-learning in the workplace, the result suggests that intrinsic motivators (effort expectancy, attitudes, and anxiety) affected employees’ intention to use e-learning in the workplace more strongly than did the extrinsic motivators (performance expectancy, social influence, and facilitating conditions). Hwang & Yi (2002) examined the effect of intrinsic motivation and self-efficacy in predicting the use of web-based information systems using students as subjects. The findings highlighted the importance of perceived enjoyment, learning goal orientation, and self-efficacy in determining the actual use of the system. Herath & Rao (2009), developed a hypothetical model on factors that encourage information security behaviour in organizations. On validating and testing the model, the study suggest that security behaviours can be influenced by both intrinsic and extrinsic motivators. Motivational theory is important in the prediction of use of technology.

### **2.3.5 Theory of Planned Behaviour**

The theory of planned behaviour (TPB) is one of the most widely cited and applied behaviour theories. It is one of a closely inter-related family of theories which adopt a cognitive approach to explaining behaviour which centres on individuals’ attitudes and beliefs. The TPB (Ajzen 1985, 1991; Ajzen and Madden 1986) evolved from the theory of reasoned action (Fishbein and Ajzen 1975) which posited intention to act as the best predictor of behaviour. Intention is itself an outcome of the combination of attitudes towards a behaviour. That is the positive or negative evaluation of the behaviour and its expected outcomes, and subjective norms, which are the social pressures exerted on an individual resulting from their perceptions of what others think they should do and their inclination to comply with these. The TPB added a third set of factors as affecting intention (and behaviour); perceived behavioural control. This is the perceived ease or difficulty with which the individual will be able to perform or carry out the behaviour, and is very similar to notions of self-efficacy (Bandura 1986, 1997; Terry et al.,

1993). The Theory of Reasoned Action (TRA) is used to predict an individual's behaviour only in a real voluntary situation, not in a mandatory context. Ajzen (1991) develops the Theory of Planned Behaviour (TPB) to extend TRA to consider the mandatory situation. He adds a new construct of perceived behavioural control in TPB. Perceived behavioural control is defined as "the perceived ease or difficulty of performing the behaviour" (Ajzen 1991, p. 188). In the context of IS research, perceived behavioural control is defined as "perceptions of internal and external constraints on behaviour" (Taylor and Todd 1995, p. 149). The Theory of Planned Behaviour (TPB) is similar to TRA in that TPB also assumes that individuals are rational decision makers. Individuals assess perceived behaviour control using a method similar to the expectancy-value model. For each in a set of control beliefs, individuals multiply the belief's strength by the perceived power of the control factor. TPB has also been widely applied to understand the individual acceptance and use of different technologies (Harrison et al., 1997; Mathieson 1991; Taylor and Todd 1995b). The theory of planned behaviour uses attitude and belief as predicates of intention to perform a behaviour.

Armitage & Conner (2001) conducted a review of research based on TPB. The findings show that TPB accounted for 27% and 39% of the variance in behaviour and intention respectively. The perceived behavioural control (PBC) construct accounted for significant amounts of variance in intention and behaviour, independent of theory of reasoned action variables. The study found that when behaviour measures were self-reported, the TPB accounted for 11% more of the variance in behaviour than when behaviour measures were objective or observed. The study also found that subjective norm was generally a weak predictor of intentions. Cheng (2015) used TPB to examine university lecturers' intention to teach an ethics course. Finding from the study shows that individual attitudes, subjective norms, perceived behavioural control, and teacher self-efficacy influence intention to teach.

### **2.3.6 The Model of PC Utilization**

The theoretical grounding for the model of PC Utilization comes from the work of Triandis (1971; 1980). In earlier work, Triandis (1971) argued that behaviour is determined by what people would like to do (attitudes), what they think they should do (social norms), what they have usually done (habits), and by the expected consequences of their behaviour. He suggested that attitudes involve cognitive, affective, and behavioural components. The cognitive component of attitudes involves beliefs. In the context of PCs, for example, a person may hold a belief that PCs make work more efficient. The affective component of attitudes has a

like/dislike connotation. Thus, the statement "I hate computers" is considered an indication of the affective component of attitudes. Behavioural intentions are simply what individuals intend to do. For example, the assertion "I will start to learn a software package tomorrow" represents a behavioural intention. Thus, attitudes involve what people believe (cognitive), feel (affective), and how they would like to behave (behavioural) toward an attitude object.

The model of PC utilization was based on subset of Triandis' (1980) theory also in the context of PC use. Thompson, Higgins and Howell (1991) model of PC utilization examined the direct effects of social factors, affect, perceived consequences, and facilitating conditions on behaviour. Behavioural intentions were excluded from the model because it was actual behaviour (i.e., PC utilization) in which we were interested. Habits were excluded because, in the context of PC utilization, habits (i.e., previous use) have a tautological relationship with current use. Thompson et al (1991) replaced this variables with complexity and job fit. Empirical validation of the constructs proved that social factors, complexity, job fit, and long-term consequences had significant effects on PC use. There was no evidence that affect towards PC use and facilitating conditions influenced actual usage.

Teo & Lim (1998) examined factors influencing personal computer usage among novice and experienced users, findings of the study revealed that novice users viewed the importance of facilitators and inhibitors differently from experienced users.

### **2.3.7 The Social Cognitive Theory**

The Theory of Planned Behaviour (TPB), the Technology Acceptance Model (TAM), and the Innovation Diffusion Theory assume that there are only unidirectional causal relationships among the major variables in their models. In contrast, the Social Cognitive Theory (Bandura, 1986) suggests that environmental factors, personal factors (in the form of cognitive factors, affective factors etc.), and behaviours are determined reciprocally. An individual's cognitive competences influence the behaviour of using a technology, and the successful interactions with the technology also influence the cognitive perceptions (Compeau et al., 1999). The Social Cognitive Theory (SCT) gives prominence to the concept of self-efficacy (Compeau et al., 1999). Self-efficacy is defined as the judgment of one's ability to use a technology to accomplish a particular job or task (Compeau and Higgins, 1995). Outcome expectations, including personal and performance-related ones, are major cognitive factors in influencing users' behaviour (Compeau and Higgins 1995). Personal-related outcome expectations are concerned with individuals' esteem and sense of accomplishment. Performance related

outcome expectations are concerned with job-related outcomes. SCT posits that self-efficacy influences both personal and performance-related outcome expectations (Compeau and Higgins 1995). Affect and anxiety are the two affective factors. Affect refers to an individual's liking for a particular behaviour (e.g., computer use). Anxiety refers to an individual's anxious or emotional reaction in performing a behaviour (e.g., using a computer). Self-efficacy has been shown to influence choice of whether to engage in a task, the effort expended in performing it, and the persistence shown in accomplishing it (Bouffard-Bouchard, 1990). The greater people perceived their self-efficacy to be, the more active and longer they persist in their effort (Bandura, 1986).

Miura (1987) has suggested that self-efficacy may be an important factor related to the acquisition of computing skills. Computer self-efficacy is a specific type of self-efficacy. Specific self-efficacy is defined as belief in one's ability to "mobilize the motivation, cognitive resources, and courses of action needed to meet given situational demands" (Wood & Bandura, 1989, p. 408). Thus, computer self-efficacy is a belief of one's capability to use the computer (Compeau & Higgins, 1995) and those with little confidence in their ability to use computers experience computer anxiety that leads to poor performance on computer-based tasks.

Computer anxiety has been defined as a fear of computers when using one, or fearing the possibility of using a computer (Chua, Chen, & Wong, 1999). It is different from negative attitudes toward computers that entail beliefs and feelings about computers rather than one's emotional reaction towards using computers (Heinssen, Glass, & Knight, 1987). Computer anxiety is characterized as an affective response, an emotional fear of potential negative outcomes such as damaging the equipment or looking foolish. From an information processing perspective, the negative feelings associated with high anxiety detract cognitive resources from task performance (Kanfer & Heggestad, 1997). Thus, the performance of participants with higher computer anxiety might be poorer than those with little or no computer anxiety.

## **2.4 Conclusion**

This chapter presented the review of literature based on the variables of the study. It presented the main theory Diffusion of Innovation (DOI), and reviewed other relevant theories and models on user's acceptance and use of technologies. The next chapter presents the methodology used for the study.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 Introduction**

This chapter presents the methodology used for the study. It covers the research paradigm, research design, and population and of the study, sample size and sampling techniques, instrumentation, validity and reliability of the study, and data was analysis procedure. The chapter ended by highlighting steps in ethical compliance that guided the study.

#### **3.2 Research Philosophy**

The study was used a pragmatist paradigm to investigate stakeholders perspective of access to ICT in rural communities of uMgungundlovu District Municipality in KwaZulu-Natal. Tashakkori and Teddlie (2003) identify pragmatism as one of the paradigms that provides an underlying philosophical framework for mixed methods research. The ontology of pragmatism proffers that all individuals have their own unique interpretations of the world (Tashakkori and Teddlie, 2003). In terms of methodology, pragmatists emphasize on the importance of using mixed methods and avoid being constrained by a single, monolithic method (Maxcy, 2003). Qualitative and quantitative methods are compatible with the pragmatic paradigm.

#### **3.3 Research design**

A sequential mixed methods design was used to investigate stakeholders' perspective of access to ICT in rural communities of uMgungundlovu District Municipality. The main reason for using this approach is to provide an indept understanding of the phenomenon under investigation from a quantitative and qualitative standpoint. This approach involves the sequential collection of quantitative data and qualitative data to provide answers to the research questions.

##### **3.3.1 Population**

The population of the study comprised of three subgroups (1) the Ward Committee representing the six wards in rural and semi-rural communities (2) Council, represented by Ward and Public Representative Councillors, and (3) the Municipal Senior Management representing the municipalities under uMgungundlovu District Municipality.

The population of the first subgroup; Ward Committee is 20, the second subgroup; Councillors (26), and the third subgroup; comprising Municipal managers (5), Corporate services managers (5) and IT managers (5) (the second population subgroup) amounts to 15. The total population for the three subgroups is 61. The population details are depicted in tables 3.1 and 3.2.

**Table 3.1 Population for the first subgroup**

Ward Committee Structure per ward	Nature of the ward			Number Targeted
Ward 4	Semi-rural			4
Ward 5	Semi-rural, community	mostly	farming	2
Ward 6	Semi-rural, community	mostly	farming	4
Ward 7	Semi-rural			2
Ward 8	Combination of Rural and Township			4
Ward 9	Rural			4
<b>Total</b>				<b>20</b>

**Table 3.2 Population for the second subgroup**

Municipality	Councillors	Municipal Managers	Corporate Services Managers	ICT Managers
uMshwathi Municipality	5	1	1	1
Mpofana Municipality	2	1	1	1
IMpendle Municipality	2	1	1	1
Msunduzi Municipality	10	1	1	1

Richmond Municipality	7	1	1	1
<b>Total Targeted</b>	<b>26</b>	<b>5</b>	<b>5</b>	<b>5</b>

### 3.3.2 Sample Size and Sampling Technique

The study used a non-proportional stratified sampling technique, which entails the selection of the subjects from the different municipalities and wards strata in order to collect quantitative and qualitative data from the participants of the study. The sample size of the Ward Committee is 20, for Councillors is 26, and for the municipality senior management, the sample size is 15, making a total sample size of 61.

### 3.3.3 Data Collection Techniques and Procedures

Since the study used a sequential mixed method design, both quantitative and qualitative data was collected to provide answers to the research questions.

#### 3.3.3.1 Quantitative Data Collection

A self structured questionnaire was used to collect the quantitative data from all the 5 local municipalities using a survey approach. The questionnaires were administered to the intended participants in the municipalities through their Personal Assistants. Only 2 local municipalities were able to respond to the questionnaires without receiving any extra assistance. Upon following up with the other 3 municipalities it was discovered that the questionnaires had not been attended to by anyone. The researcher therefore took an initiative to visit these municipalities and did a one-on-one interview as per the questions on the questionnaire. The researcher recorded all responses on the questionnaires as given by the respondent. Out of 41 questionnaires distributed, a total of 35 questionnaires were collected from respondents in 5 Local Municipalities within uMgungundlovu District Municipality. The questionnaire consists of 18 questions, each containing a section that explained the procedure for answering the questions. The questionnaire consist of three main parts as follows:

#### Part 1: Questions 1-4 Demographics

These questions asked general personal particulars such as age, gender, qualifications and years of experience in the municipality;

## Part 2: Questions 5-9 Policy Imperatives

These questions asked about knowledge and understanding ICT, whether the ICT policy has been adopted, how often does it get reviewed and lastly means of accessing the ICT policy; and

## Part 3: Questions 10-18 ICT Management

These questions asked about the effectiveness of the management of data, Councillors preference of receiving data, the skills level of ICT staff.

**Table 3.3 Number of Respondents who participated in Questionnaire**

<b>Municipality</b>	<b>Councillors</b> <small>(Serving in the Corporate Services/Human Resources Portfolio Committee of Council)</small>	<b>Municipal Managers</b>	<b>Corporate Services Managers</b>	<b>ICT Managers</b>
uMshwathi Municipality	4	1	1	1
Mpofana Municipality	4	1	1	1
IMpendle Municipality	4	1	1	1
Msunduzi Municipality	4	1	1	1
Richmond Municipality	4	1	1	1
<b>Total Responded</b>	<b>20</b>	<b>5</b>	<b>5</b>	<b>5</b>

### 3.3.3.2 Qualitative Data Collection

A semi-structured interview was used to collect the qualitative data from the Ward Committee leaders from the rural communities in uMngeni Municipality. The procedure involved a face-to-face meeting with the participants using an open-ended interview schedule formulated by

the researcher. The interview process involved the participants being asked the same questions from the interview schedule.

The interviewer started the process by informing the interviewee that the interview will only last for 20 minutes and the conversations will be recorded using an audio recorder. Before the process began, the interviewer checked whether the interviewee understood what was being said and was also asked to confirm if he/she agreed with the interview being audio recorded. Probing questions were asked where necessary. The types of questions used were:

### **Part A: Demographics**

These questions focused on demographic attributes of the respondents such as age group, gender and ethnicity.

### **Part B: Ethnographic questions (descriptive and structured)**

These questions were used to determine the types of information the respondents needed in everyday life and their understanding of the various ways that information could be accessed. Questions in this segment also covered the levels of ICT skills of respondents and how they acquire information and communication technology skills.

### **Part C: Experience, opinion and value questions**

These questions were used to determine the respondents' own perceptions about how useful it could be to access information electronically. Also to determine the respondents knowledge of ICT Digital Hubs and whether or not building an ICT Digital Hub in the community would improve access to electronic information.

The respondents were encouraged to express their opinions and explain the unique complexities that were specific to their area of work. DiCicco-Bloom and Crabtree (2006:317) mention that interviews pick up on non-verbal clues from respondents with 'the interviewee being encouraged to share as much information as possible, unselfconsciously and in their own words'. Of the 20 respondents who were targeted only 12 participated, this is outlined in the table below:

**Table 3.4 Number of Respondents who participated in Interview**

<b>Ward Structure per ward</b>	<b>Committee</b>	<b>Nature of the ward</b>	<b>Number Targeted</b>	<b>Number Responded</b>
Ward 4		Semi-rural	4	4
Ward 5		Semi-rural, mostly farming community	2	1
Ward 6		Semi-rural, mostly farming community	4	2
Ward 7		Semi-rural	2	1
Ward 8		Combination of Rural and Township	4	2
Ward 9		Rural	4	2
<b>Total</b>			<b>20</b>	<b>12</b>

### 3.4 Validity

Validity of quantitative data is the ability of an instrument to represent the constructs they were designed to capture (Lincoln & Guba, 1985, p.296). The questionnaire for this study was subject to construct, content and face validity. This was done through a careful examination, correction and verification of the questionnaire items by the researcher to ensure the instrument measures what it is intended to measure (Teddlie & Tashakkori, 2009).

### 3.5 Reliability

Reliability is the ability of an instrument to consistently and accurately measure the constructs under examination (Teddlie & Tashakkori, 2009). Reliability of the pre-test quantitative instrument was measured using the Cronbach's coefficient alpha. Cronbach's coefficient ranges from 0-1, items with high Cronbach value (0.7 and above) were retained and items with low Cronbach coefficient were reformulated and retested.

### 3.6 Data Analysis

This quantitative data was analysed using descriptive statistics (frequencies, percentages, pie charts, and bar graphs) with Statistical Package for the Social Sciences (SPSS). SPSS is commonly used to for descriptive and inferential analysis of data. The qualitative data was analysed using thematic content analysis. Thematic content analysis involves identifying and

describing themes that are both implicit and explicit ideas within the qualitative data set. (Bernard, 2010).

### **3.7 Ethical Consideration**

Permission to conduct the study was sought and granted by the Municipal Managers of all 6 Local Municipalities. Authorisation letters to this effect were obtained. The researcher undertook to not cause any disruptions to the functions of any of these municipalities and the community structures in the cause of data collection.

### **3.8 Conclusion**

This chapter presented the methodology of the study. It described the research design, research approach, the population of the study, the sample size and sampling technique. Furthermore, the chapter discussed the instruments used for data collection and its reliability and validity. Finally, it presented the procedures for data collections and how data was analysed. The next chapter presents the analysis and presentation of data.

## **CHAPTER FOUR**

### **PRESENTATION OF FINDINGS, INTERPRETATION AND DISCUSSION**

#### **4.1 Introduction**

The focus of this study was to examine the perspectives of stakeholders regarding access to ICT in rural communities of uMgungundlovu District Municipality. The stakeholders in the context of this study are the ward committee, the councillors and the managers at different levels in the municipality. A semi-structured interview was used to collect the required qualitative data from the ward leaders, while a structured questionnaire was used to collect quantitative data from the councillors and managers. The qualitative data was analysed using thematic content analysis, while the quantitative data was analysed using SPSS version 22

The chapter presents the results of the data analysis and the findings of the study. The analysis of data and presentation of the findings were derived from the questionnaire and interview schedule, which was guided by the research questions of the study. The first segment of this chapter presents the quantitative data derived from the questionnaire, while the second segment presents the qualitative data based on the interview schedules with the study participants. The presentation of the data analysis is guided by the following sequence: demographic characteristics of the respondents, perspective of the stakeholders regarding current means of accessing information using ICT by rural dwellers in uMgungundlovu District Municipality, factors that affect access to ICT in rural communities of uMgungundlovu District Municipality, the literacy level of local communities and technological skills of the municipal leadership, and challenges that have the potential to undermine the implementation of ICTs in the rural communities.

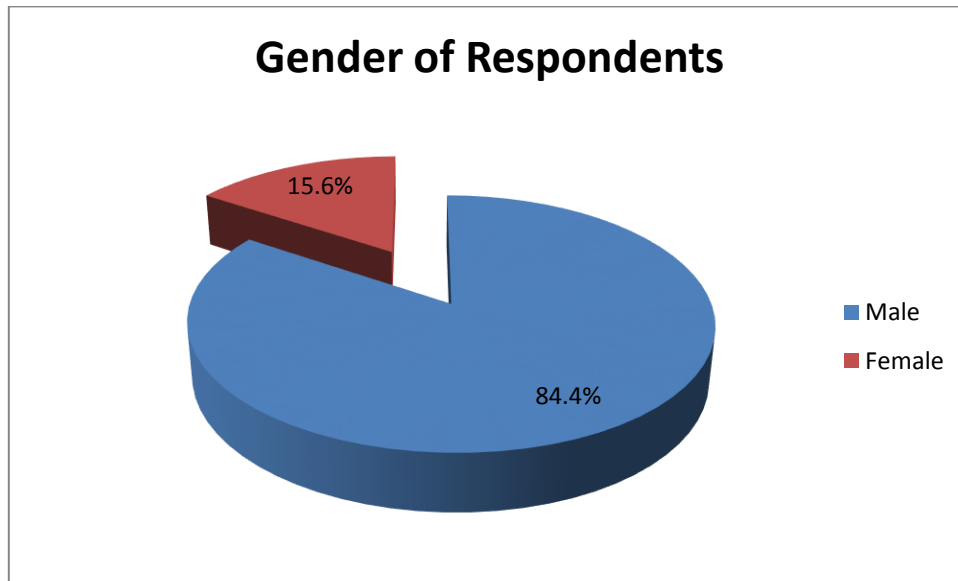
#### **4.2 Demographic Characteristics of the Respondents**

This section presents the demographics characteristics of the study participants.

##### **4.2.1 Distribution of Respondents by Gender**

Fig 4.1 shows the gender of the study participants. The fig shows that majority of the study participants are male (84.4%), while (15.6%) are females.

N=32

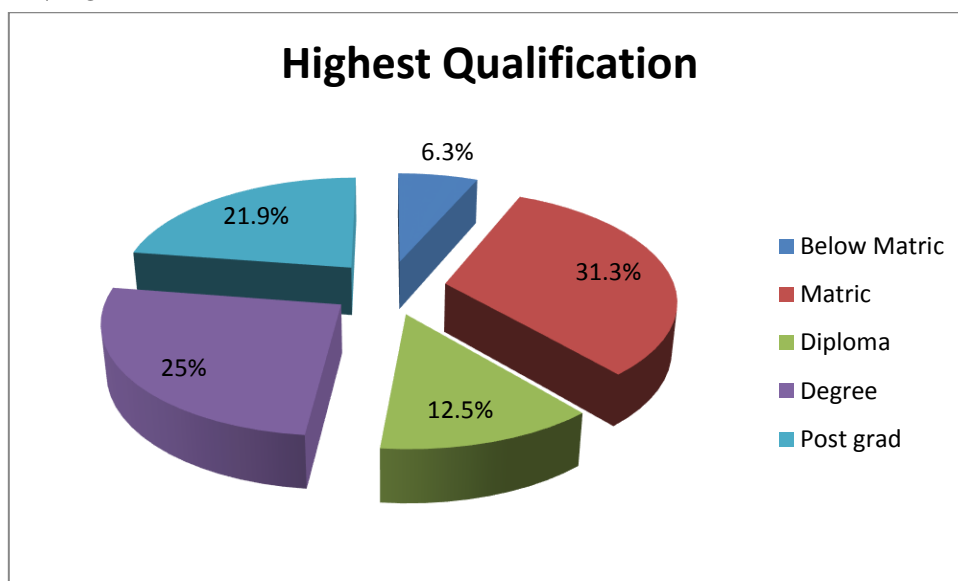


**Fig 4.1 Distribution of Respondents by Gender**

#### **4.2.2 Distribution of Respondents by Highest Qualification**

Fig 4.2 shows the highest qualification of the study respondents. The result shows that those with matric certificate account for the highest number (31.3%) of respondents followed by those with degree (25%) and post graduate degree (21.9%). Respondents with diploma certificate are (12.5%), and those without matric certificate accounts for the least number of respondents.

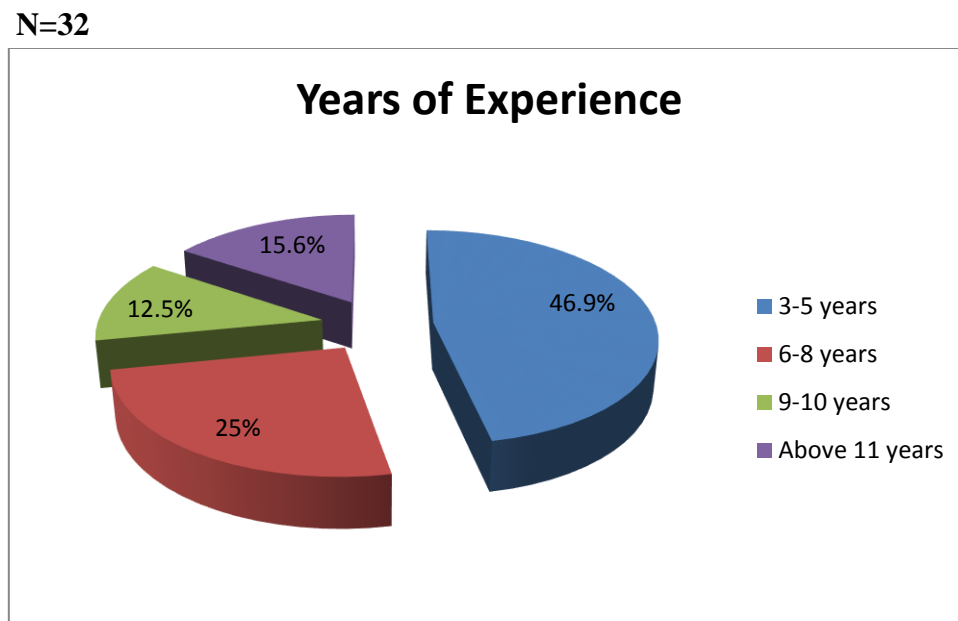
N = 32



**Fig 4.2 Distribution of Respondents by Qualification**

### 4.2.3 Distribution of Respondents by Years of Experience

Fig 4.3 shows the distribution of the respondents by years of experience. The result shows that majority (46.9%) of the respondents had between 3 to 5 years of experience followed by those with 6 to 8 years (25%) and those with more than 10 years (15.6%) of experience. The respondents with 9 to 10 years of experience are the least in number (12.5%).

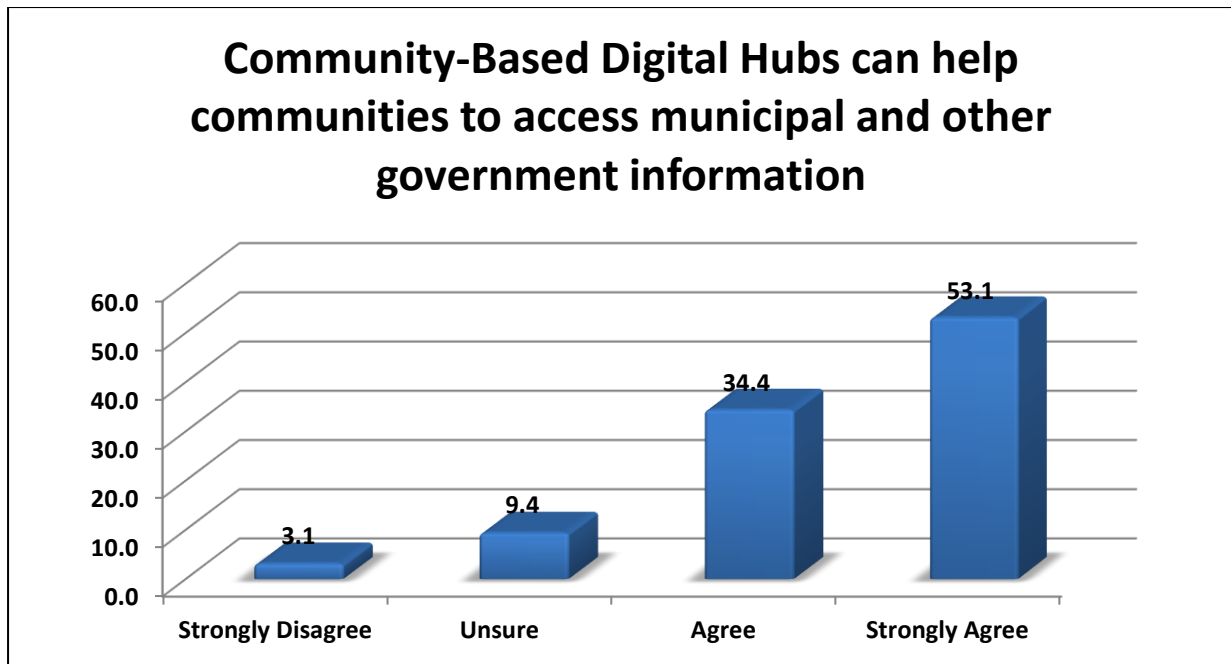


**Fig 4.3 Distribution of Respondents by Years of Experience**

## 4.3 Descriptive Analysis of Quantitative Data

### 4.3.1 Current means of accessing information by rural dwellers in uMgungundlovu District Municipality (Research Question 1)

Figure 4.4 shows the response of the respondents when asked whether community-based digital hubs can help communities to access municipal and other government information. The result reveals that the cumulative percentage (87.5%) of respondents that strongly agree and agree that community-based digital hubs can help communities to access government information far surpasses those that strongly disagree (3.1%). The respondents that were undecided are (9.4%).

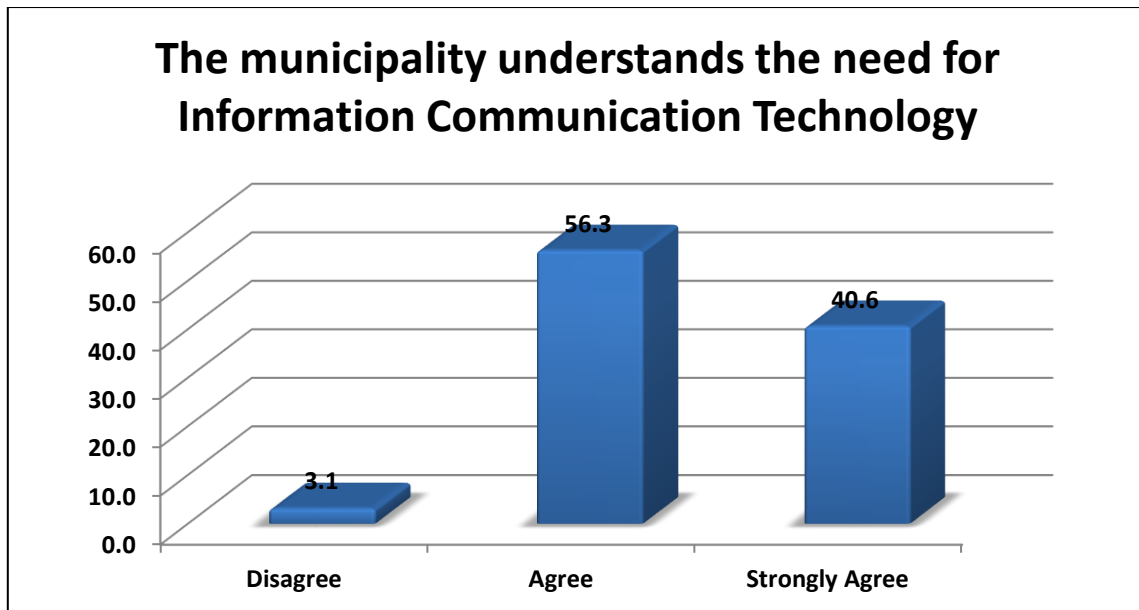


**Fig 4.4 Community-based Digital Hubs help Access Government Information**

#### **4.3.2 Factors that affect access to ICT in rural communities of uMgungundlovu District Municipality (Research Question 2)**

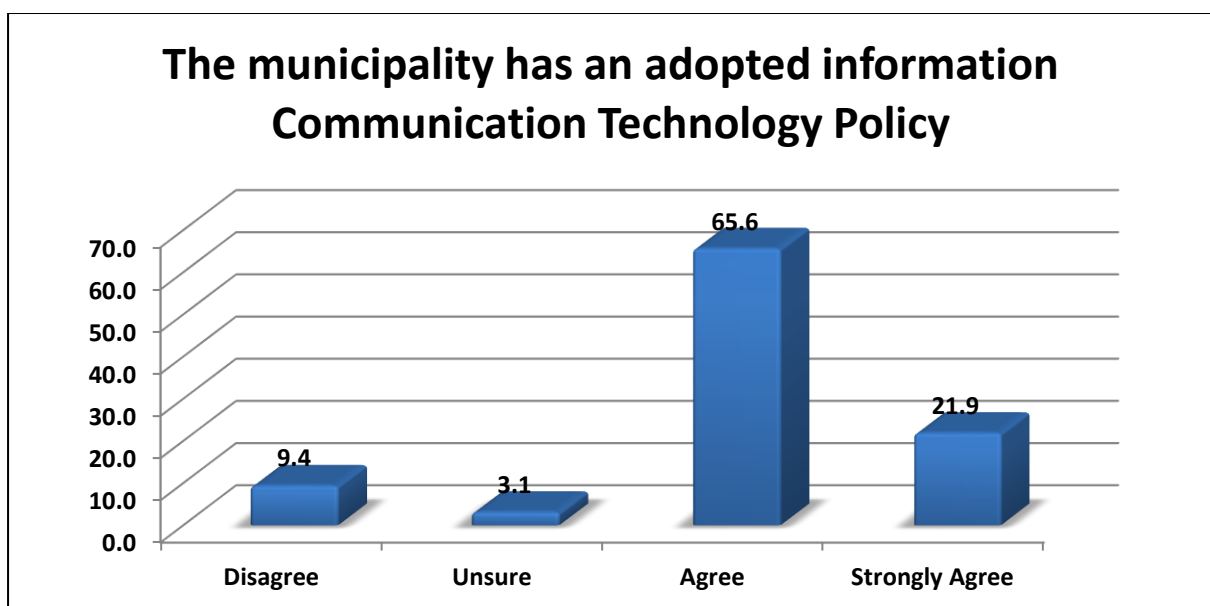
This section shows the responses of the respondents on factors that affect access to ICT in rural communities of uMgungundlovu District Municipality.

Fig 4.5 shows that a vast majority (96.9%) of the respondents understands the need for information communication technology in the municipality. The majority number is a combination of those that agree and strongly agree, as against the mere (3.1%) of the respondents that disagreed. This implies that one of the factors that influence access to ICT is the recognition of the need of ICT in the municipality.



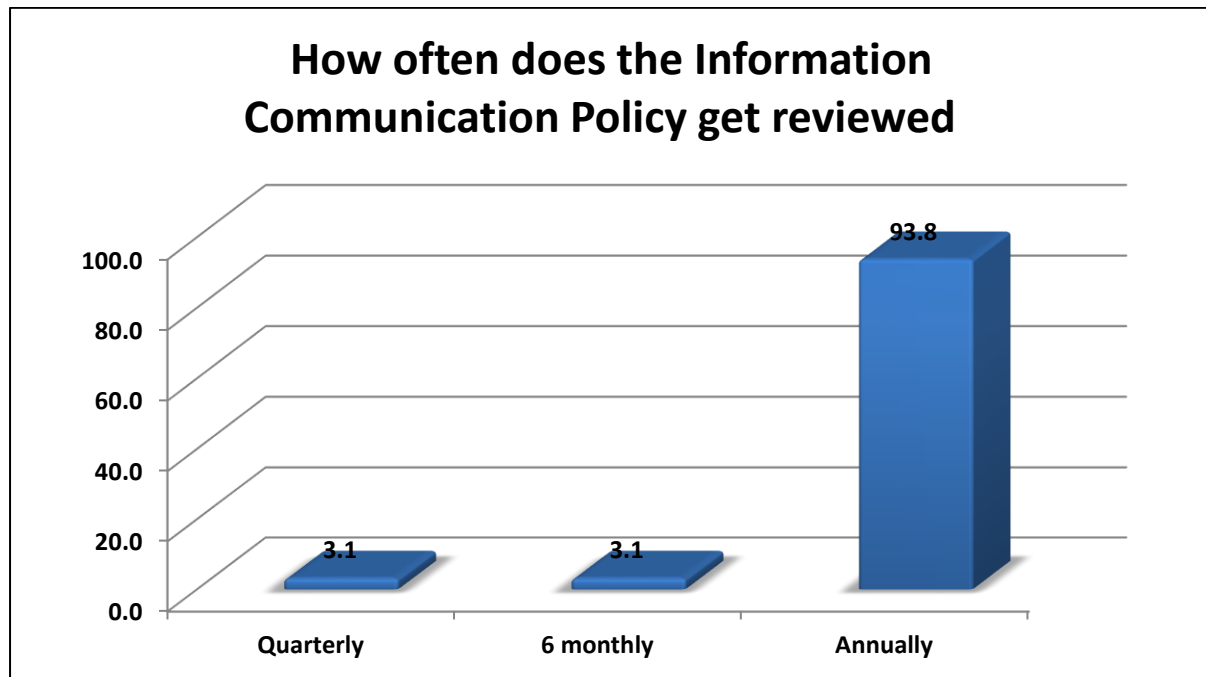
**Fig 4.5 The Need for Information Technology**

Fig. 4.6 shows the response of the respondents on adopted ICT policy. The result indicates that majority (87.5%) of the respondents (ICT managers) viewed the adoption of ICT policy in the municipality as a positive factor that affect access to ICT in the municipality. Those that disagreed were only (9.4%), while (3.1%) of the respondents were unsure.



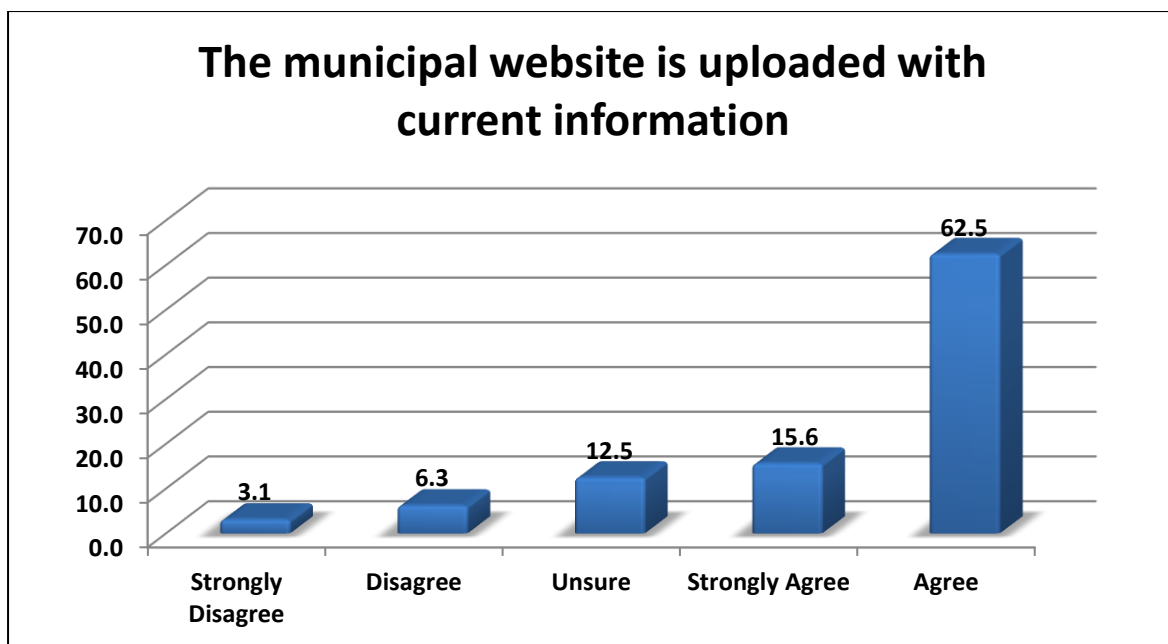
**Fig 4.6 Adoption of ICT Policy in the Municipality**

Fig 4.7 shows the result on how often ICT policy get reviewed. The result shows that a vast majority (93.8%) of the respondents believe that the annual review of ICT policy is a major factor that facilitates access to ICT in rural communities of uMgungundlovu Municipality. Quarterly and bi-annual review of ICT policy was poorly rated by only (3.1%) of the respondents respectively.



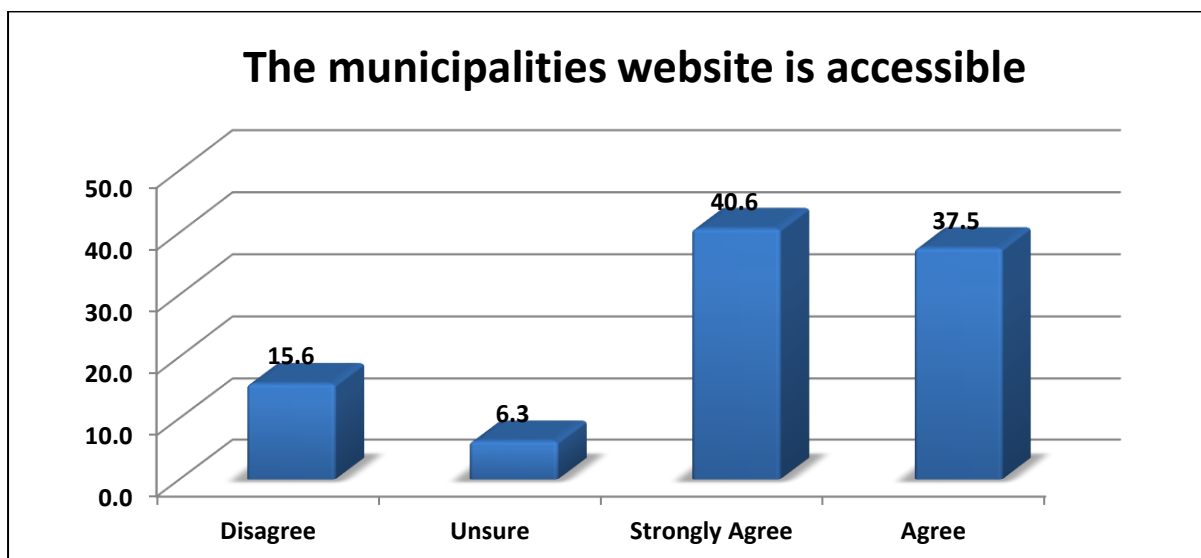
**Fig 4.7 Frequency of Review of ICT Policy**

Fig 4.8 shows the responses of the respondents on how current information on the municipality website influence access to ICT in the municipality. The result reveals that the cumulative number (78.1%) of respondent that agree and strongly agree that current information uploaded on the municipality website encourages access to ICT in the municipality, far outnumbers those that strongly disagree (3.1%) and disagree (6.3%). Those that were evasive accounts for only (12.5%).



**Fig 4.8 Current Information on Municipality Website**

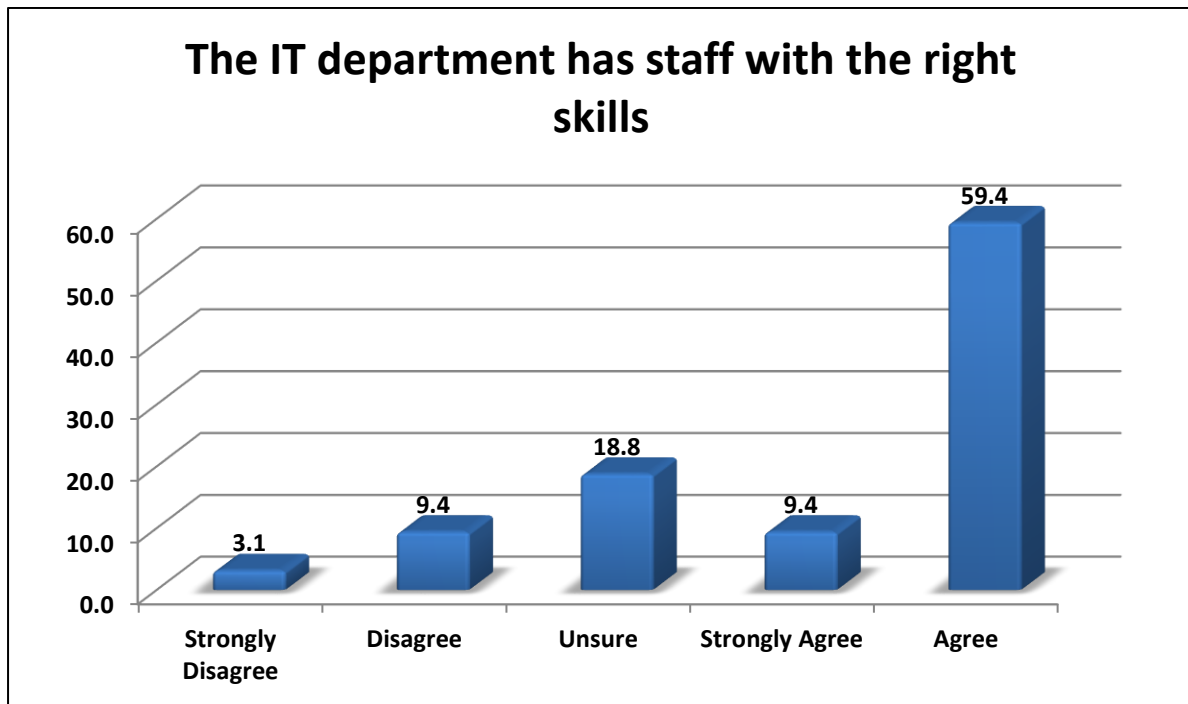
The result (Fig 4.9) on whether access to the municipality website is a factor that encourages access to ICT in the municipality show that (78.1%) of the respondents agree that accessibility to the municipality website encourages access to ICT in the municipality. Those that disagree accounts for (15.6%), while only (6.3%) were undecided.



**Fig 4.9 Accessibility of Municipality Website**

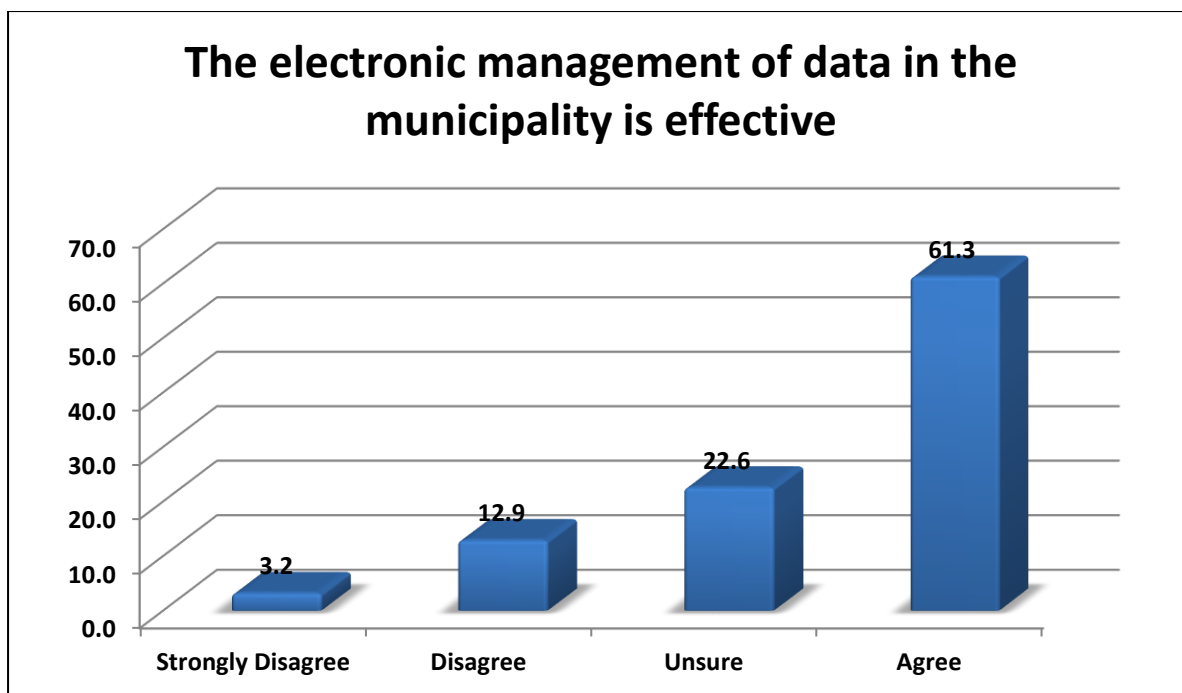
#### 4.3.3 Literacy level and technological skills of local communities and municipal leadership as far as are concerned. (Research Question 3)

Fig 4.10 shows the level of skills of staff in IT department. The result shows that (68.8%) of the respondents admitted that staff of IT department has the right IT skills, as compared to (12.5%) that felt otherwise. The respondents that were unsure of the level of skills of IT staff were (18.8%).



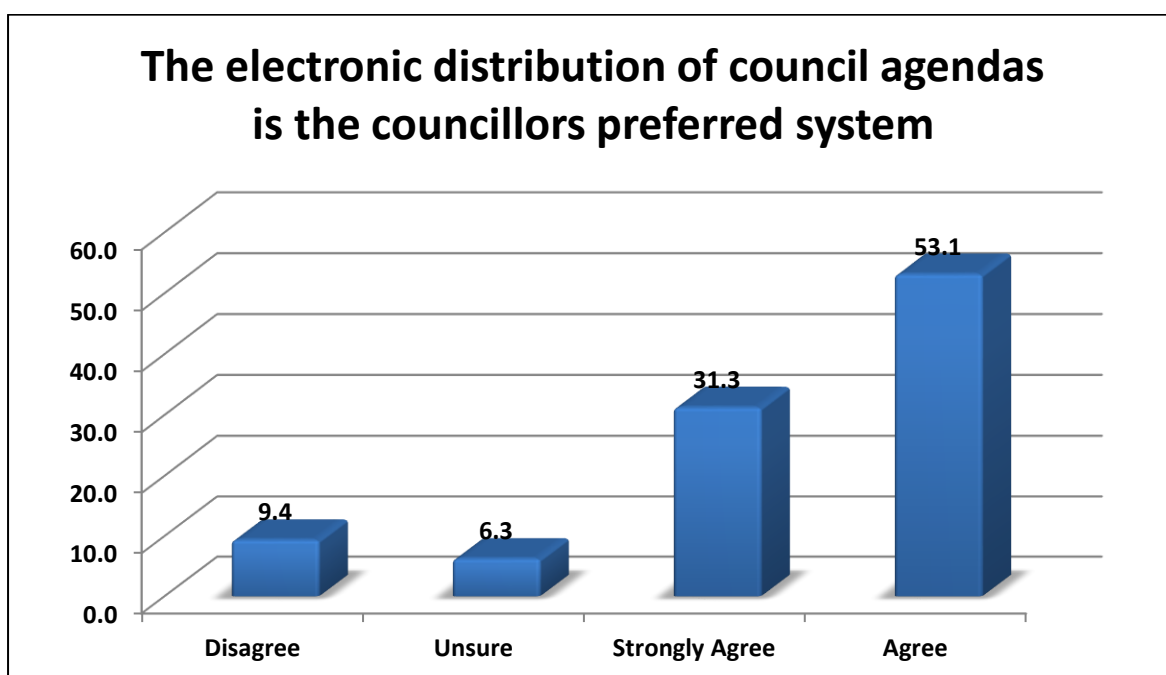
**Fig 4.10 Skills of Staff of IT department**

The result of the effectiveness of electronic management of data in the municipality is shown in fig 4.11. The result reveals that (61.3%) of the respondents agreed electronic management of data in the municipality is effective, in relation to (16.1%) that disagreed. Only (12.9%) of the respondents were unsure of the effectiveness of electronic management of data in the municipality.



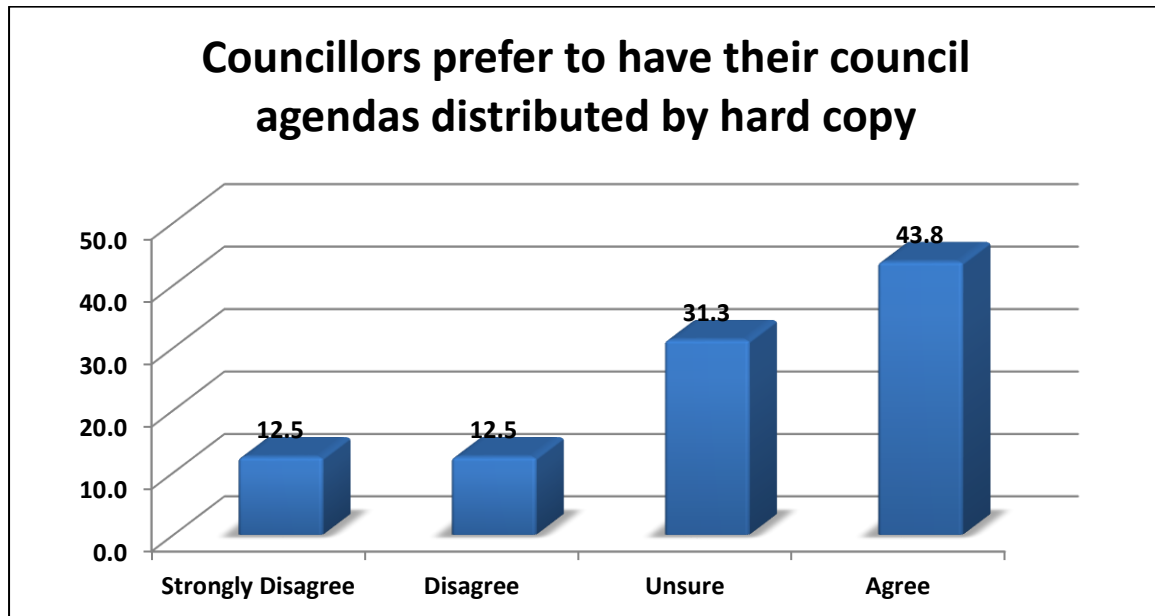
**Fig 4.11 Effectiveness of Electronic Management of Data**

Fig 4.12 shows the opinion of the respondent towards the preferred system used to distribute the council's agendas. The result reveals that majority (84.4%) of the respondents, comprising those that agree and strongly agree, consents that councillors preferred their agendas to be distributed in electronic format. Those that were not certain accounts for (6.3%), while those that disagreed were (9.4%).



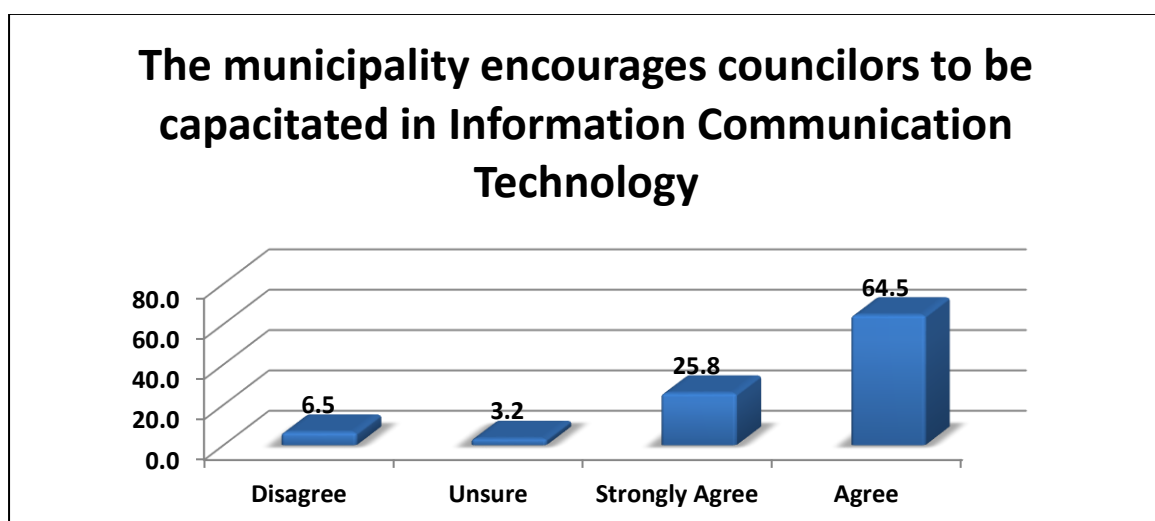
**Fig 4.12 Electronic Distribution of Councillors Agendas**

Fig 4.13 shows the response of the respondents on whether councillors prefer to have their agendas distributed by hard copy. The result reveals that only (43.8%) of the respondents agree that hard copy should be used in distributing the agendas, while (25%) disagreed. The number of undecided respondents were (31.3%).



**Fig 4.13 Hard Copy Distribution of Council Agenda**

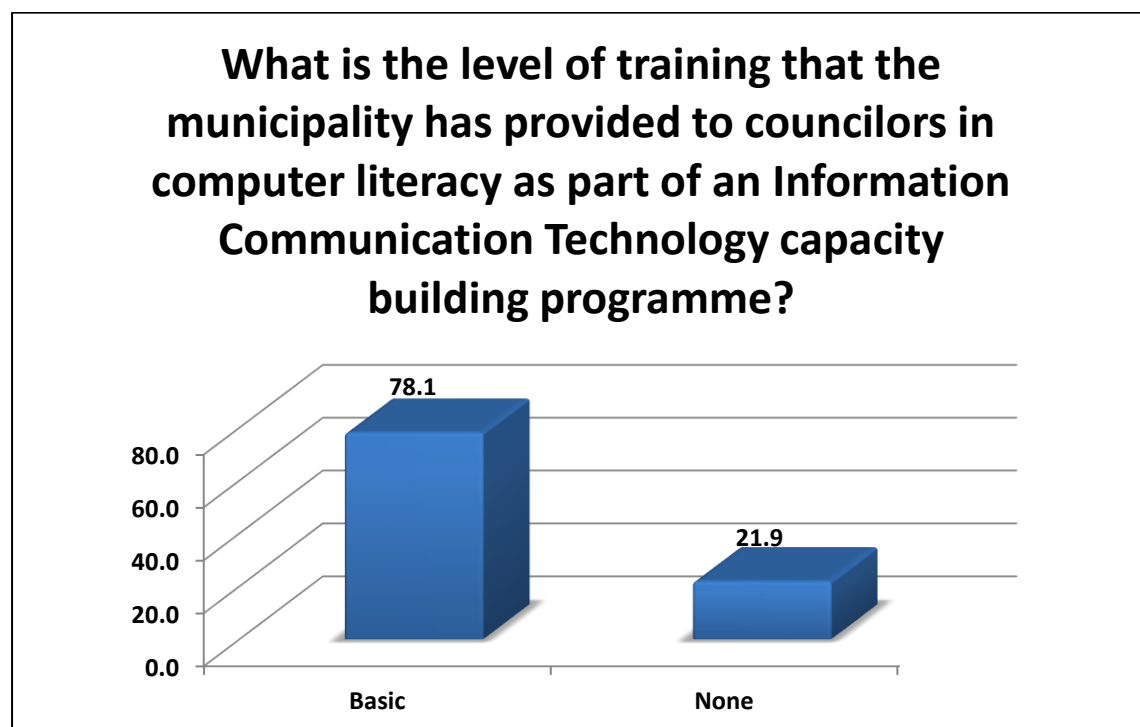
Fig 4.14 shows the responses of respondents towards support for capacitating councillors in ICT. The result shows an overwhelming (90.3%) support by the respondents that municipality encourages councillors to be capacitated in information technology, as compared to (6.5%) that disagreed. Only (3.2%) of the respondents were indecisive.



**Fig 4.14 Councillors Capacitation in Information Communication Technology**

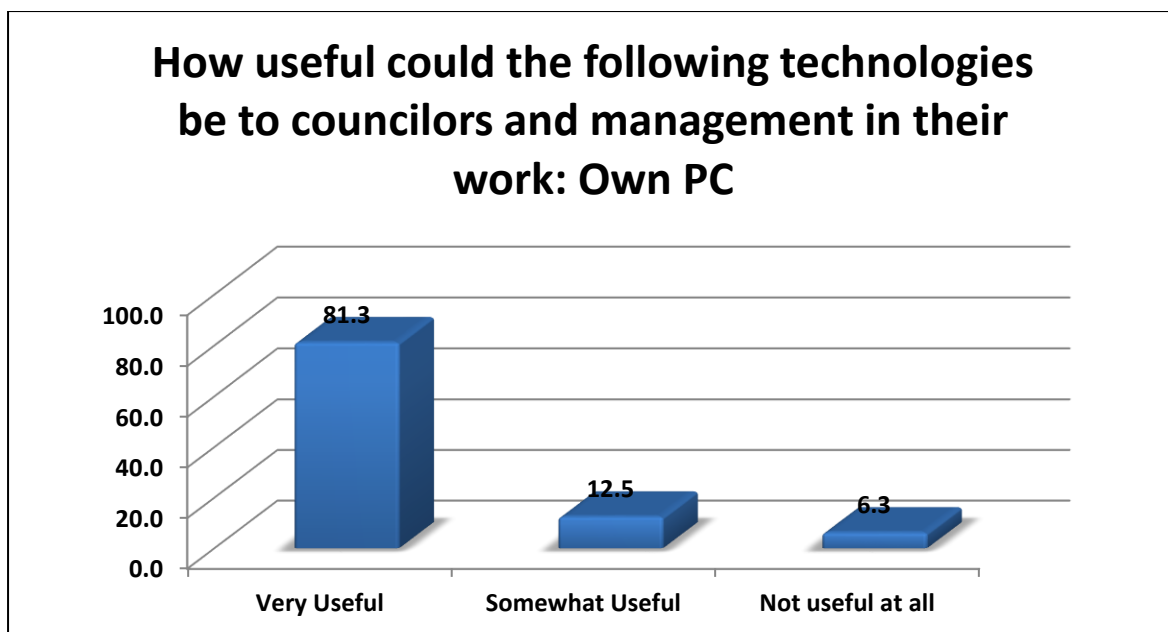
#### 4.3.3.1 Level of Computer Literacy Training provided to Councillors

Fig 4.5 shows the data on level of computer literacy training provided to councillors as part of ICT capacity building programme. The result shows that (78%) of the respondents agreed to basic training being provided by the municipality as part of ICT capacity building programme. The respondents that inferred no training was provided were (21.9%).



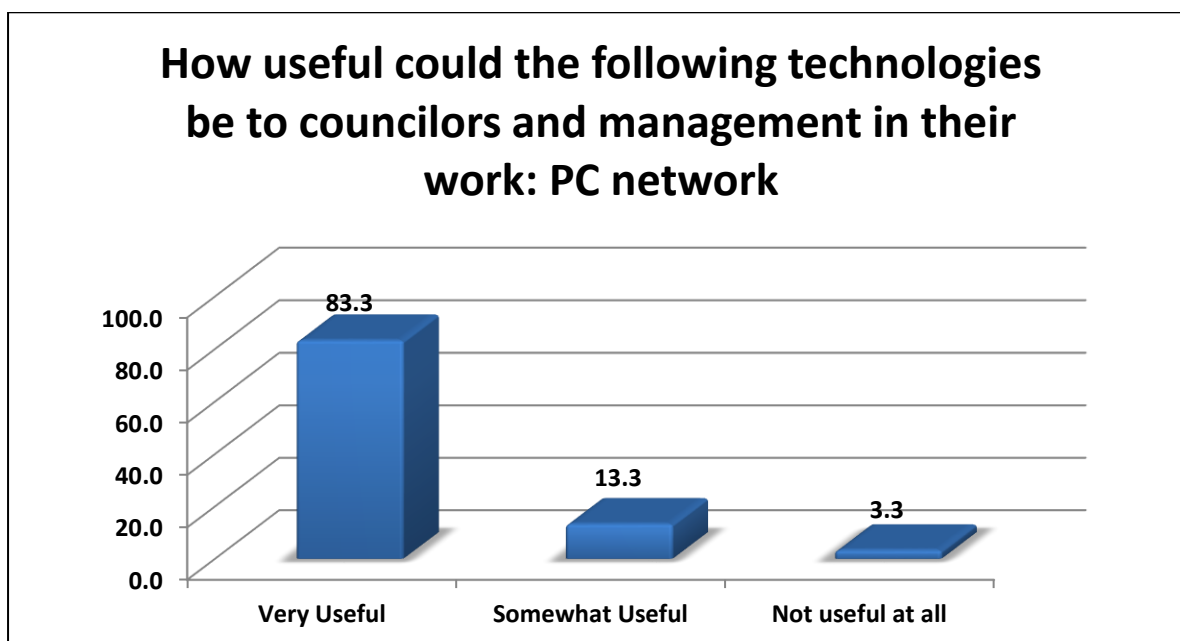
**Fig 4.15 Level of Training provided to Councillors**

Fig 4.16 shows the data on usefulness of owned personal computer to councillors in their work. The results suggest that majority (81.3%) of the respondents' perceived personally owned computers to be very useful to councillors and management in their work. Only (12.5%) of the respondents felt it is somewhat useful, while only a few (6.3%) sees it as not useful.



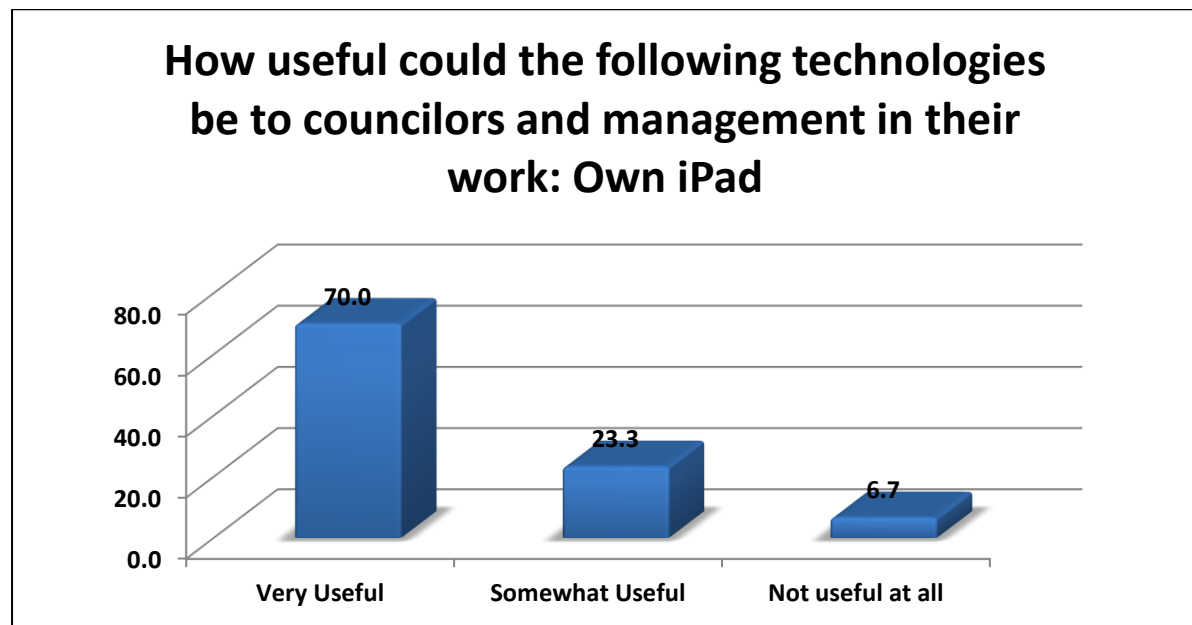
**Fig 4.16 Usefulness of Own PC to Councillors**

Fig 4.17 shows the data on usefulness of PC networks to councillors and management in their work. The result shows that (83.3%) of the respondents agreed to the usefulness of PC networks to councillors and management in their daily work. Those that somewhat agreed to its usefulness and those that consider it not useful at all account for (13.3%) and (3.3%) respectively.



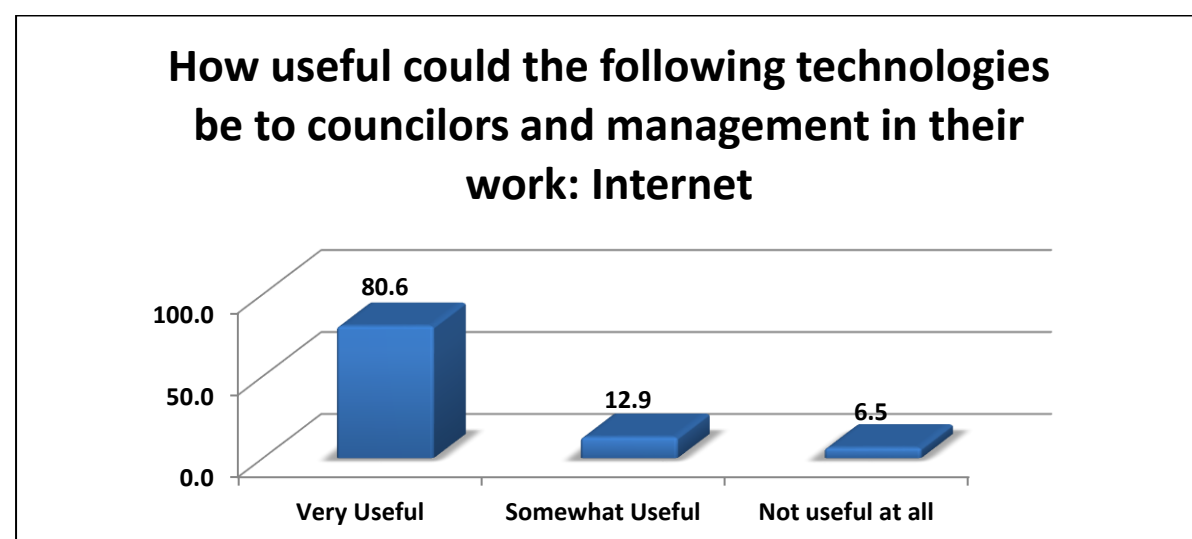
**Fig 4.17 Usefulness of PC Networks to Councillors**

The result on the usefulness of own iPad to councillors is depicted in fig 4.18. The result reveals (70%) of the study participant found iPad very useful for councillors and management in their work, as against (23.3%) and (6.7%) that considers iPad as being somewhat useful and not useful respectively.



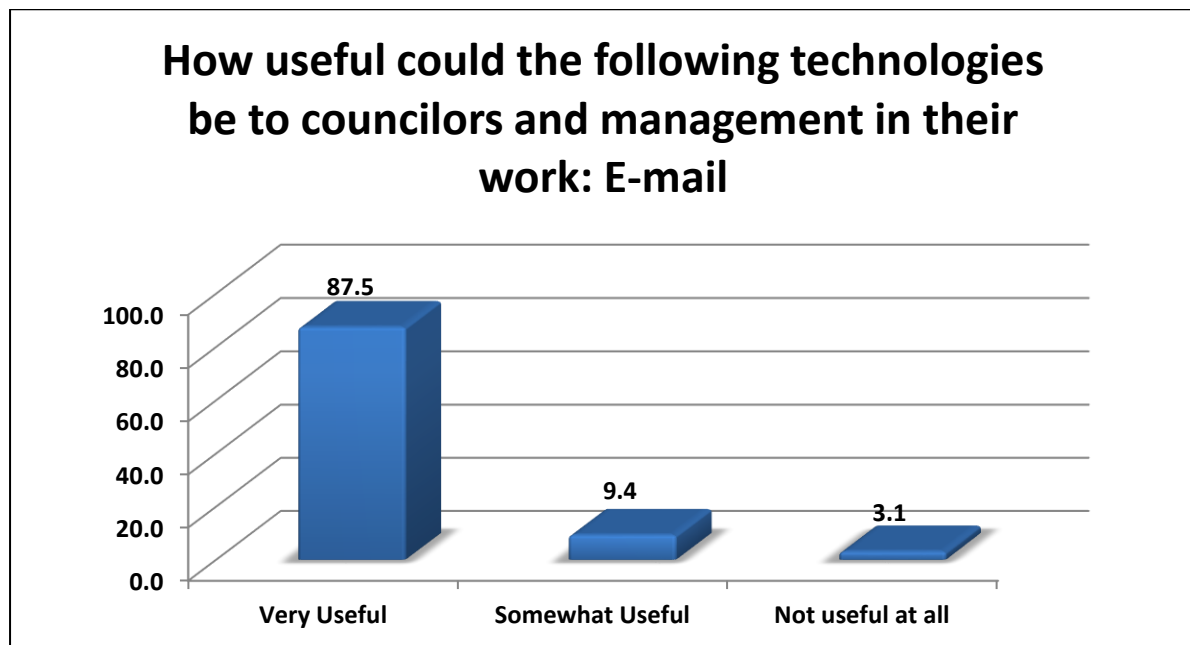
**Fig 4.18 Usefulness of Own iPad to Councillors**

Fig 4.20 depicts the responses of respondents on the usefulness of the Internet to councillors and management in their work. The result reveals that majority (80.6%) of the respondents consider the Internet as being very useful to councillors and management on their work. Few (12.9%) of the respondents felt the Internet was just somewhat useful, and an only (6.5%) thinks of the Internet as not useful at all.



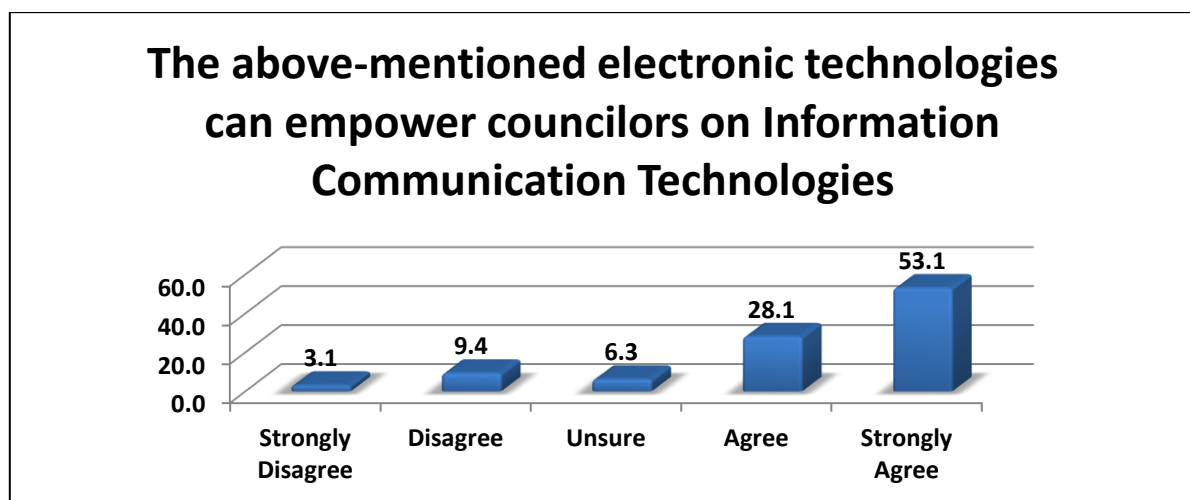
**Fig 4.19 Usefulness of Internet to Councillors**

Fig 4.20 show the result of the usefulness of email to councillors and management in their work. The result shows that (87.5%) of the respondents agreed to the usefulness of email in the daily work of councillors and management. Only (9.4%) thinks email is somewhat useful, and (3.1%) considers it as not useful.



**Fig 4.20 Usefulness of E-mail to Councillors**

Fig 4.21 shows the result of the capacity of owned PC, PC networks, email and the Internet in empowering councillors. The outcome reveals (81.2%) of the respondents' holds a strong view (agree and strongly agree) on the capacity of these technologies in empowering councillors, as compared to those with contrary opinion (12.5%). The respondents that were not certain on the capability of these technologies account for mere (6.3%).



**Fig 4.21 Capacity of PC, Networks, E-mail and Internet to empower Councillors**

## 4.4 Thematic Analysis and Results of Interview Data

This section presents the results of the thematic analysis of the interview data. The responses of the respondents to the interview schedule provides answers to the research questions. The sections starts with a demographic description of the interview respondents, followed by the presentation of the thematic analysis and results of the interview data.

### 4.4.1 Demographic Characteristics of Interview Respondents

The results of the demographic data of the interview respondents shows that male 7(58%) respondents were more in number than their female (42%) counterpart. The respondents between the ages of 31 to 40 accounted for 9(75%), while those between 20 and 30 years of age are 3(25%).

**Table 4.1 Demographic Characteristics of Interview Respondents**

<b>Respondents</b>	<b>Sex</b>	<b>Age</b>	<b>Ward / Location</b>	<b>Municipality</b>
1 Member of a ward committee	M	31	Ward 4, Lidgetton West (semi-urban)	uMngeni Municipality
2 Member of a ward committee	F	34	Ward 4, Lidgetton West (semi-urban)	uMngeni Municipality
3 Member of a ward committee	F	34	Ward 4, Curry's Post	uMngeni Municipality
4 Member of a ward committee	M	36	Ward 4, Lions River	uMngeni Municipality
5 Member of ward committee	M	34	Ward 7, Birnamwood	uMngeni Municipality
6 Member of a ward committee	F	36	Ward 9, Nguga	uMngeni Municipality
7 Member of ward committee	F	26	Ward 8, Mpophomeni	uMngeni Municipality
8 Member of a ward committee	M	33	Ward 5, Triandra	uMngeni Municipality
9 Member of a ward committee	F	22	Ward 5, Teapot Valley	uMngeni Municipality
10 Member of ward committee	M	32	Ward 5, Teapot Valley	uMngeni Municipality

11 Member of ward committee	M	40	Ward 5, Dargle	uMngeni Municipality
12 Member of ward committee	M	21	Ward 8, Nxamalala	uMngeni Municipality

#### 4.4.2 The Current Means of Accessing Information (RQ1)

##### ***Respondent 1: Male 31yrs***

**Researcher:** What are the ways in which your community access the information, is it through Radio or newspapers? And what about those who are illiterate?

*Respondent 1: For now, the communities get their information through the word of mouth and also by the Radio and through community committees.*

**Researcher:** What about the youth, are they able to access the information using the Internet?

*Respondent 1: No, they are not able to access the Internet in the community. If they want to use the Internet, they have to travel to the municipality.*

##### ***Respondent 2 Female 34yrs***

**Researcher:** What are the ways in which your community access the information, is it through Radio or newspapers? And what about those who are illiterate?

*Respondent 2: The people of the community, both literate and illiterate get more information from the community meetings, for example, the municipality from time to time calls meetings to inform the community about the budget, others listen to Radios, and watch TVs.*

##### ***Respondent 3 Female 34yrs***

**Researcher:** Currently, what are the ways in which your community access the information? Is it through Radio or Television?

*Respondent 3: They get it through Radio and TV.*

##### ***Respondent 4, Male 36***

**Researcher:** Currently, what are the ways in which your community access the information, is it through Radio or Television?

*Respondent 4: They get it from the radio stations and by attending community committee meetings and through cellular phones.*

**Respondent 5: Male 34yrs**

**Researcher:** Currently, what are the ways in which your community access the information, is it through Radio or Television?

*Respondent 5: We send out letters to the community and the members of the committee take these and distribute among the members of the community. Some of the people are illiterate which means that we need to go back and verbally explain to them regarding the time and the venue of the meeting.*

**Respondent 6: Female 36yrs**

**Researcher:** Currently, what are the ways in which your community access the information?

*Respondent 6: There is no other way that they get the information, except if I go from house to house and inform the people if there is a meeting, alternatively the municipal workers also make announcements using the loudspeaker. A person who only has a cellphone cannot get every information.*

**Respondent 7: 26 Female 26yrs**

**Researcher:** Currently, what are the ways in which your community access the information? Is it through Radio or Television?

*Respondent 7: The community here, generally get their information through cellphones, Radio and print media.*

**Respondent 8: 33 Male 33yrs**

**Researcher:** Currently, what are the ways in which your community access the information, is it through Radio/ Newspapers/ computer/ TV/?

*Respondent 8: They get the information through the radios, not by computers because there are no computers. They don't have knowledge to use them. If they need help they travel about 40km to town.*

**Respondent 9: 22 Female 22yrs**

**Researcher:** Currently, what are the ways in which the community access information? Is it through Radio/ Newspapers/ computer/?

*Respondent 9: What I can say is that we get information from newspapers and also by sharing information through the word of mouth.*

**Respondent 10: 32 Male 32yrs**

**Researcher:** Currently, what are the ways in which the community access information?

*Respondent 10: In this area we phone one another to share information. We, who are able to use the Computer we read e-mails to get information and also read the news in the Internet. I also print out job opportunities and give them to others.*

**Respondent 11: 40 Male 40yrs**

**Researcher:** Currently, which ways does the community use to access information? Information such as the one obtained at school and how to further studies.

*Respondent 11: I think they go to principals. (meeting information custodian)*

**Researcher:** What about you as Ward Committees, is there any information that you share with people?

*Respondent 11: Yes, we meet them and share information.*

**Respondent 12: Male 21yrs**

**Researcher:** Currently, what are the ways in which your community access information?

*Respondent 12: I usually see them using the internet, but it's the youth who can use it.*

**Researcher:** Where do they get it from?

*Respondent 12: As I have mentioned I usually go to Mpophomeni Youth Centre, they also go there.*

**Researcher:** How do adults get information? Do they read newspapers, do they listen to the radio, do they watch TV? Or do they perhaps get it from committee meetings?

*Respondent 12: They read newspapers but the problem is that some of them are illiterate, those listen to the radio.*

### **Descriptive Narrative of Current Means of Accessing Information by Rural Dwellers in uMgungundlovu District Municipality (RQ 1)**

#### ***Theme: Radio***

The descriptive analysis of the interview data shows that radio is the most used form of accessing information. Unlike the use of mobile phone, internet or reading newspaper that requires a certain level of literacy, radio provides easy access to information for people that are totally illiterate, so far as the radio station transmits in their local language. Respondent 12 affirmed this position when asked how do adults get information? His response: *“They read newspapers but the problem is that some of them are illiterate, those listen to the radio”*

#### ***Theme: Word of Mouth***

The next in ranking in ways of accessing information is through word of mouth, one-on-one meeting, which may entail either meeting individuals on one-to-one basis spontaneously or visiting their house-to-house to access or share information. Word of mouth through face-to-face interaction appears to be a vital way of accessing information in poor rural communities where cellular telephone is not used by everyone. From the perspective of the respondent, *“loudspeaker”* is an extension of *“Word of mouth”* using a cheap and affordable battery-operated technology.

Respondent 6, a female ward leader from Nguga municipality said

*“There is no other way that they get the information, except if I go from house to house and inform the people if there is a meeting, alternatively the municipal workers also make announcements using the loudspeaker”*

Respondent 5 a ward committee member from Birnamwood in ward 7, while emphasizing on using letters as a means of communication but stressed the importance of verbal communication in cases where people are illiterate, according to him *“.....Some of the people are illiterate which means that we need to go back and verbally explain to them regarding the time and the venue of the meeting”* Even in cases where the respondents did not include verbal communication (Word of mouth) as a way of accessing information, it

remain a natural form of accessing and sharing information regardless of socio-demographic disparities.

***Theme: Cellular Phone***

Cellular phone follows in rank as the current means of accessing information. For communities with electricity and network coverage, cellular mobile phone provides an easy platform to access and share information regardless of geographical distance.

***Theme: Newspapers***

Newspapers as a means of accessing information is next in ranking, was reported among respondents in Mpophomeni in ward 8 (respondent 7), Teapot Valley in ward 5 (respondent 9) and Lower Mashingeni in Ward 8 (respondent 12). Newspapers when available offers ready information especially in communities without electricity.

***Theme: Community Gathering***

Next in ranking was community gathering mentioned by respondents 1,2 and 4 in .....respectively. In rural communities, social communication is crucial in maintaining social ties and forms the basis for fostering important social relationship. This stance is captured by respondent 2:

*“The people of the community, both literate and illiterate get more information from the community meetings, for example, the municipality from time to time calls meetings to inform the community about the budget, ...”*

***Theme: Internet Technology***

The use of Internet technology was reported as a current means of accessing information only by ward committee member (Respondent 10) in Ward 5 at Teapot Valley and Ward 8 in lower Mashingeni (Respondent 12) under the uMngeni Municipality. However, using the Internet is common amongst the younger generation, the youth.

When the researcher asked respondent 10 if the youth can access information from the Internet, he replied:

*“Yes, the youth is able to access the Internet because there is a group of youth that I work with here. Whenever there is training, I make sure I train them first so that they can motivate and call others”*

Also in the case of respondent 12, when the researcher asked him the ways the community access information, he answered: *“I usually see them using the internet, but it’s the youth who can use it”*

### **Descriptive ranks of Current Means of Accessing Information in the Communities**

Table 4.1 shows the descriptive weights given to the items mentioned by the respondents as means of access to information in the municipality. The result shows that radio is most preferred means, followed by word of mouth (one-on-one meeting), cellular phone, newspaper, community meetings, TV, and internet.

**Table 4.2 Descriptive Ranks of Current Means of Accessing Information**

Respondents	Radio	Word of mouth	Cellular phone	Newspaper	Community meetings	Watch TV	Letter; Print	Internet: e-mail, e-news
Resp 1	√	√			√			
Resp 2	√				√	√		
Resp 3	√					√		
Resp 4	√		√		√			
Resp 5							√	
Resp 6		√						
Resp 7	√		√	√				
Resp 8	√							
Resp 9		√		√				
Resp10			√				√	√
Res 11		√						
Res12	√			√				√
Total	<b>8</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>

#### 4.4.3 Literacy Level and Technological Skills of Local Communities and Leaders in the Municipal (RQ3)

*Respondent 1: Male 31yrs*

**Researcher:** Have you ever had an opportunity to use a computer?

*Respondent 1:* No I have never had it (computer).

**Researcher:** Are you trained to use it though?

*Respondent 1:* No I have not been trained but I sometimes used it at school although I did not have formal training.

**Researcher:** Have you ever heard about community –based Digital Hubs?

*Respondent 1:* I have heard about it that it was going to be established in certain areas, but no mention was made of Lidgetton West.

**Researcher:** Would you like your neighbourhood to have the community –based Digital Hub?

*Respondent 1:* Yes I would like it.

**Researcher:** What about the youth, are they able to access the information using the Internet?

*Respondent 1:* No, they are not able to access the Internet in the community. If they want to use the Internet, they have to travel to the municipality.

**Researcher:** Now you have been looking at this from your perspective, but now I would like you to look at it from the community's point of view; does the community have any knowledge about the Digital Hubs and what communication tools it contains?

*Respondent 1:* Yes, the community has some knowledge about this, but the people who have this knowledge are the young people and the adults still don't have this knowledge.

**Researcher:** When we look at the training, you did mention earlier that you are not trained in computer literacy and you also said you don't have a certificate. In your opinion is the community trained to use the communication tools?

*Respondent 1:* No the community I come from, is not trained.

**Researcher:** In your opinion, does it mean that the youth do get training at schools but the difficulty is the lack of the infrastructure in the community?

*Respondent 1:* Yes, they do get the training at school.

*Respondent 2: Female 34yrs*

**Researcher:** We should not be afraid to be honest and tell the truth if the government is contributing to the lack of these infrastructures. Are you able to use the computer?

*Respondent 2:* No I have never handled it in my hand before.

**Researcher:** Does this mean that you are not trained to use it?

*Respondent 2:* Yes I am not trained.

**Researcher:** Now you have been looking at this from your perspective, but now I would like you to look at it from the community's point of view. Does the community have any knowledge about the Digital Hubs and what communication tools these Digital Hubs contain?

*Respondent 2:* The youth do use the computers at school, the adults also hear about the computers from the radio but the difficulty is to purchase them, because they want to know more about issues. We would welcome these community-based Digital Hubs and they would be very helpful even to the youth who passed their matric but are unable to further their studies like myself.

**Researcher:** When we look at the training, you did mention earlier that you are not trained in computer literacy and you also said you don't have a certificate. In your opinion is the community trained to use the communication tools?

*Respondent 2:* No my community is not trained, those with training skills go to the cities to further their studies and this leaves students stranded.

**Researcher:** Somebody said even if the pupils can learn the use of the computer at model C schools those acquired skills end there, because they do not have computers at home to keep practising.

*Respondent 2:* Yes, I agree.

**Researcher:** What about the youth, are they able to access the information using the internet?

*Respondent 2:* No. I think it is only those who are fortunate to attend model C schools. Otherwise here in the rural areas not much attention is paid to internet. We are however, keen to have computer training even in our schools in order for the children to access information.

***Respondent 3: Female 34yrs***

**Researcher:** Do you have it here in the house?

*Respondent 3:* No I do not have it in the house but I am trained to use it.

**Researcher:** Do you have an opportunity to use a computer?

*Respondent 3:* Yes I use a pay facility in the city.

**Researcher:** Now you have been looking at this from your perspective, but now I would like you to look at it from the community's point of view. Does the community have any knowledge about the Digital Hubs and what communication tools they contain?

*Respondent 3:* Yes, some people do have some knowledge but they may still need additional clarification.

**Researcher:** In your opinion, is your community trained in the use of the communication tools?

*Respondent 3:* No the community does not have the knowledge nor training, I think that they need comprehensive clarification.

**Researcher:** Does it mean that your community is not trained?

*Respondent 3:* Yes they are not trained.

**Researcher:** What about the youth, are they familiar with the use of the Internet?

*Respondent 3:* I think that the youth are not able to use Internet because of the levels of poverty in this community. Not many of the leaners are able to pass matric and they are not able to go any further, but I think that it would be of great assistance.

***Respondent 4: Male 36yrs***

**Researcher:** Are you trained though, on computer literacy?

*Respondent 4:* No I have no skill on computer usage.

**Researcher:** Now I need you to look at this from the community's point of view, since you have been looking at it from your perspective. Does the community have any knowledge about the Digital Hubs and the communication tools they contain? *Respondent 4:* No, many people do not have the knowledge. Those of us who live in the farms get the information after a long time, behind other communities. I am of the opinion though, that those learners who are doing grade twelve do hear about these things.

**Researcher:** In your opinion, is the community trained adequately in the use of the communication tools?

*Respondent 4:* No. If ever there are those with some kind of knowledge they are in the minority. Even at the schools where our children attend, there are no computers.

**Researcher:** The youth, do they have skills to use the internet?

*Respondent 4:* There are children who attend schools where there are computers and I believe that they are the ones who have knowledge.

**Researcher:** How do you think that this knowledge would help the learners if they only use the computers at schools and they are not able to practise at home?

*Respondent 4:* It is a problem that they are able to use computers at school and when they come home there are no computers. This is the main difference between the rural learners and the township ones.

**Respondent 5: Male 34yrs**

**Researcher:** What about a computer, do you have an access to it?

*Respondent 5:* No I do not have.

**Researcher:** But are you trained to use the computer?

*Respondent 5:* No although I know what it looks like, I am not trained to use it.

**Researcher:** Have you ever heard about the Community-based Digital Hubs, which is the centre where you can find different communication tools?

*Respondent 5:* Yes It is something that I have heard about.

**Researcher:** Would you like your community to have this Community-based Digital Hub?

*Respondent 5:* Yes I would love to, so that the community can pass on the information to others.

**Researcher:** Now I need you to look at this from the community's point of view, since you have been looking at it from your perspective. Does the community have any knowledge about the Digital Hub and what communication tools it contains? *Respondent 5:* In my opinion, our community **does not have sufficient information**. We have never had the opportunity to be informed about this. Moreover here in the farms information reaches the community very late after things have already taken place.

**Researcher:** In your opinion, is your community trained to use these communication tools?

*Respondent 5:* **No** in my opinion there is a need for a training of this nature. As I have already mentioned that we do not have computers in this community, **most of the people have no knowledge about them**. If we can get people to come and train the community, we would welcome this and we need this kind of training.

**Researcher:** What about the Youth, are they able to use the Internet?

*Respondent 5:* It is possible that we have one or two especially those who attend model C schools (few in model C school may be able to use the internet).

***Respondent 6: Female 36yrs***

**Researcher:** Do you have a computer?

*Respondent 6:* No I do not have.

**Researcher:** What about the Computer, do you know how to use it?

*Respondent 6:* I **do not have the knowledge of the computer** but I should get training if only I can have an opportunity.

**Researcher:** Have you ever heard about the Community based Digital Hubs?

*Respondent 6:* Yes, I have heard about it but I think that the community has not heard about it.

**Researcher:** Would you like your community to have these Community-based Digital Hub?

*Respondent 6:* Yes, I would appreciate it very much and I think that the Digital Hub would be of an assistance to our children who are learners but do not have a place to do their training

after school. It would also help those children who have passed matric to compile their CV's. Personally, as I work as a volunteer I would not be in a position to have money for my children to go to another area if they need communication tools.

**Researcher:** Now I need you to look at this from the community's point of view, since you have been looking at it from your perspective. Does the community have any knowledge about the Digital Hub and what communication tools it contains? *Respondent 6:* I think that they will know about it as soon as it is established because at the moment they do not know about it.

**Researcher:** In your opinion, does your community have the skill to use the communication tools?

*Respondent 6:* I think that those who are at schools do have knowledge. But the difficulty though is that they do not have these communication tools at home. Regarding the adults, it is those who are working in the cities who have the knowledge but they also have to go to the cities in order to find these communication tools.

**Researcher:** What about the youth, do they know how to use the internet?

*Respondent 6:* I think that they would know, if only we can have this Digital Hub in our community because they learn about it at school.

#### **Respondent 7: Female 26yrs**

**Researcher:** Do you know how to use the computer? Do you get the opportunity to use it?

*Respondent 7:* Yes I do have an opportunity to use it.

**Researcher:** Do you know how to use these communication tools or do you need some assistance?

*Respondent 7:* I know how to use these tools.

**Researcher:** Have you ever heard about community –based Digital Hubs?

*Respondent 7:* I think I have heard about it in the city.

**Researcher:** Would you like these Community based Digital Hubs to be established in your community?

*Respondent 7:* Yes I would like it very much.

**Researcher:** Now I need you to look at this from the community's point of view, since you have been looking at it from your perspective. Does the community have any knowledge about the Digital Hub and the communication tools it contains? These Community Multi-purpose Centres have fax, computer and printing facilities. *Respondent 7:* Yes, they do have the knowledge.

**Researcher:** In your opinion is your community trained in using these communication tools?

*Respondent 7:* No, they do not have enough knowledge, their knowledge is limited.

**Researcher:** In your opinion, do they need training in order to be able to use these communication tools?

*Respondent 7:* Yes, they do

**Researcher:** The youth, are they able to access information from the Internet?

*Respondent 7:* They are not.

**Researcher:** Is it because of the lack of training, may be?

*Respondent 7:* It is the lack of training and ignorance about the internet facility.

**Respondent 8: Male 33yrs**

**Researcher:** What about the computer, can you use it or do you have access to it?

*Respondent 8:* Yes. I have a Laptop.

**Researcher:** Can you, on your own use the communication tools that we have just mentioned or you need assistance?

*Respondent 8:* Yes, I can use the computer and the phone.

**Researcher:** Have you ever heard about Community-based Digital Hubs, which is a community structure with different kinds of communication tools?

*Respondent 8:* No, I have not heard about it.

**Researcher:** Would you like your community to have this Community-based Digital Hub?

*Respondent 8:* Yes. I would like very much.

**Researcher:** Now I would like you to look at this from your community's point of view, since you have been looking at it from your perspective. Does the community have any knowledge about the Digital Hubs and what communication tools they contain?

*Respondent 8:* No, they don't.

**Researcher:** In your opinion, is the community trained to use communication tools?

*Respondent 8:* What I gather from the community is that they know how to use cellphones but not computers.

**Researcher:** Does this mean that even if the Community-based Digital Hub can be established here, the community members cannot use it?

*Respondent 8:* Yes.

**Researcher:** The youth, can they access the internet?

*Respondent 8:* No. Since they cannot use the computer, they cannot use the internet too.

***Respondent 9: Female 22yrs***

**Researcher:** Do you have a computer?

*Respondent 9:* No, I don't have a computer.

**Mbali Myeni:** Do you have access to it?

*Respondent 9:* Yes, there are computers in this house but we can only use them as an organisation.

**Researcher:** Are you able to use the communication tools that we have talked about or you need assistance?

*Respondent 9:* No I cannot use the computer on my own, there is somebody who assists me.

**Researcher:** In other words you did not receive training to use the computer?

*Respondent 9:* Yes.

**Researcher:** Have you ever heard about Community-based Digital Hubs which is a community structure with different kinds of communication tools?

*Respondent 9:* I have heard about something similar which is called the Youth Advisory Centre at Howick Municipality but there are only computers there.

**Researcher:** Have you actually gone there to use them?

*Respondent 9:* Yes.

**Researcher:** Would you like your community to have this Community-based Digital Hub?

*Respondent 9:* Yes I would like.

**Researcher:** Now I need you to look at this from the community's point of view, since you have been looking at it from your perspective. Does the community have any knowledge about the Digital Hub and what communication tools it contains? *Respondent 9:* No, they do not have knowledge. Most of them do not know.

**Researcher:** In your opinion, is the community trained to use communication tools?

*Respondent 9:* No, the majority is not trained to use communication tools.

**Researcher:** Can the youth access the Internet?

*Respondent 9:* No they can't. They need help.

**Respondent 10: Male 32yrs**

**Researcher:** Can you use all the communication tools that we have talked about, on your own or you need some assistance? I see the cellphone, but some people cannot use the it.

*Respondent 10:* Yes, I can use these communication tools.

**Researcher:** Do you have deep knowledge even in the computer usage?

*Respondent 10:* Yes.

**Researcher:** Have you ever heard about Community-based Digital Hubs, which is an infrastructure with a variety of communication tools?

*Respondent 10:* I know the name. There is one I used to work for at Sweetwater and it was called a Digitainer. It was a Container, which was used as a classroom for computers and it had 15 computers. We taught computer skills free of charge. The company that subsidised us

*withdrew and then things changed and the Container was then taken over by Hilton College. Now the community cannot utilise the computers fully because the container is now at Hilton College. The community can only use it during the holidays when the school is closed.*

**Researcher:** You have mentioned that you have worked at Digitainer in Sweetwater under the Msunduzi Municipality. You have also mentioned that as a result of the withdrawn subsidy the Container was taken over by Hilton College. Would you like your community to have this Community-based Digital Hub?

*Respondent 10: Yes, I would like that because it is really painful to see people who are unable to use technology. I can also help motivate people to use it and not stand aloof.*

**Researcher:** Now, I would like you to look at this from your community's point of view, since you have been looking at it from your perspective. Does the community have any knowledge about the Digital Hubs and what communication tools they contain?

*Respondent 10: No, our community here has no knowledge because they cannot use the computer and the Internet. Even if they want to make their CV's they come to me for assistance.*

**Researcher:** In your opinion, is the community trained in the use of communication tools?

*Respondent 10: No, They cannot use them. When I teach them, I start from the beginning teaching them about the parts of the computer for three days before getting into programmes.*

**Researcher:** Can the youth access information from the Internet?

*Respondent 10: Yes, the youth is able to access the Internet because there is a group of youth that I work with here. Whenever there is training, I make sure I train them first so that they can motivate and call others.*

**Respondent 11: Male 40yrs**

**Researcher:** Do you have a computer?

*Respondent 11: No, I don't. I also go to town if I need it.*

**Researcher:** And the computer?

*Respondent 11: No, I can't use it. Somebody helps me if I have to use it.*

**Researcher:** If the Digital Hub can be established in this place can you use the computer?

*Respondent 11: Yes, I can use it.*

**Researcher:** Can you use it, are you trained?

*Respondent 11: Yes. I did not receive training for a long time, but I did learn how to use it.*

**Researcher:** Have you ever heard about the Community-based Digital Hubs ?

*Respondent 11: Yes, I have heard.*

**Researcher:** Would you like your community to have this Community-based Digital Hub?

*Respondent 11: Yes, I would appreciate it.*

**Researcher:** Now I want you to answer using the community's perspective since you have been using your perspective. First question: Does your community have knowledge about these Community Digital Hubs, which community tools they contain and which services are offered?

*Respondent 11: I think it's the youth who have such knowledge.*

**Researcher:** In your opinion, is your community trained in the use of communication tools?

*Respondent 11: I think the majority has knowledge because we have people who have completed Standard 10.*

**Researcher:** Can the youth access the internet?

*Respondent 11: No they can't. They must go to town if they need it.*

**Respondent 12: Male 21yrs**

**Researcher:** Do you get the opportunity to use the computer?

*Respondent 12: Yes, I get the opportunity to use it.*

**Researcher:** Where do you use it, do you have one?

*Respondent 12: I go to Mpophomeni Youth Centre and use it.*

**Researcher:** Are you trained to use the computer?

*Respondent 12: Yes, I am trained.*

**Researcher:** Where were you trained?

*Respondent 12: I was trained at Mpophomeni Youth Centre.*

**Researcher:** Have you ever heard about the Community-based Digital Hubs ?

*Respondent 12: No, I have never heard.*

**Researcher:** By the way, you said you have not heard about the Community-based Digital Hub?

*Respondent 12: Yes, I have never heard about it.*

**Researcher:** The Community-based Digital Hub is almost the same as the Youth Centre, but it belongs to the government and you don't pay anything. Would you like your community to have this Community-based Digital Hub?

*Respondent 12: Yes, I would like it very much.*

**Researcher:** In your opinion, is the community trained to use the communication tools?

*Respondent 12: They have very little knowledge at the moment. It's not enough.*

**Researcher:** Would you be happy if the government can come up with a programme to train your community?

*Respondent 12: I can be very happy.*

**Researcher:** Can the youth access the internet? How many of them can use it?

*Respondent 12: I think it's about 40%.*

### **Descriptive summary of the literacy level and technological skills of ward leaders (RQ 3)**

A descriptive summary of the literacy level and technological skills of ward leaders and ward committee members in the municipal

Respondent1: Ward leader has poor computer literacy, has no formal training. Has knowledge of community digital hub and will like to see it establish in his community. From his

perspective, only the youths in the community have knowledge of digital hub. The youth get their training in schools, unfortunately, the community has no infrastructure to support and sustain these skills. Besides the youth that get their training from schools, others in the community has no training

Respondent 2: The ward leader has poor computer literacy, not trained. The community is not trained to use computers. Have heard about CDH, and want it setup in the community. From his perspective, the community have heard of computer (CDH) from radio. Those with computer skills eventually go to the cities to look for better opportunity. The youth are more computer literate because they were taught in schools.

Respondent 3: The ward 4 member of ward committee is computer literate and has received computer training. She has heard about CBDH and will like her neighbourhood to have it. In her perspective, some in the community has knowledge of digital hub and may need more information on it. The community are not trained and has no knowledge in the use of communication tools and the youths cannot use the internet.

Respondent 4: The Ward 4 committee member is not computer literate. He has heard about CBDH, and would like it to be established in his community. In his perspective, the community does not have knowledge of CBDH except perhaps the learners in schools. The community are not trained to use communication tool. Those with training if at all are few. The schools in the community does not have computers. Only kids that attend schools with computer may be able to use the internet.

Respondent 5: The Ward 7 committee member has poor computer literacy, hence not trained to use it. He has heard of CBDH and will like his community to have it. In his perspective, the community does not have knowledge of digital hub. The community are not trained to use communication tool. There may be some youths (in model C school) that can use the internet.

Respondent 6: Ward 9 committee member does not have knowledge of computer. She has heard about CBDH and will like one to be established in her community. In her perspective, the community do not have knowledge about digital hub. Only those in school and those who work in the cities have skill to use communication tools. She thinks youths have knowledge of the internet since they are exposed to it at school.

Respondent 7: Ward committee member is computer literate, knows how to use communication tools, have heard (knowledge) of digital hub and will like it to be built in his community. In her perspective, the community have knowledge of digital hub, but are not trained (not enough knowledge) to use communication tools. The youth cannot access the internet due to lack of training.

Respondent 8: Ward 5 committee member is computer literate, have no knowledge of community based digital hub, will like it to be establish in the community. In his perspective, the community has no knowledge of digital hub, and lacks the training to use communication tools. The youth cannot use the Internet.

Respondent 9: Ward 5 committee member is not computer literate often requiring assistance, have not received any formal training and have knowledge of digital hub, and will like one to be setup in her community. From her perspective, the community have no knowledge of community digital hub, and majority are not trained to use communication tools. The youth in her perspective cannot access the internet.

Respondent 10: Ward 5 committee member is computer literate, knows what community digital hub meant, and will like it to be established i his community. From his perspective, the community does not know about community digital hub, are not computer literate, neither were they trained to use communication tool. In his perspective, the youths can use the internet.

Respondent 11: Committee member is not really computer literate and requires assistance while using computer. He has no formal training. He has knowledge of community digital hub, and will like one to be established in his community. From his perspective, only the youths in the community have knowledge of community digital hub, and not the entire community. Majority can use communication tools. The youths do not have internet.

Respondent 12: Ward 8 committee member is computer literate, has undergone computer training. He has never heard of community digital hub, and will like it to be established in his community. In terms of training, only a few have knowledge of communication tool, and only about forty percent of the youth can access the internet.

**Table 4.3 Descriptive summary of the literacy level and technological skills of ward leaders**

Resp	Ward Leader				Community			
	Computer literacy	Computer Training	Knowledge of CDH	Establish CDH in Community	Knowledge of CDH	Youths trained to use communication tools?	Community trained to use communication tools?	Can Youths use internet
Resp 1 Ward 3	Poor	None 1	Yes	Yes	Yes 1	Yes (Youths in school)1	No	No 1
Resp 2 Ward 4	Poor	None 2	Yes	Yes	Yes 2	No	No	No 2
Resp 3 Ward 4	Good	Yes 1	Yes	Yes	Yes 3	No	No	No 3
Resp 4	Poor	None 3	Yes	Yes	No	Yes (Youths in school)2	No	Youths in school
Resp 5	Poor	None 4	Yes	Yes	No	Yes (Youths in school)3	No	Youths in school
Resp 6	Poor	None 5	Yes	Yes	No	Yes (Youths in school and workers) 4	No	Youths in school
Resp 7	Good	Yes 2	Yes	Yes	Yes 4	No	No	No 4
Resp 8	Good	Yes 3	Yes	Yes	No	No	No	No 5
Resp 9	Poor	None 6	Yes	Yes	No	No	No	No 6
Resp 10	Good	Yes 4	Yes	Yes	No	Yes 5	No	Yes
Resp 11	Average	None 7	Yes	Yes	Yes 5	No	Yes	No 7
Resp 12	Good 5	Yes 5	No	Yes	Yes 6	Yes Some 6	No	Yes, some
	<b>Poor= 6 (50%) Good= 5(41.6%) Average= 1(8.3%)</b>	<b>None= 7(58.3%) Yes = 5(41.6%)</b>	<b>Yes = 11(91.6%) No = 1(8.3%)</b>	<b>Yes = 12</b>	<b>Yes = 6(50%) No = 6 (50%)</b>	<b>Yes = 6(50%) No = 6(50%)</b>	<b>Yes = 1(8.3%) No = 11(91.6%)</b>	<b>Yes = 5(41.6%) No = 7(58%)</b>

Table 4.3 shows the descriptive summary of the literacy level and technological skills of committee ward members and their perspective of the literacy levels of the local communities in uMngeni municipality.

The result shows that 6(50%) of the Ward committee members have low computer literacy, 5(41.6%) of them are computer literate, and only 1(8.3%) of the committee member had average computer literacy. In term of computer training, 7(58.3%) of the Ward committee members had no computer training, whereas 5(41.6%) admitted they had undergone some training. Almost all 11(91.6%) of the Ward committee members admitted they have heard about Community based digital hub, and only 1(8.3%) had never heard of it. All of the committee members interviewed wanted the Community based digital hub (CBDH) to be setup in their respective communities.

The second part of table 4.3 shows the perspectives of the committee Ward members on the technological and computer literacy levels of their respective communities. From their perspectives, the communities members that have heard about CBDH and those that never heard about it are equally distributed, (50%) for each case respectively. The perception of majority 11(91.6%) of the Ward committee members is that their respective communities are not trained to use communication tools. But their perception on youth training with respect to the use of communication tool were significantly different. The ward leaders that had the conviction that youths were exposed to computer training courtesy of the schools they attend were 6(50%), and same number 6(50%) of ward leaders had a contrary view. On the use of internet by the youths, 7(58%) of the ward committee members perceive the youths of not capable of using the internet, as against 5(41.6%) with the perception of community youths ability to use the internet.

#### **4.4.4 Challenges that have the potential to undermine the implementation of ICTs in the community at large which compromises the development of communities? (RQ4)**

***Respondent 1: Male 31yrs***

**Researcher:** In your opinion, what are the challenges that the community may confront that could delay the establishment of the Digital Hub?

*Respondent 1: "The difficulty we face in this community is that we do not have the land. We are surrounded by land that is privately owned. Our community has a shortage of skilled people to train others in such infrastructures. I also think that the community would appreciate, and protect such a structure"*

***Respondent 2: Female 34yrs***

**Researcher:** Does this area have electricity? I ask this question because I want to see whether there are any challenges that could prevent the establishment of the Digital Hubs? For example, in Ward 9 they do not have the electricity which means that the establishment of the communication infrastructure in the community is hindered.

***Respondent 2:*** “*But I don’t see the same problem here because at Ward 4 we do have electricity. We would appreciate if the government were to establish this infrastructure.*”

**Researcher:** Do you not have a problem of the land ownership? Or do you have a land of your own?

***Respondent 2:*** “*Our difficulty in this area is that we do not have the ownership of the land, we are surrounded by a privately owned land, but I think we can ask the white owners to donate a piece of land.*”

***Respondent 3: Female 34yrs***

**Researcher:** What other challenges do you think can prevent the establishment of the community-based Digital hubs? In other communities they complain about the lack of land or electricity infrastructure?

***Respondent 3:*** “*I see nothing that can hinder us from having it*”.

**Researcher:** Others say it may be difficult for it to function because there are no skilled people in the community.

***Respondent 3:*** “*I think it would be easy when it is established, everybody would be motivated*”

***Respondent 4, Male 36yrs***

**Researcher:** What other challenges do you think can hinder the establishment of the community-based Digital hubs? In other communities they complain about the lack of land or electricity infrastructure.

***Respondent 4:*** “*We do have electricity infrastructure. The only other thing that would be a challenge would be the availability of the land. It would depend on the government being able to provide land as our land is small*”.

**Respondent 5: Male 34yrs**

**Researcher:** What are some of the challenges that may hinder the establishment of the Digital Hub?

**Respondent 5:** *It would be the lack of the land, like I have mentioned before that the land here belongs to the employers.*

**Researcher:** Do you have electricity in your community?

**Respondent 5:** *"I would say that the majority of the people do not have it".*

**Researcher:** Don't you think that the lack of electricity can be a challenge to the establishment of this infrastructure?

**Respondent 5:** *"Yes it (electricity) can be a challenge because most of these tools use electricity. Even if the employers can make the land available it would still be difficult because we do not have electricity".*

**Respondent 6: Female 36yrs**

**Researcher:** What are some of the challenges that may hinder the establishment of the Digital Hub?

**Respondent 6:** *"The first challenge would be, the lack of electricity, especially because this establishment works with electricity. So electricity would be the challenge"*

**Respondent 7: Female 26yrs**

**Researcher:** In your opinion, what are the challenges that can delay the establishment of the Digital Hubs? In other areas they complain about the lack of land and electricity. What do you see as the difficulties in this community?

**Respondent 7:** *"I think the challenges would be lack of land and knowledge how to take care of the infrastructure, as well as the ability to use what is inside the structure".*

***Respondent 8: Male 33yrs***

**Researcher:** What challenges do you think, can prevent the establishment of the Digital Hub in your community? In other places they complain about the lack of land and electricity. What do you see as challenges in this area?

**Respondent 8:** *"I think it is the lack of electricity and the land ownership. We are not free to do anything because we have to get permission from farmowners".*

***Respondent 9: Female 22yrs***

**Researcher:** What challenges do you think can hinder the establishment of the Digital Hub in your community? In other places they complain about the lack of land and electricity. Which challenges do you see in this area?

**Respondent 9:** *"The challenge would be the place where these tools will be delivered, and that there are no people who are trained to help others".*

**Researcher:** Do you mean training must be the first priority?

**Respondent 9:** *" Yes"*

***Respondent 10: Male 32yrs***

**Researcher:** Which challenges, do you think can prevent the establishment of the Digital Hub in your community? You have already mentioned that there is a Board that must first give you permission if you want to do things in the community. What are other challenges that you can think of?

**Respondent 10:** *"It's the land, which can be a problem and the permission to build on that land".*

***Respondent 11: Male 40yrs***

**Researcher:** Which challenges do you think can prevent the establishment of the Digital Hub in your community?

**Respondent 11:** *"I think it is electricity which can be a challenge because computers work with electricity".*

**Respondent 12: Male 21yrs**

**Researcher:** What are the challenges, do you think, which can prevent the establishment of the Digital Hub in your community?

**Respondent 12:** “There are many challenges as the izinduna are still in control. It will be difficult to find the land on which to build this infrastructure. It will also be difficult to liaise with the izinduna and the councillor because of conflicts”.

**Descriptive Summary of Challenges militating against CBDH (RQ 4)**

The results shows that lack of availability of land to build CBDH was the greatest challenge perceived by the Ward leaders followed by lack of electricity, and shortage of skilled people to manage the CBDH. Maintenance of the structure was mentioned by only respondent 7. The difficulty of permission to build on land was seen by only respondent 10 as a challenge. Only respondent 12 felt that comunal land conflict between the councillors and *izunduna* could pose a possible challenge to the development of CBDH. Respondent 3 did not foresee any challenge to the development of CBDH in her community.

**Table 4.4 Descriptive Summary of Challenges militating against CBDH**

Respondents	Lack of Land	Lack of Electricity	Shortage of skilled people	Maintenance of structure	Permission to build on land	Communal land control conflict	No challenge
1	√		X				
2	√						
3							√
4	√						
5	√	√					
6		√					
7	√		√	√			
8	√	√					
9	√		√				
10	√				√		
11		√					
12	√					√	
<b>Total</b>	<b>9</b>	<b>4</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>

Seven themes emerged from analysing the interview data on possible challenges that could militate against the establishment of Community based digital hub from the perspectives of the Ward committee members.

### **Lack of Land**

Lack of Land was the most prominent theme that emerged as a challenge that could verge the setup of CBDH in the communities. The theme was mentioned by nine (9) respondents; respondents 1, 2, 4, 5, 7, 8, 9, 10, and 12. Excerpts are their responses.

**Respondent 1:** *“The difficulty we face in this community is that we do not have the land. We are surrounded by land that is privately owned”*

**Respondent 2:** *“Our difficulty in this area is that we do not have the ownership of the land, we are surrounded by a privately owned land, but I think we can ask the white owners to donate a piece of land.”*

**Respondent 4:** *“The only other thing that would be a challenge would be the availability of the land”*

**Respondent 5:** *“It would be the lack of the land, like I have mentioned before that the land here belongs to the employers”*

**Respondent 7:** *“I think the challenges would be lack of land.....”*

**Respondent 8:** *“I think it is the lack of electricity and the land ownership*

**Respondent 9:** *“The challenge would be the place where these tools will be delivered,...”*

**Respondent 10:** *“It’s the land, which can be a problem...”*

**Respondent 12:** *“There are many challenges as the izinduna are still in control. It will be difficult to find the land on which to build this infrastructure.*

### **Lack of Electricity**

The next important theme that emerged as plausible impediments to the establishment of CBDH in the communities is lack of electricity, mentioned by four respondents. Respondents 5, 6, 8, and 11. Below are the excerpts of their responses.

**Respondent 5:** *“Yes it (electricity) can be a challenge because most of these tools use electricity.*

**Respondent 6:** *“The first challenge would be, the lack of electricity,...”*

**Respondent 8:** *“I think it is the lack of electricity and...”*

**Respondent 11:** *“I think it is electricity which can be a challenge because computers work with electricity”.*

### **Shortage of Skilled People**

Next in ranking as possible challenges is shortage of skilled personnel, observed by respondents 1, 7 and 9. The excerpt of their responses are shown below:

**Respondent 1:** *“Our community has a shortage of skilled people to train others in such infrastructures”*

**Respondent 7:** *“I think the challenges would be lack of land and knowledge how to take care of the infrastructure, as well as the ability to use what is inside the structure”.*

**Respondent 9:** *“The challenge would be the place where these tools will be delivered, and that there are no people who are trained to help others”.*

Other minor themes that emerged as possible hinderances to CBDH implementation, include Maintenance of structure, Permission to build on land, Communal land control conflict, and No challenge.

### **Maintenance of structure (CBDH)**

**Respondent 7:** *“I think the challenges would be lack of land and knowledge how to take care of the infrastructure, as well as the ability to use what is inside the structure”.*

### **Permission to build on land**

**Respondent 10:** *“It’s the land, which can be a problem and the permission to build on that land”.*

### **Communal land control conflict**

**Respondent 12:** *“There are many challenges as the izinduna are still in control. It will be difficult to find the land on which to build this infrastructure. It will also be difficult to liaise with the izinduna and the councillor because of conflicts”.*

### **No challenge**

**Respondent 3:** *“I see nothing that can hinder us from having it”.*

#### 4.4.5 Ability of ICT to develop and improve the lives of the people in Rural Communities

**Respondent 1: Male 31yrs**

**Researcher:** In your opinion to what extent would the community-based Digital Hubs be of benefit in the daily life of the community?

**Respondent 1:** “They would be of great benefit because communication is important. Training would assist even those who did not have the opportunity to learn the skill before”. [major themes: **Enhance communication; avenue for training; skill development**]

**Researcher:** In your opinion would the communication tools assist the developmental change of the rural communities?

**Respondent 1:** Yes, the community must have access to the information; the government promotes development but this (development) information is not reaching the people in the community because of the lack of skills in using the Internet. [major themes: **Access to information; Skill development**]

**Respondent 2: Female 34yrs**

**Researcher:** In your opinion, to what extent would the Community-based Digital Hubs be of benefit to the daily life of the community?

**Respondent 2:** “These would be very helpful. We need the computers so that we can be able to send facsimile and compile our CVs, and also to be able to access the internet facilities. Because we do not have this Community based Digital Hub in our areas, we often find ourselves having to stand on long queues in the cities”. [major themes; **Information resources; access to information**]

**Researcher:** In your opinion would the communication tools assist the developmental change of the rural communities?

**Respondent 2:** “Certainly, they would assist the community and there would be no need to travel to the cities”. [major theme: **proximity of information resources**]

**Respondent 3: Female 34yrs**

**Researcher:** In your opinion, to what extent would the Community -based Digital Hubs be of benefit to the daily life of the community?

**Respondent 3:** “They would be helpful indeed especially for the learners who are still at school after completing they would come out with the skill”. [major theme: **skill development**]

**Researcher:** In your opinion, to what extent would the communication tools be of benefit in the life of the rural community?

**Respondent 3:** “Yes, it would develop the community”. [major theme: **develop the community**]

**Respondent 4: Male 36yrs**

**Researcher:** In your opinion, to what extent would the Community-based Digital Hubs be of benefit to the daily life of the community?

**Respondent 4:** “These would be very helpful, especially these days as we live in times of high communication technology. It would also enable us to look for employment opportunities in the internet”. [major theme: **create employment opportunities**]

**Researcher:** In your opinion, how would the communication tools be able to improve the lives of the rural community?

**Respondent 4:** “These would improve the lives of the rural community, because the rural people do not know what is happening around the world as a result of the lack of these communication tools. Should these be available communication would be much better. [major theme: **improve lives, information awareness, enhance communication**]

**Respondent 5: Male 34yrs**

**Researcher:** In your opinion, to what extent would the Community-based Digital Hubs be of benefit to the daily lives of the community?

**Respondent 5:** “It would improve the communication so that it is not like before when people wrote letters and the replies took time to come back”. [major theme: **Speedy communication**]

**Researcher:** In your opinion, would the communication tools be of any developmental benefit to the people in the rural areas?

**Respondent 5:** “It would be of developmental benefit to the rural community. It would also mean that most people would be able to pass on the information and knowledge. Like I have mentioned that the writing of letters take a long time to reach the destination, and since some of the people are illiterate they discard the letters because they cannot read. But if we can have

someone to explain about the communication tools it would be easy to use them". [major theme: **Enhance knowledge transfer**]

**Respondent 6: Female 36yrs**

**Researcher:** In your opinion, to what extent would the Community-based Digital Hubs be of benefit to the daily life of the community?

**Respondent 6:** These would be very helpful especially to our children, who would be able to do their assignments after school. Even the adults would be able to learn how to use computers and the youth to develop themselves. [major theme: **Enhance knowledge, Skill**]

**Researcher:** In your opinion, how would the communication tools be able to improve the lives of the rural community?

**Respondent 6:** Yes, they will improve lives because the community will have a first hand information, rather than to hear about them. [major theme: **Information awareness**]

**Respondent 7: Female 26yrs**

**Researcher:** In your opinion, to what extent would the Community-based Digital Hubs be of benefit in the daily life of the community?

**Respondent 7:** They would be very helpful.

[major theme: **very helpful**]

**Researcher:** In your opinion, would the communication tools be of any developmental benefit to the people in the rural areas?

**Respondent 7:** Yes it would improve the lives of the people and job opportunities would be open. [major theme: **improve lives, create job opportunity**]

**Respondent 8: Male 33yrs**

**Researcher:** In your opinion, to what extent can these Community-based digital hubs be of benefit to the daily lives of the community?

**Respondent 8:** They can be of great benefit to our community.

**Researcher:** In your opinion, to what extent would the Community-based Digital Hubs be of benefit to the daily life of the community?

**Respondent 8:** In my opinion, they can develop the community in many ways.

[major theme: **great benefit; develop the community**]

**Respondent 9: Female 22yrs**

**Researcher:** In your opinion, to what extent would the-Community-based Digital Hubs be of benefit to the daily lives of the community?

**Respondent 9:** They would be of great value because at the moment if we want to fax something we have to travel to town and yet we are unemployed. [major theme: **Proximity to information centre**]

**Researcher:** In your opinion, can these communication tools be of developmental benefit to people in rural areas?

**Respondent 9:** They can because people who do not have money can use them if they are close to them. [major theme: **Affordable access to Information; Proximity to Information resources**]

**Respondent 10: Male 32yrs**

**Researcher:** In your opinion, to what extent will the Community-based digital hubs be of benefit to the daily lives of the community?

**Respondent 10:** “They will be of great benefit because we are far from the city and we do not have newspapers here. Even if we want to apply for jobs, that can happen soon because we will be having the Internet. That will not be the same as using the ordinary mail system”. [major theme: **proximity of information resources; great benefit**]

**Researcher:** In your opinion, can the Digital Hubs be of developmental benefit for the people in rural areas?

**Respondent 10:** They can be of great benefit. I always see teachers and learners who come to learn computer skills at Hilton during holidays, we train them and after that nothing happens. They will meet the computer again during the following holidays. It is a problem to learn to use the computer when you do not practise your acquired skills thereafter. If communities can have Digital Hubs, life can be easy. [major theme: **skill development; great benefit**]

**Respondent 11: Male 40yrs**

**Researcher:** In your opinion, to what extent can these Community-based digital hubs be of benefit to the daily lives of the community?

**Respondent 11:** *They can be of great benefit. I think they are necessary all the time.*

**Researcher:** In your opinion, can the Digital Hubs be of developmental benefit to the lives of the rural areas?

**Respondent 11:** I think they can be of great benefit. [major theme: **great benefit**]

**Researcher:** Now I would like you to look at this from your community's point of view, since you have been looking at it from your perspective. Does the community have any knowledge about the Digital Hubs and what communication tools they contain as well as the benefits thereof?

**Respondent 12:** *I think they have this knowledge, but not all of them. Those who have it are the educated ones.*

**Researcher:** In your opinion, can the communication tools be of any developmental benefit to the lives of the rural areas?

**Respondent 12:** *I think they can develop the lives of the people in the rural areas.* [major theme: **improve lives**]

The analysis of the interview session on how ICT can develop and improve the lives of the people in rural communities brought out a number of themes.

### **Great Benefit. Very Helpful**

The most frequently occurring themes was “*great benefit*” and “*very helpful*” signifying the extent to which community-based digital hubs can be of benefit in the daily life of the community. *Great benefit* was used by respondents 1, 8, 9, 10 and 11, the term, “*very helpful*” was used by respondents 2, 3, 4, 6 and 7.

*Res 1: They would be of great benefit*

*Res 2: These would be very helpful*

*Res 3: They would be helpful indeed*

*Res 4: These would be very helpful*

*Res 6: These would be very helpful*

*Res 7: They would be very helpful*

*Res 8: They can be of great benefit*

*Res 9: They would be of great value*

*Res 10: They will be of great benefit*

*Res 11: They can be of great benefit*

### **Enhance Communication**

Another theme that emerged was Speedy communication, which connotes that the community-based Digital Hubs, if established will enhance communication, facilitating speedy communication both within the community and beyond. This theme was observed in the excerpt of respondents 1 and 5:

*Res 1: "...because communication is important....."*

*Res 5: "It would improve the communication so that it is not like before when people wrote letters and the replies took time to come back".*

### **Proximity**

Proximity appeared as a theme that describes the feeling that the establishment of community-based Digital Hubs will bring communication facilities closer to the community, and easing the difficulty of travelling long distance to access information resources. This theme emerged from the interview excerpt from respondents 9 and 10:

*Res 9: "They would be of great value because at the moment if we want to fax something we have to travel to town...."*

*Res 10: "They will be of great benefit because we are far from the city and we do not have newspapers here."*

### **Skill, Knowledge development**

Another theme that emerged was skill development. It supports the argument that community-based Digital Hubs if established in the community will bring about training and skill and knowledge development among members of the community, especially to the advantage of the youths and learners. This perspective is held by respondents 1, 3 and 6.

*Res 1: "They would be of great benefit because communication is important. Training would assist even those who did not have the opportunity to learn the skill before".*

**Res 3:** *“They would be helpful indeed especially for the learners who are still at school after completing **they would come out with the skill**”.*

**Respondent 6:** Even **the adults would be able to learn how to use computers** and **the youth to develop themselves**

### **Information Resources, Internet Access**

Information resources and access to the Internet appeared as themes considered to be a potential benefit of deployment of community-based Digital Hubs. The facility from the perspective of respondent 2 is expected to provide access to information resources and the Internet that will enable seamless communication between the community and the outside world. In his words:

**Respondent 2:** *“We need the **computers** so that we can be able to send facsimile and compile our CVs, and also to be able to **access the internet facilities**”.*

### **Employment Opportunities**

Employment opportunities also emerged as a theme used by a respondent to support the establishment of community-based Digital Hubs. The hub will not only provide employment for community members who will be managing it, but it will also provide internet access for online job applications. In the perspective of respondent 4:

**Respondent 4:** *“It would also enable us to look for **employment opportunities** in the internet”*

### **Develop the Community**

*Development of the Community emerged as one of the themes seen from the perspective of respondent 8 as a good reason for the establishment of community-based Digital Hubs in his community. His perspective is that the digital hub can bring development to the community in several ways. In his words:*

**Respondent 8:** *“In my opinion, **they can develop the community in many ways**”.*

On whether the communication tools assist the developmental change of the rural communities, all the respondents responded affirmatively, signalling the importance of communication tools in aiding developmental changes in the communities.

A number of themes appeared in the interview with respondents

### **Themes from Respondent 1: Access to information; Skill development**

Respondent 1 stated that affirmatively that communication tools will increase access to information, and equip people with the skill that can bring development to the community.

### **Themes from Respondent 2: Proximity of information resources**

Respondent 2 affirmed that communication tools will assist the community and reduce the need to travel to cities.

### **Theme from respondent 3: *develop the community***

Respondent 3 stated that access to communication tool would help in the development of the community.

### **Themes from respondent 4: improve lives, information awareness, enhance communication**

Respondent 4 opined that access to communication tools would improves lives, enhance communication and help the rural people to know what is happening around the world.

### **Theme from respondent 5: *Enhance knowledge transfer***

From the perspective of respondent 5, access to information tools would be of developmental benefits to the rural community and help people to pass on information and knowledge easily.

### **Theme from respondent 6: *First hand Information***

Respondent 6 is of the opinion that communication tolos will improve lives as it will help the community to have first hand information.

### **Themes from respondent 7: *create job opportunity***

The perspective of respondent 7 is that communication tolos will improves lives and create job opportunities.

### **Theme from respondent 8: *develop the community***

Respondent 8 stated that access to communication tools would be of great benefit and develop the community in many ways.

### **Theme from respondent 9: *Affordable access to Information; Proximity to Information resources***

In the perspective of respondent 9, access to information tool will help people who do not have money to access communication tools cheaply.

### **Theme from respondent 10: *skill development***

Respondent 10 affirmed that communication tools are of great benefit and will assist the communities especially learners to master computer skills.

### **Theme from respondent 11: great benefit**

In the perspective of respondent 11, access to communication tools would be of great benefit to the lives of people in the community.

### **Theme from respondent 12: improve lives**

Respondent 12 thinks that if the community could have access to digital communication tools, it would bring development to their lives.

### **Descriptive Summary of ways ICT can develop and improve lives**

The question on whether ICT can develop and improve the lives of the people in rural communities was operationalized in two interview questions viz: (1) “In your opinion to what extent would the community-based Digital Hubs be of benefit in the daily life of the community?” and (2) “In your opinion would the communication tools assist the developmental change of the rural communities?”. A summary perspectives of ward committee members in the municipality on the extent to which the community-based Digital Hubs could be of benefit in the daily life of the community revealed an affirmative stance by all the respondents. They affirmed community-based Digital Hubs if established would be of “great benefit” or “very helpful” in the daily lives of people in the community. Other views held in the perspectives of the respondents are that CBDH would *improve communication* within and beyond the members of the community, it will bring information services close to the community (*proximity*), as well as provide the opportunity for *knowledge and skill development*. Also it is their perspectives that CBDH provides *information resources* and *internet access* to the community in addition to *employment opportunities*. All these attributes of CBDH in the perspective of the respondents would ultimately bring *development* to the entire community.

On whether the communication tools aids developmental changes in the community, all the respondents uniformly affirmed this position. In their perspective, communication tools brings developmental changes through *affordable access to Information, Proximity of information resources* to the community, *improve communication*, *facilitate knowledge transfer*, and *provide first hand Information*. Other strongly held perspective of developmental changes which communication tools could provide include *skill developement and creation of job opportunities to the community*.

#### **4.4.6 Ways Communities could get involved in Community based Digital Hub Projects**

***Respondent 1: Male 31yrs***

**Researcher:** Would you like to be informed about it in order for you to make your input?

***Respondent 1: Yes I would like***

**Researcher:** You have mentioned already that the community would protect the infrastructure, what other role do you think that the community should play?

***Respondent 1:*** It would mean that the community should appreciate and utilize the structure, safeguard it for the future generation.

***Respondent 2: Female 34yrs***

**Mbali Myeni:** Would you like to be informed about it in-order for you to make your input?

***Respondent 2:*** “Yes I would appreciate to see the establishment of this community Digital Hubs and would like to be a participating member”.

**Researcher:** What role do you think that the community can play in protecting, caring and preserving the infrastructure for the future generation?

***Respondent 2:*** “The youth who are studying at the FET colleges, can work in the Community based -Digital Hub especially because some of them are trained as plumbers, others have a self taught knowledge but they are unemployed.

***Respondent 3: Female 34yrs***

**Researcher:** Would you like to be informed about it in order for you to make your input?

***Respondent 3:*** “Yes I would welcome it, so that I can participate, assist and share my opinion”.

**Researcher:** In your opinion, what other role can the community play in taking care of the infrastructure?

***Respondent 3:*** “The community would have to keep an eye in order to assist the learners”.

***Respondent 4: Male 36yrs***

**Researcher:** Would you like to be informed before the establishment of these Community-based Digital hubs so that you can have input?

**Respondent 4:** *Yes I would appreciate it.*

**Researcher:** In your opinion what role do you think the community can play in taking care of the infrastructure?

**Respondent 4:** *In my opinion if the community would have to unite, protect and keep watch over the infrastructure from vandalism in order to preserve it.*

**Respondent 5: Male 34yrs**

**Researcher:** Would you like to be informed about it before it is established in order for you to make your input?

**Respondent 5:** *“Yes I would appreciate it very much”.*

**Researcher:** What role do you think that the community can play in taking care of the infrastructure?

**Respondent 5:** *“In my opinion, the community understand one another, therefore they should have this as a priority, to protect the infrastructure from those who would want to vandalise it”.*

**Respondent 6: Female 36yrs**

**Researcher:** Would you like to be informed when the infrastructure is going to be established so that you can have an input?

**Respondent 6:** *“Yes I would be very happy, I would even suggest the site for it to be established in order for the majority of the community to benefit”.*

**Researcher:** What role do you think that the community can play in taking care of the infrastructure?

**Respondent 6:** *“In my opinion, the role of the community in keeping the infrastructure protected is to establish the security committee to take care of it, the women’s role is to clean it and the youth to teach their peers”.*

**Respondent 7: Female 26yrs**

**Researcher:** Would you like to be informed about it in order for you to make your input?.

**Respondent 7:** *“Yes”.*

**Researcher:** What role do you think the community can play in protecting the infrastructure?

**Respondent 7:** First and foremost, *the community need to come together and protect the structure.*

**Respondent 8: Male 33yrs**

**Researcher:** Would you like to be one of the people who are informed before it is established in your area so that you can have an input?

**Respondent 8:** *Yes. I can be happy to give my input.*

**Researcher:** What role, do you think the community can play in taking care of the Digital Hub?

**Respondent 8:** *Once established it will be the duty of the community to protect and collect money to maintain it.*

**Respondent 9: Female 22yrs**

**Researcher:** Would you like to be one of the people who are informed before this Digital Hub is established in your area so that you can have input?

**Respondent 9:** *“Yes. I would like that”.*

**Researcher:** In your opinion, what role can the community play in taking care of these Digital Hubs?

**Respondent 9:** *The Digital Hub must be at a strategic position where the community can keep an eye so that it is protected.*

**Researcher:** How can your community take care of it so that it is properly maintained and protected?

**Respondent 9:** *The community needs to be educated about its importance so that they can co-operate.*

**Respondent 10: Male 32yrs**

**Researcher:** Would you like to be one of the people who are informed before it is established so that you can have your input?

**Respondent 10:** *“Yes. I would like to be involved so that I can help because I can connect the different parts of the computer as well as repair computers”.*

**Researcher:** What role do you think can the community play in taking care of these Digital Hubs?

**Respondent 10:** *“The community must co-operate. Here at Hilton we are a co-operating community. We are fighting against crime. We focus on learning than doing other things. It’s ignorant people who get involved in crime. If we can have Digital Hubs we can encourage everybody to learn and focus on learning.”*

**Respondent 11: Male 40yrs**

**Researcher:** Would you like to be one of the people who are informed before it is established in your community so that you can have input?

**Respondent 11:** *“Yes, I can be happy”.*

**Researcher:** What role, do you think, can be played by the community in taking care of the Digital Hubs?

**Respondent 11:** *“I think the security guard that we currently have at school can help to protect the Digital Hub”.*

**Respondent 12: Male 21yrs**

**Researcher:** Would you like to be one of the people who are informed before it is established so that you can have an input?

**Respondent 12:** *“Yes, I would like that”.*

**Researcher:** In your opinion, what role can the community play in taking care of the Digital Hub?

**Respondent 12:** Our community does not have unruly people. I don’t see anything that can be a disturbance.

The question on community involvement in digital hub projects was operationalized in two interview questions; (i) “Would you like to be informed about the CBDH in order for you to make your input?”, and (ii) “In your opinion what role do you think the community can play in taking care of the infrastructure?”

A thematic analysis of the interview data on community involvement in the digital hub projects on the first question reveals that all the respondents would like to be informed and participate in the establishment of the digital hub in their respective communities. The respondents showed a keen interest and affection in being involved in the CBDH projects. Excerpts of some of their responses (on if they would like to be informed about the establishment of the CBDH project in order for them to make their input) are captured below:

**Respondent 2:** “Yes I would appreciate to see the establishment of this community Digital Hubs and would like to be a participating member”

**Respondent 3:** “Yes I would welcome it, so that I can participate, assist and share my opinion”.

**Respondent 5:** “Yes I would appreciate it very much”.

**Respondent 6:** “Yes I would be very happy, I would even suggest the site for it to be established in order for the majority of the community to benefit”.

**Respondent 8:** Yes. I can be happy to give my input

**Respondent 10:** “Yes. I would like to be involved so that I can help because I can connect the different parts of the computer as well as repair computers”.

On the role the community can play in taking care of the Digital hub, a common theme which represents the viewpoint of the respondents is that their communities would *protect* the CBDH if established. This perspective is held amongst respondents 1,3, 4, 5, 6, 7, 8, and 11. Other themes that emerged from the perspective of respondent 1 are “*appreciation*” and “*utilize*”, signalling that the role of the community is to appreciate and utilize the CBDH. Another theme that emerged from the perspective of respondent 3 is the “supply of manpower” to the CBDH. In his perspective; “*The youth who are studying at the FET colleges, can work in the Community based Digital Hub especially because some of them are trained as plumbers, others have a self taught knowledge but they are unemployed*”. This provides a clue into the role the community should play in providing the manpower needed to run the CBDH. However, in the perspective of respondent 12, the community need not play any role.

#### **Theme: Protect the CBDH**

**Respondent 1:** “It would mean that the community should appreciate and utilize the structure, safeguard it for the future generation”

**Respondent 3:** *“The community would have to keep an eye in order to assist the learners”.*

**Respondent 4:** In my opinion if the community would have to unite, protect and keep watch over the infrastructure from vandalism in order to preserve it.

**Respondent 5:** *“In my opinion, the community understand one another, therefore they should have this as a priority, to protect the infrastructure from those who would want to vandalise it”.*

**Respondent 6:** *“In my opinion, the role of the community in keeping the infrastructure protected is to establish the security committee to take care of it, the women’s role is to clean it and the youth to teach their peers”.*

**Respondent 7:** First and foremost, the community need to come together and protect the structure.

**Respondent 8:** Once established it will be the duty of the community to protect and collect money to maintain it.

**Respondent 11:** *“I think the security guard that we currently have at school can help to protect the Digital Hub”.*

## **4.5 Summary of Findings**

This section provides the summary of findings to the research questions guiding the study.

### **4.5.1 Current means of accessing information by rural dwellers in uMgungundlovu District Municipality. (RQ 1)**

The descriptive analysis of the interview data shows that radio is the most current used form of accessing information. Next in ranking in current ways of accessing information is through Word of mouth, one-on-one meeting, which may entail either meeting individuals on one-to-one basis spontaneously or visiting house-to-house to share information. Word of mouth through face-to-face interaction is an important way of accessing information in poor rural communities where cellular telephone is seldom used by everyone. *“Loudspeaker”* using a cheap and affordable battery-operated technology that magnifies the human natural voice is an extension of *“Word of mouth”* mention by only one respondent.

Cellular phone, newspaper, community gatherings follows with same ranking, while TV, letter writing and internet had the least ranking from the stakeholders perspective. Cellular phone as the current means of accessing information. In communities with limited electricity and network coverage, cellular mobile phone is an easy way to access and share information.

Newspapers as a means of accessing information offers ready information especially in communities without electricity. Communal gathering is important in rural communities as it provides an platform for information exchange and dissemination for all community members. Internet technology was reported as a current means of accessing information reportedly used mainly by the youths in the community.

#### **4.5.2 Factors that affect access to ICT in rural communities of uMgungundlovu District Municipality. (RQ 2)**

In the perspective of the shareholders (ICT managers), the factors that influence access to ICT in the municipality are the recognition of the need of ICT in the municipality (96.9%), the adoption of ICT policy in the municipality (87.5%), and annual review of ICT policy (93.8%). Other factors that influence access to ICT in rural communities of uMgungundlovu Municipality are current information on the municipality website (78.1%) and access to the municipality website (78.1%).

#### **4.5.3 Literacy level of local communities and municipal leadership as far as technological skills are concerned (RQ 3)**

The summary of the literacy level and technological skills of ward committee members and their perspective of the literacy levels of the local communities in uMngeni municipality shows that 6(50%) of the Ward committee members have low computer literacy, while 5(41.6%) of them are computer literate, and only 1(8.3%) of the ward committee member had average computer literacy. The Ward committee members 7(58.3%) with no computer training are more than those 5(41.6%) that had undergone some form of training. Almost all 11(91.6%) of the Ward committee members had knowledge of Community based digital hub. All of the committee members interviewed wanted the Community based digital hub (CBDH) to be setup in their respective communities.

The perspective of the ward committee members on the technological and computer literacy levels of their respective communities, shows an even distribution between the committee

members with knowledge of CBDH and those without, (50%) for each case respectively. The perception of majority 11(91.6%) of the Ward committee members is that their respective communities are not trained to use communication tools. But their perception on youth training with respect to the use of communication tool were significantly different. The ward leaders that had the conviction that youths were exposed to computer training because of the schools they attend were 6(50%), were equal to ward leaders with a contrary view. On the use of internet by the youths, 7(58%) of the ward committee members perceive the youths of not capable of using the internet, as against 5(41.6%) with the perception of community youths ability to use the internet.

#### **4.5.4 Challenges that have the potential to undermine the implementation of ICTs (CBDH) in the rural communities (RQ 4)**

The results shows that lack of availability of land to build CBDH was the greatest challenge perceived by the Ward leaders followed by lack of electricity, and shortage of skilled people to manage the CBDH. Maintenance of the structure was mentioned by only one respondent 7. The difficulty of permission to build on land was seen by one respondent as a challenge. Only respondent 12 felt that comunal land conflict could pose a possible challenge to the development of CBDH. Respondent 3 in Ward did not foresee any challenge to the development of CBDH in her community.

#### **4.6 Application of Diffusion of Innovation Theory to the Result of the Study**

Rogers (2003) diffusion of innovation theory describes the process by which innovation is communicated through certain channels over time among the members of a social system. The innovation characteristics determine the extent of adaption. The more an innovation possesses these characteristics the more the rate of adaption. According to Rogers, adoption is a decision to make full use of an innovation and rejection is a decision not to adopt an innovation. Rogers defines diffusion as the process in which an innovation is communicated thorough certain channels over time among the members of a social system. As expressed in this definition, innovation, communication channels, time, and social system are the four key components of the diffusion of innovations. Rogers identifies five attributes of an innovation that influence the adoption and acceptance behaviour to be: relative advantage, complexity, compatibility, trialability, and observability.

In the context of this study, the innovation is the 'Community-based Digital Hub' while the social system is the members of the communities of uMgungundlovu District Municipality where the innovation is expected to 'diffuse'. The adoption of the digital hub as an innovation is based on its attributes. The factors that affect the adoption of digital hub from the perspective of the stakeholders are the recognition of the need of ICT in the municipality, the adoption of ICT policy in the municipality, annual review of ICT policy, current information on the municipality website and access to the municipality website.

The rate of adoption of digital hub is a function of its relative advantage which is defined as the degree to which an innovation is perceived as being better than the idea it supersedes, and also measured in economic terms, convenience, and satisfaction it provide. The respondents in the communities have a notion that the digital hub would provide a convenient means of accessing information by the members of their communities. With the digital hub, they can easily send mails to friends, apply for jobs online, fax document, scan and make calls. In a way, this brings a sense of satisfaction to the communities as they can easily do things which before requires them to travel a long distance. The digital hub holds a lot of benefits in the perspective of the respondents of this study. The respondents affirmed that community-based Digital Hubs if established would be of "great benefit" or "very helpful" in the daily lives of people in the community. In their perspectives the CBDH would improve communication within and beyond the community, bring information service closer and more accessible to the community, as well as provide the opportunity for knowledge and skill development. It would provide information resources and internet access to the community in addition to job opportunities and ultimately bring development to the entire community. The benefits of the digital hubs if established in the community satisfies the relative advantage dimension of the theory of diffusion of innovation.

In terms of compatibility which is the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters, the digital hub is perceived by the respondents as a system that the community (the social system) needs in order to meet its developmental goals. The provision of the digital hub is expected to fit into the current trend and social values where internet technology and social communication has become the new norm in a world that is increasingly becoming a digital village. If an innovation is compatible with an individual's needs, then uncertainty will decrease and the rate of adoption of the innovation will increase.

The challenges that could impede the establishment of the community aligns with the complexity dimension of DOI model defined as “the degree to which an innovation is perceived as relatively difficult to understand and use”. In the context of this study, possible challenges that could militate against the establishment of Community based digital hub from the perspectives of the respondents are lack of availability of land to build CBDH, followed by lack of electricity, shortage of skilled manpower to manage the CBDH, maintenance of the structure, the difficulty of permission to build on, and communal land conflicts. As Rogers stated, complexity is negatively correlated with the rate of adoption. Thus, excessive complexity of an innovation is an important obstacle in its adoption (Martin, 2003).

According to Rogers (2003), “trialability is the degree to which an innovation may be experimented with on a limited basis, and is positively correlated with the rate of adoption. The more an innovation is tried, the faster its adoption. The study shows that five of the respondents are computer literate and have undergone some forms of training. This proves that they have experimented with and are familiar with the benefits of ICT. Likewise, the study shows that youths in the community have *trial* experiences of communication tools in their schools especially with computers and the internet, and therefore are familiar with the benefits of the digital hubs. For members of the community and youths who already have computing skill, the digital hub would be a huge benefit to their skill development and sustainability. According to Rogers (2003) new ideas that are simpler to understand are adopted more rapidly than innovations that require the adopter to develop new skills and understandings.

The last characteristic of innovations is observability. Rogers (2003) defined observability as the degree to which the results of an innovation are visible to others. The easier it is for individuals to see the results of an innovation, the more likely they are to adopt it. In the context of this study, the result shows that almost all of the Ward committee members have heard about community based digital hub, and the perspective of the respondents about the community’s knowledge of digital hub is evenly divided. Through experience and observation, and having known the benefits of digital hub, the study shows that all of the committee members interviewed wanted the Community based digital hub (CBDH) to be setup in their respective communities. According to Rogers (2003), observability is the key motivational factor and is positively correlated with the rate of adoption of an innovation.

## **4.7 Conclusion**

This chapter presented the results of the data analysis of the quantitative and qualitative data. The results were systematically presented in line with the research questions of the study. The chapter also discussed the results of the study in line with the theory (Diffusion of Innovation theory) that guided the study. The next chapter discusses the findings of the study with references to other empirical research.

## **CHAPTER FIVE**

### **DISCUSSION OF FINDINGS**

#### **5.1 Introduction**

The study examined the stakeholders' perspectives on access to ICT by rural communities of uMgungundlovu District Municipality in KwaZulu-Natal province. The study is guided by four research questions, viz: what is the current means of accessing information by the rural communities in uMgungundlovu District Municipality; what are the factors that affect access to ICT in the municipality; what is the level of technological skills of local communities and leaders in the municipal; and what are the challenges that have the potential to undermine the implementation of ICTs in the rural communities in the municipality.

The findings of the study revealed that radio is the most currently used form of accessing information in the communities, followed by word of mouth information sharing. Cellular phone, newspapers and community gathering follows in ranking as means of accessing information in the communities. The least used method of accessing information in the communities is Internet technology, used seldom by the youths in the community.

In the perspective of the stakeholders, the factors that influence access to ICT in the municipality is the recognition of the need of ICT in the municipality, the adoption of ICT policy in the municipality, annual review of ICT policy, current information on the municipality website and access to the municipality website.

The results show six of the Ward committee members have low computer literacy, while five of them are computer literate, and only one had average computer literacy. Seven of the Ward committee members had no computer training, while five had undergone some form of training. Almost all of the Ward committee members had knowledge of Community based digital hub and all of them wanted the Community based digital hub (CBDH) to be established in their communities. The perspective of the committee Ward members on the technological and computer literacy levels of their respective communities shows an even distribution between the community members with knowledge of CBDH and those without. The communities are not trained to use communication tools, but their perception on youth training with respect to the use of communication tool were significantly different. Six of the ward leaders perceive the youths as having undergone some computer training because of the schools they attend.

Seven of the ward committee members perceive the youths of not capable of using the internet.

The greatest challenge to the establishment of CBDH was lack of availability of land followed by lack of electricity, shortage of skilled people to manage the CBDH, Maintenance of the structure, difficulty of permission to build on land and comunal land conflict.

This section discusses the findings of this study

## **5.2 Current means of accessing information by rural dwellers in uMgungundlovu District Municipality**

The descriptive analysis of the interview data shows that radio is the most used form of accessing information. This is understandable due to lack of electricity infrastructure and low income amongst the members of the communities. In this scenario, radio becomes the most convenient and affordable information gathering device that can be powered by batteries when or where electricity is not available. Unlike the use of mobile phone, Internet or reading newspaper that requires a certain level of literacy, radio provides easy access to information for people that are totally illiterate, so far as the radio station transmits in their language of understanding. Respondent 12 affirmed this position when asked how do adults get information. *“They read newspapers but the problem is that some of them are illiterate, those listen to the radio”*. Radio plays a significant role in information dissemination especially in rural communities across Africa. In Ghana, (Sam & Dzandu, 2015) reported the use of radio in disseminating agricultural information in poor rural communities, while (Fombad & Jiyane, 2016) observed that where poverty, illiteracy, poor access to public agency has deprived women access to information, community radio has proved to be a reliable and dependable option to accessing free information. Bachmann & Kiteme (2015) noted that in rural Madagascar and Kenya, as in other parts of Africa, radio remains the communication medium of choice and the sole source of supra-local information for many communities. Print media, television, and Internet are often inaccessible or unaffordable where they live (Myers 2011). The Kenya population and housing census of 2009 revealed that 74 per cent of all households own a radio set (Wiesmann et al. 2014). Thus, radio can play a crucial role in advancing rural development. Word of mouth is next in ranking in ways of accessing information in the communities. This may entail either meeting individuals on one-to-one basis, or visiting them in their homes to access or share information. Using word of mouth to pass information is evident in traditional cultures and is used regularly in all society to pass information. However,

in rural communities in Africa, oral tradition still dominates, without telecommunication infrastructure, word of mouth becomes the defacto means of passing information. In many rural communities in Africa, word of mouth has proved to be a cheap and effective means of sharing information, and some instances, megaphone is used to amplify the information to a wider audience (Sturges & Chimseu, 1996; Fouries & McNamara, 2008). In some instance, it involved meeting information custodian, for example when the researcher asked respondent 11 on how the community access information on “...*how to further studies*”, the respondent replied “*I think they go to principals*”, who in this case is the information custodian knowledgeable to possess information regarding how a person in the community can further his or her studies. Word of mouth through face-to-face interaction appears to be a vital way of accessing information in poor rural communities where cellular telephone is not used by everyone. This finding is consistent with (Mamoeti, Nehemiah & Chipso 2013), where respondents used word of mouth to share information, in the absence of ICT infrastructure. Respondent 6, a female ward leader from Nguga location said, “*There is no other way that they get the information, except if I go from house to house and inform the people if there is a meeting, alternatively the municipal workers also make announcements using the loudspeaker*”. Even in the perspective of the respondent, “*loudspeaker*” is an extension of “*Word of mouth*” using a cheap and affordable battery-operated technology that simply magnifies the human natural voice. Respondent 5 a community member from Birnamwood location while emphasizing on using hand written letters as means of communication buttressed the importance of verbal communication in cases where people are illiterate, according to his him “.....*Some of the people are illiterate which means that we need to go back and verbally explain to them regarding the time and the venue of the meeting*” Even in cases where the respondents did not include verbal communication (Word of mouth) as a way of accessing information, it remain a natural form of accessing and sharing information regardless of socio-demographic disparities. Cellular phone follows in rank as the current means of accessing information and was mentioned only amongst respondents 4 in Lion River (ward 4), respondent 7 in Mpophomeni (Ward 8) and respondent 10 at Teapot Valley (Ward 5), all in uMngeni municipality. Since its inception, mobile cellular phone has become increasingly affordable even amongst the local communities’ members. This technology offers the rural communities communication channels to stay in contact with relatives and friends in townships and urban areas. For communities with electricity and network coverage, cellular mobile phone provides an easy platform to access and share information regardless of geographical distance. Mamoeti, Nehemiah & Chipso (2013) while investigating the benefits of ICT in Lesotho rural

communities, observed that mobile phones are less frequently used on a daily and weekly basis also owing to the costs of recharging of prepaid airtime. Other studies have observed increasing uses of smartphone to access the internet, especially amongst younger generations (Attwood et al., 2013; Alao, Lwoga & Chigona, 2107). Newspapers as a means of accessing information is next in ranking, was reported among respondents in Mpophomeni in ward 8 (respondent 7), Teapot Valley in ward 5 (respondent 9) and Lower Mashingeni in Ward 8 (respondent 12). Newspapers when available offers ready information especially in communities without electricity. Since it is in print form, it can be kept and made reference to anytime in the future, and once it is bought by one person, it can also be shared among other family members. Similar (Fouries & McNamara, 2008; Fombad & Jiyane, 2016) that investigated access to information in rural communities have equally noted the use of newspaper to access information by the community members. Next in ranking was community gathering mentioned by respondents 1, 2 and 4. In rural communities, social communication is crucial in maintaining social ties and forms the basis for fostering important social relationship. Communal gathering is important in rural communities as it provides a platform for information exchange and dissemination for all community members both educated and non-educated. This stance is captured by respondent 2: *“The people of the community, both literate and illiterate get more information from the community meetings, for example, the municipality from time to time calls meetings to inform the community about the budget, ...”*. The use of internet technology was reported as a current means of accessing information only by ward committee member (Respondent 10) in Ward 5 at Teapot Valley and Ward 8 in lower Mashingeni (Respondent 12) under the uMngeni Municipality. However, using the internet is only applicable to the younger generation, the youth. When respondent 10 was asked if the community has knowledge of digital hub, he responded: *“No, our community here has no knowledge because they cannot use the computer and the Internet. Even if they want to make their CV’s they come to me for assistance”* But when the researcher asked respondent 10 if the youth can access information from the internet, he replied: *“Yes, the youth is able to access the Internet because there is a group of youth that I work with here. Whenever there is training, I make sure I train them first so that they can motivate and call others”* Also in the case of respondent 12, when the researcher asked him the ways the community access information, he answered: *“I usually see them using the internet, but it’s the youth who can use it”*. In the present digital age, the younger generation are usually more technological and computer savvy than their older counterparts, partly because they get this training in their various schools and partly due to peer and social influence that compels them to keep up-to-date with technology and social trends. The use of

smartphones has improved access to the Internet especially amongst the youths (Lwoga & Chigona, 2107), making (Attwood et al., 2013) to question the need for community digital hub for internet access.

### **5.3 Factors that affect access to ICT in rural communities of uMgungundlovu District Municipality**

In the perspective of the shareholders (ICT managers), the factors that influence access to ICT in the municipality is the recognition of the need of ICT in the municipality, the adoption of ICT policy in the municipality, and annual review of ICT policy, current information on the municipality website and access to the municipality website.

The analysis of the interview data from the respondents buttresses the need to establish a community based digital hub in the various communities in the municipality. All the ward committee members interviewed recognized the need to setup the ICT infrastructure in their communities, since it presumed CBDH would bring development and employment opportunities to the communities in addition to facilitating easy access to information. South Africa seem to lag behind other countries like India in term of access to ICT in the rural communities. India, a predominantly rural country, with almost two thirds of its population living in villages have ensured that Community Information Centres (CICs) are established in 487 blocks in the seven North-Eastern States. CICs are also being established in the government schools in Andaman and Nicobar Island and Lakshadweep Island for imparting ICT based education. Another case in point is Kenya, has initiated Digital Villages called Pasha Centres that provide digital inclusiveness to all especially those from the marginalized communities and university fraternity. These Pasha Centres are established to address the ICT disparities between urban and rural populations and to improve their quality of life. These centres get the online services using Internet connected computers and other ICT enabled applications. It can be deduced that if the affected rural communities of uMngeni Municipality are not provided with an opportunity of Community Based Digital Hubs they are not going to improve their quality of life. They will always be backwards in technology as it advances and not enjoy the benefits that come with it. According to Klopper, Rugbeer and Rugbeer (2005) the digital divide is a social/political issue referring to the socio-economic gap between communities that have access to computers and the Internet and those who do not. As emphasized by Singh (2004) cited in Klopper (2005:183) that the existence of the digital divide

attributes to high levels of poverty, lack of telecommunications infrastructure, and high costs of connectivity. It is evident from the literature that India has taken a giant step of ensuring that it achieves its objective of making all government services accessible to all through a One-stop-shop (integrated service delivery) ensuring efficiency, transparency and reliability at affordable costs to meet the basic needs of citizens. Community Information Centres have been established and also extended to schools.

The ultimate goal is that of reducing the digital divide by providing Internet access and IT enabled services to the community at large and to facilitate citizen interface with the Government. However, China presents a rather contrary view about ICTs, there seem to be minimum prioritization of strategies to bridge the digital divide and access to ICTs. Rather, what is central on their agenda are issues that pertain to social and economic equity. South Africa on the other hand has the majority (95%) who are information have-nots and only (4.5%) are information haves based on the South African Web usage behaviour (2000). However, it is noted that attempts have been made to establish Multipurpose Community Centres in some parts of the rural South Africa although it is met with a lot of challenges. Literature has revealed that one way of promoting access to ICT is through computer education. According to Warchauer (2004:125) Community technology centres in both developed and developing countries have set up educational programmes to empower socially marginalised people to learn how to use computers. The latter is supported by Oestmann and Dymond (2001) cited in Kloppe (2005:184) where it is stated that community telecentres expand access to information and communication technologies-based services, extend the reach of public services such as education, health and social services.

Literature has revealed that there are greater benefits that can be achieved through the implementation of ICTs. Apart from providing employment opportunities, it helps improve business skills and knowledge, enable local entrepreneurs to respond more rapidly to changing markets, local clients can easily access the internet to get information on certain issues such as access to government services without coming all the way to head office. Results from the survey revealed that communities residing in rural areas of uMgungundlovu District Municipality are positive about the establishment of Community-Based Digital Hubs and would welcome it. The limiting factor would be the lack of exposure to electronic communication technologies and also lack of necessary resources, a situation that is prevalent in almost all the rural communities in the District and farming communities are the worst. The respondents shared their concern that if they are not provided with an opportunity to have a

Community based digital hub, they are not going to improve their lives. They will always be backward in technology as it advances and would not enjoy the benefits that comes with it. Therefore, there is need on the part of the South African government and its stakeholders to put in place ICT policy that would mandate the establishment of CBDH in rural communities in South Africa, and develop a sustainable strategy that ensures a continued support and maintenance of those infrastructures. Accessibility of information through telecentres in the various communities will enable South African citizen in rural communities to access government web contents thereby giving them a sense of inclusiveness in the socio-political system. In addition, when ICT permeates the rural communities, it becomes easy for information developers to create local contents tailored to suit community's information needs. Such implementation will act as a spring board to trigger rapid rural development across South Africa. This study revealed that 87% of respondents agreed that community based digital hubs can help communities' access municipal information. This is a very strong support for the establishment of community-based digital hubs.

#### **5.4 Level of technological skills of local communities and municipal leadership**

The results show six of the Ward committee members have low computer literacy, while five of them are computer literate, and only one had average computer literacy. Seven of the Ward committee members had no computer training, while five had undergone some form of training. The communities are not trained to use communication tools, but their perception on youth training with respect to the use of communication tool were significantly different. Six of the ward leaders perceive the youths as having undergone some computer training because of the schools they attend. Seven of the ward committee members perceive the youths as not capable of using the internet.

The UNESCO survey of (2006:5) and its outcome revealed that the use of ICTs in the context of information society hinges largely upon having a population that can use them. The implication of this is that there is a need to acquire the right skills needed to use ICT. This calls for participants of the emerging information society to be educated and computer literate.

The argument made by Ferreira (1999) about users of computers and those that have access to ICTs is the fact that there are those who are more educated than others with the best education, training and cognitive skills who would use ICTs more effectively. This in-turn gives them an advantage in labour markets, thus economic inequality thrives and lead to greater ICT inequality. The other contributing factor to ICT socio-economic inequality is whether or not

communities are ready to use the ICTs. The concept normally used in relation to ability to use ICT is “Electronic Readiness” refers to the degree to which a society is prepared to participate in digital economy and become a better and more improved digital society. The other relative term to Electronic Readiness is “Digital Literacy” which measures the ability to locate, organise, understand, evaluate and create information using digital technology. Literature suggest that digitally literate people can communicate and work more effectively, especially with those who possess the same knowledge and skills. Fundamentally, it means that those who do not possess the same knowledge and skills will be affected by the digital exclusiveness. That is a consequence of differing levels of literacy and technical skills as well as the gap between those who have access to quality, useful digital content and those who do not. Hence the call for digital inclusiveness.

The research results revealed that the majority of rural communities lack knowledge and skills regarding the use of ICT in education. This could be that many of the people in the rural areas have grown up in environments with limited or no electronic technology and thus find it difficult to integrate into society or rather the digital society. Bannon (1991) comments that tools shape the way human beings interact with reality and according to the principles of internalization/externalization, shaping external activities ultimately results in shaping internal ones. The results of the research indicate that most respondents show that they have never received basic computer training, hence incapable of using computers. This is as a resulting of lack of access to computers or electronic communication tools. Generally speaking, without the development of Internet and computer competencies, access to the Internet may not lead to a level playing field, and may in fact result in social inequalities.

### **5.5 Challenges that have the potential to undermine the implementation of ICTs in the rural communities**

The results shows that lack of availability of land to build CBDH was the greatest challenge perceived by the Ward leaders followed by lack of electricity, and shortage of skilled people to manage the CBDH. Other perceived challenges include maintenance of the structure, the complexity of permission to build on land, and comunal land conflict.

Land is under the ownership of Amakhosi (Chiefs). People in rural areas do not own the land nor does the municipality. The lack of support from iZinduna and Amakhosi (Chiefs), referred to as the Tribal Authority, for the release of land was identified by the respondents as a major challenge. It appears that the situation becomes worse when Induna and a Ward Councillor are

in conflict. In other communities electricity poses a major challenge to the development of CBDH. Electricity is the backbone that ensures CBDH runs effectively and efficiently. Without electricity achieving a sustainable CBDH is impractical with resultant continued under development of the rural communities. Shortage of skilled people is an impediment that can be countered through training of the local community members on how to use the communication tools of the digital hub. Lack of proper training would amount to non use or under utilization of the resources in the hub, and subsequently undermine the huge infrastructural investment. Of importance to the sustainability of the digital hub is its maintenance. Without proper and timely maintenance schedules, the digital hub may quickly become obsolete both in terms of hardware and software components. Technology changes at a very fast pace and therefore requires constant update of software's and replacement of old and out-dated hardware components. Literature however listed other challenges that impairs access to ICT in the South Africa environment. The challenges listed by (Trustler, 2003) include high level of inequality, weak infrastructure, particularly in rural areas, lack of ICT readiness in government and a lower priority of budget allocation for ICT development. Addressing these impediments that affect access to ICT in rural communities would ensure that investment in community based digital hub yields the much-anticipated community development benefits. Also similar to the findings of this study, Conradie, Morris & Jacobs (2003) documented challenges of ICT for rural development to include the lack of electric power, lack of supporting communication infrastructure in the rural area and lack of PC-related skills in the local rural community.

## **5.6 Conclusion**

The chapter presented the discussions to the findings of the research questions. The findings was discussed with references to empirical findings in different studies elsewhere. The next chapter presents the conclusion and recommendations based on the findings of the study.

## **CHAPTER SIX**

### **CONCLUSION AND RECOMMENDATION**

#### **6.1 Introduction**

The study examined the perspectives of Stakeholders regarding access to ICT in rural communities of uMgungundlovu District Municipality in KwaZulu-Natal province. The study focused on determining the current means of accessing information using ICT by rural dwellers in uMgungundlovu District Municipality, determine factors that affect access to ICT in rural communities, find out the literacy level of local communities and municipal leadership as far as technological skills are concerned and identify challenges that have the potential to undermine the implementation of ICTs in the rural communities, which could compromise their development.

#### **6.2 Conclusion**

Access to information is crucial to the socio-economic development of every community. The views of stakeholders regarding access to ICT in the communities investigated is crucial in understanding their perspectives to the different dynamics that challenges the implementation of ICT projects, such as community based digital hubs. From the perspective of the stakeholders, for the community members to access the municipality website for current information, access to ICT is a crucial factor to achieving the objective. Access to ICT is the first point of accessibility to the municipality website, and strengthens the importance and need to establish community based digital hub in the various communities as expressed by the entire community councillors in this study. To this end, through policy, the municipality can initiate, plans and make budgetary allocation towards deploying community based digital hubs in the various communities to promote access to ICT. As supported by this study, the municipality encourages councillors to be capacitated in information technology by providing basic training as part of ICT capacity building programme. From the stakeholders perspective, personally owned computers, in addition to the additional power of computer networks and the Internet is crucial to the management of their daily work and in empowering the councillors. On the part of the ward committee members, lack of computer training had resulted in low computer literacy, necessitating their aspiration to have digital hub established in the communities. This could perhaps act as a centre for training and consequently improve the computer literacy levels of community members. In communities with poor computer literacy, lack of electricity and

digital hubs, it is not surprising that the internet is one of the least used means of accessing information in spite of the vast amount of information it holds. With the exception of some youths that are exposed to internet at school, turning to more accessible and less expensive information media like radio and newspapers becomes an easy option to obtain information. With the downward prices of mobile phones, cellular phones provide a more convenient means of sharing information in communities with access to electricity and network coverage. Community gathering remains an indispensable medium of sharing information in addition to the added benefits of creating an atmosphere for social interactions and maintaining social ties in small communities that value the importance of communal bond. As much as the communities desire to have digital hubs, impediments to its establishment persist mainly due to unavailability of land, lack of electricity and shortage of skilled people. These challenges require urgent attention on the part of stakeholders in the South African government that have continually promised free and equitable access to information as part of its constitutional mandate.

### **6.3 Recommendations**

The study makes the following recommendations base on the findings of the study.

#### **Recommendation 1: Land Acquisition through Tribal Conflict Resolution**

The study observed that the greatest challenge to the establishment of the community based digital hub was lack of availability of land, reported by most the respondents to be privately owned and some instances under the control of *izinduna*. To this end, the study recommends that the government through the appropriate agencies, should negotiate with the private land owners and resolve the conflict between the *izinduna* and Counsellors with the aim of releasing land through direct purchase by the government or through donation of land in support of community development.

#### **Recommendation 2: Extension of Electricity into Rural Communities**

The study revealed that the electricity was a major challenge in some of the communities that militates against the establishment of community based digital hubs. In line with this observation, the study recommends that the government should by way of policy prioritize rural electrification which would act as a backbone in facilitating ICT deployments (include CBDH) in rural communities.

### **Recommendation 3: Establishment of Digital Hub in Rural Communities**

The result of the study show that all of the committee members interviewed wanted the Community based digital hub (CBDH) to be setup in their respective communities. The establishment of CBDH would enhance communication, create job opportunities and aid the development of the rural communities. Therefore, the study recommends the establishment of CBDH in rural communities across South Africa in fulfillment of the right of citizen to have access to information.

### **Recommendation 4: Organizing Training Workshops for Skills Development**

The study revealed that the communities are not trained to use communication tools. To enable the communities to utilize the proposed CBDH, the government through the appropriate agency, should organize training workshops for them on how to use computers, the Internet and other communication tools in accessing information for personal and community developmental goals.

## **6.4 Limitations of the Study**

The study examined the perspectives of Stakeholders regarding access to ICT in rural communities of uMgungundlovu District Municipality in KwaZulu-Natal province. The study is limited as it focused only on the perspectives of Stakeholders regarding access to ICT in rural communities. The study did not examine access to ICT from users' perspectives. The perception and experiences of community members may have contributed to a richer understanding of the phenomenon that underpins the study. Moreover, the study did not investigate the opinions of stakeholders in other provinces whose perspectives may differ considerably due to unique peculiarities in their communities. Lastly, the study only investigated the perceptions of stakeholder with regard to access to ICT in uMgungundlovu District municipality. There may be other factors and variability's that could impede access to ICT in the communities, which this study did not adequately address.

## **6.5 Suggestions for Further Studies**

The study examined the perspectives of Stakeholders regarding access to ICT in rural communities of uMgungundlovu District Municipality in KwaZulu-Natal province. Further

studies could look at the factors and challenges that influence access to ICT in rural communities from users' perspective.

Since there is acute shortage of community based digital hubs across vast rural communities in South Africa, further studies could investigate the policy implementation gaps that hinders the implementation of digital hubs and telecentres across rural communities in South Africa.

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## Appendix 1



**uMshwathi Municipality**

7 April 2014

Attention Ms Mbali Myeni

### **PERMISSION TO CONDUCT RESEARCH WITHIN UMSHWATHI MUNICIPALITY**

Please be advised that your request to do research within the uMshwathi Municipality in pursuit of an Masters in Commerce with the University of Kwa-Zulu Natal been approved by the Municipal Manager. Therefore you are granted permission to undertake research on your chosen topic within our municipality as a case study.

We wish you every success in your studies and please feel free to contact my office should you need further assistance.

Yours sincerely

MR. K. PERUMAL  
GENERAL MANAGER CORPORATE SERVICES

#### **VISION**

*"uMshwathi Umetho – Ewe Build Together"*

uMshwathi Municipality, Private Bag X29, Werlburg, 3233 • Main Road, New Hanover, 3440  
Telephone: 033 502 0260 / 502 9262, Fax: 033 502 0260

## Appendix 2

### UMKHANDLU WASEKHAYA IMPENDLE

Private Bag X 512  
Impendle  
3227



Tel: 033/9960771  
Fax: 033/9960852  
<http://impendle.local.gov.za>

### IMPENDLE LOCAL MUNICIPALITY

REFERENCE:

ENQUIRIES: SI Mabaso

DATE: 17 April 2014

uMngeni Local Municipality  
PO Box 5  
Howick  
3920

**ATTENTION: Ms. Mbali Myeni**

Dear Madam

#### PERMISSION TO CONDUCT RESEARCH WITHIN IMPENDLE LOCAL MUNICIPALITY

This letter serves to inform you that your request to do research within Impendle Municipality is hereby approved. You are therefore granted permission to undertake research on your chosen topic with the Impendle Local Municipality as a case study.

Contact numbers of the Municipality's ICT Officers are given hereunder:

Ayanda Mkhize	:	0735080594 / 033 996 6007
Sandile Ndlela	:	0795219677 / 033 996 6037

Yours Sincerely

  
Mr. SI Mabaso  
Municipal Manager

## Appendix 3



*From the office of the Mayor*

Honorable Mayor  
Mrs M. Myeni  
uMngeni Municipality  
Howick  
3290

### **Permission to Conduct Research**

First may I take this opportunity to apologise profusely for the delay in responding to your request, as such therefore, in confirming receipt of your emailed request seeking permission to undertake research in pursuit of your MCom studies, I wish to inform you that your request has been acceded to and wish to extend our gratitude for choosing our Municipality for your research and the best.

Please feel free to contact our Corporate Services Director – Mrs GP Maphumulo on **033 263 1221** for any arrangements that you would like to make.

Yours Faithfully

  
Mr. M. Moyo  
Municipal Manager

“Ikusasa lisezandleni Zethu, Masakhe.” (“The Future Is In Our Hands, Let’s Build.”)

## Appendix 4

Uhla lweMibuzo yoCwanningongxoxo

(Interview Schedule)

*Imibono yababambe iqhaza ekuthuthukisweni*

*kwemphakathi yase makhaya eyakhele umasipala waseMngeni*

*mayelana nokutholakala kwezinsiza zokuxhumana*

*kuzizinda zokuxhumana (digital hubs) ezisemphakathini*

*(The Perspectives of Stakeholders*

*In Rural Communities of uMngeni Local Municipality*

*Regarding Access to Information Communication Technologies (ICTs)*

*Via Community-Based Digital Hubs)*

<b>Umcwangingi (Researcher):</b>	Mbali Pearl Molefe (205525613)
<b>Umphathi (Supervisor):</b>	Professor Rembrandt Klopper
<b>School:</b>	Information Science and Technology
<b>Discipline:</b>	Digital Media
<b>Study Field:</b>	Applied Digital Media-Faculty of Management Studies

### A. Isingeniso

- 1) Igama lami ngingu Mbali Pearl wakwaMolefe, umfundi eNyuvesi yaKwaZulu-Natal. Ngizocela usizo kuwena, njengelungu elibalulekile emphakathini, ukuba ungazise ukuthi ngabe izinhlobo zini zobuchwepheshe kwezokuxhumana (Information and Communication Technologies) ezidingwa ngumphakathi walapha.
- 2) Ucwanningongxoxo lwethu luzothatha isikhathi esingevile emizuzwini engamashumi amabili (20 minutes). Kodwa-ke ebengizocela ukukwazi, ukuthi ngabe uyavuma yini ukuba ngikubuze imibuzo?

## **B Indikimba**

### **1) Imibuzo eqondene nobuzwayo**

1. Awungitshela kafishane ngawe kanye nomlando ngomndeni wakho?
2. Sewunesikhathi esingakanani wakhele lendawo engaphansi kamasipala waseMngeni?
3. Uzalwe ngamuphi unyaka? / Uneminyaka emingaki?
4. Ubulili?
5. Ubuzwe bakho? Isibonelo: ungumZulu, ungumXhosa, ungumSwati njalo njalo?

### **2) Imibuzo eyenabile**

Ngaphambi kokuba ngibuze lemibuzo elandelayo, ngizoqala ngichazele lowo obuzwayo ukuthi u “Digital Hub” kanye no “Information and Communication Technology” basho ukuthini ukuze mina naye sibe nokufunda okufanayo ukuthi ngabe lamagama asho ukuthini. Emva kwalokho, lowo obuzwayo uzobuzwa lemibuzo elandelayo.

- Ingabe unazo noma unalo ithuba lokusebenzisa lezinsizakuxhumana (electronic communication devices) ezilandelayo:
    - Umakhalekhukhwini (cell phone)
    - Ucingo lwasendlini (telephone)
    - Ikhompyutha (computer)
  - Ingabe uyakwazi ukuzisebenzisa noma kukhona omunye oyeke akwenzele uma udinga ukuzisebenzisa?
  - Uma ukwazi ukuzisebenzisa, uvame kangakanani ukuzisebenzisa?
1. Usuke wezwa ngento ebizwa ngokuthi yi ‘Community-based Digital Hub’?
  2. Ingabe ungathanda ukuthi umphakathi owakhelene nawo ubenayo i-Community-based Digital Hub? Ungathanda yini ukuthi uma kuzosungulwa le Community-based Digital Hub nawe ube ngomunye wabaziswayo ukuze ukwazi ukubeka uvo lakho mayelana nokusungulwa kwayo?
  3. Ngokubona kwakho, ama Community-based Digital Hubs angaba usizo olungakanani empilweni yansukuzonke yomphakathi?

### **3) Imibono yakho mayelana nokutholakala kwezinsizakuxhumana (ICTs) kuma Community-based Digital Hubs**

*(Imibono yakho mayilandelane njengokubaluleka kwayo)*

**Obuzayo makachazele obuzwayo ukuthi yiziphi izinsiza anokuzithola ku Multi-Purpose Community Centre noma ku Community-based Digital Hub:**

1. Ingabe umphakathi wangakini unalo yini ulwazi lokuthi lama Community-based Digital Hubs anazinsiza zini ngaphakathi nokuthi analisizo luni?
2. Njengamanje, yiziphi izindlela umphakathi wangakini othola ngazo ulwazi (information)?
3. Amalunga omphakathi anolwazi (skill) olungakanani ngoku setshenziswa kwezinsizakuxhumana?
4. Izingane zomphakathi ziyakwazi yini ukuthola ulwazi (information) ku Internet?
5. Yiziphi izingqinamba ezingabambezela intuthuko ekwakhiweni kwengqalasizinda yezokuxhumana, umphakathi ohlangabezana nazo?
6. Ngokubona kwakho, izinsizakuxhumana zingakwazi yini ukuthuthukisa impilo yemiphakathi yasemaphandleni?
7. Yiliphi iqhaza elingabanjwa imiphakathi yasemaphandleni ekusetshenzisweni kwezinsiza ezitholakala kuma Community-based Digital Hubs?

**C Isiphetho**

- Mangithathe lelithuba ngibonge isikhathi sakho nokuphendula kwakho imibuzo yalocwaningngoxo. Uma kukhona okunye onesifiso sokungitshela kona mayelana nalolucwaningo engilwenzayo, ngingabonga kakhukulu?
- Uma kukhona okunye engifisa ukukubuza kona esikhathini esizayo, ngizocela ungivumele ngikushayele ucingo ekhaya, emsebenzini noma kumakhalekhukhwini wakho?

NGIYABONGA

## Appendix 5



### Interview Schedule

*The Perspectives of Stakeholders*

*In Rural Communities of uMngeni Local Municipality*

*Regarding Access to Information Communication Technologies (ICTs)*

*Via Community-Based Digital Hubs*

**Researcher:** Mbali Pearl Molefe (205525613)

**Supervisor:** Professor Rembrandt Klopper

**School:** Information Science and Technology

**Discipline:** Digital Media

**Study Field:** Applied Digital Media-Faculty of Management Studies

**University of KwaZulu-Natal**

### A. **Opening**

- 3) My name is Mbali Pearl Molefe, the student at the Information Communication and Technology School, the University of KwaZulu-Natal. Because you are one of the valued members of our community uMngeni Municipality would like your assistance to determine what ICTs should be made available to members of the local communities.
- 4) The interview should take around 20 minutes. Are you available to respond to some questions at this time?

## **B Body**

### **4) Personal information**

1. Briefly tell us about yourself and your family history?
2. How long have you been a resident in uMngeni Municipality?
3. In what year were you born? / How old are you?
4. Gender?
5. To which African group do you belong?

### **5) General questions**

**Before embarking on this session, I will firstly explain the terms Digital hub and Information Communication Technology for the benefit of the interviewee to have the same knowledge and understanding as the researcher. The following leading questions will be asked.**

- **Do you have access to any of the following Electronic Communication Devices i.e.**
  - **Cellphones;**
  - **Telephones;**
  - **Computers**
- **Do you use it yourself or does someone do it for you?**
- **If you are using it yourself, how often do you use it?**

1. Are you familiar with the concept - Community-Based Digital Hub?
2. How would you feel if it were to be established in your community? Would you like to be consulted when such an establishment does take place?
3. How useful can they be in the daily lives of the community?

### **6) Your perceptions regarding access to ICTs via Community-Based Digital Hubs:**

(Listed in order of priority)

**I will give a full description of each service that is most likely to be available in the Multi-Purpose Community Centre or Community-Based Digital Hub.**

1. Does the community know on what basis the digital hubs are equipped and for what purposes?

2. What are the current means of accessing information?
3. What is the literacy level of local communities as far as technological skills is concerned?
4. Are children able to download information using any form of ICT?
5. What are challenges that have the potential to undermine the implementation of ICTs in the community at large which compromises the development of communities?
6. Can ICT develop and improve the lives of the people in rural communities?
7. How could communities get involved in projects undertaken amongst the services offered in the digital hub?

## **C Closing**

- I appreciate the time you took for this interview. Is there anything else you think would be helpful for me to know before incorporating your inputs to the study?
- I should have all the information I need. Would it be alright to call you at Home or on your mobile if I have any more questions?

I would like to once again thank you for your contribution to this research project.

## **Appendix 6**

### **UNIVERSITY OF KWAZULU-NATAL**

#### **Information Communication Technology School**

Dear Respondent,

MCom (Digital Media) Research Project

Researcher: Mbali Pearl Molefe (072 615 4050)

Supervisor: Professor M Maharaj (083 786 6034)

I, Mbali Pearl Molefe an MCom (Digital Media) student, at the Information Communication and Technology School, of the University of Kwazulu-Natal. You are invited to participate in a research project entitled “To investigate the perspectives of stakeholders in rural communities of uMgungundlovu District Municipality regarding access to Information Communication Technologies (ICTs) via Community-Based Digital Hubs. The aim of this study is to: To find solutions to the lack of access to instantaneous interpersonal communications and the lack of access to digital media contents by inhabitants of rural communities of uMgungundlovu Municipality which hinders community development.

Through your participation I hope to understand the current conditions in the representative sample of rural communities of uMgungundlovu District Municipality regarding governments’ initiative on the deployment of ICT structures and services. The results of the survey are intended to contribute towards the need for the establishment of a Digital Hub or a Telecentre to ensure access to information. Establishment of a digital hub or Telecentre would at least address the issue of equal distribution of information to all South African citizens whether rural or urban. The aim of the researcher is to contribute towards the development of the communities of uMgungundlovu District Municipality through the enhancement of communication technologies.

Your participation in this project is voluntary. You may refuse to participate or withdraw from the project at any time with no negative consequence. There will be no monetary gain from participating in this survey. Confidentiality and anonymity of records identifying you as a participant will be maintained by the Information Communication Technology School, UKZN. If you have any questions or concerns about completing the questionnaire or about participating in this study, you may contact me or my supervisor at the numbers listed above.

The survey should take you about 15 minutes to complete. I hope you will take the time to complete this survey.

Sincerely

Investigator's signature\_\_\_\_\_ Date\_\_\_\_\_

---

### CONSENT

I.....(full names of participant) hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project. I understand that I am at liberty to withdraw from the project at any time, should I so desire.

SIGNATURE OF PARTICIPANT.....

DATE.....

## SECTION A: DEMOGRAPHICS

For all questions below please place a cross in the appropriate answer/box

### Question 1

Age:

18 years to 25 years	25 years to 35 years	35 years to 45 years	45 years to 55 years
----------------------	----------------------	----------------------	----------------------

### Question 2

Gender.

Male	Female
------	--------

### Question 3

Highest qualifications.

Matric	Diploma	Degree	Post Graduate Degree
--------	---------	--------	----------------------

### Question 4

Indicate how many years of experience do you have in the municipality.

0 to 2 years	3 to 5 years	6 to 8 years	9 to 10 years	11 years +
--------------	--------------	--------------	---------------	------------

## SECTION B: POLICY IMPERATIVES

For all questions below please place a cross in the appropriate answer/box

### Question 5

The municipality understands the need for Information Communication Technology.

Strongly disagree	Disagree	Unsure	Agree	Strongly agree
-------------------	----------	--------	-------	----------------

### Question 6

The municipality has an adopted information Communication Technology Policy.

Strongly disagree	Disagree	Unsure	Agree	Strongly agree
-------------------	----------	--------	-------	----------------

### Question 7

How often does the Information Communication Policy get reviewed?

Quarterly	Six-monthly	Annually
-----------	-------------	----------

### Question 8

The municipal website is uploaded with current information.

Strongly disagree	Disagree	Unsure	Strongly agree	Agree
-------------------	----------	--------	----------------	-------

### Question 9

The municipalities website is accessible.

Strongly disagree	Disagree	Unsure	Strongly agree	Agree
-------------------	----------	--------	----------------	-------

## SECTION C: ICT MANAGEMENT

For all questions below please place a cross in the appropriate answer/box

### Question 10

The IT department has staff with the right skills.

Strongly disagree	Disagree	Unsure	Strongly agree	Agree
-------------------	----------	--------	----------------	-------

### Question 11

The electronic management of data in the municipality is effective.

Strongly disagree	Disagree	Unsure	Strongly agree	Agree
-------------------	----------	--------	----------------	-------

### Question 12

The electronic distribution of council agendas is the councillors preferred system.

Strongly disagree	Disagree	Unsure	Strongly agree	Agree
-------------------	----------	--------	----------------	-------

### Question 13

Councillors prefer to have their council agendas distributed by hard copy

Strongly disagree	Disagree	Unsure	Strongly agree	Agree
-------------------	----------	--------	----------------	-------

### Question 14

The municipality encourages councilors to be capacitated in Information Communication Technology.

Strongly disagree	Disagree	Unsure	Strongly Agree	Agree
-------------------	----------	--------	----------------	-------

### Question 15

What is the level of training that the municipality has provided to councilors in computer literacy as part of an Information Communication Technology capacity building programme?

Advanced	Intermediate	Basic	None
----------	--------------	-------	------

### Question 16

How useful could the following technologies be to councilors and management in their work?

	Very useful	Somewhat useful	Not useful at all
16.1 Own PC	1	2	3
16.2 PC network	1	2	3
16.3 Own iPad	1	2	3
16.4 Internet	1	2	3
16.5 E-mail	1	2	3

### Question 17

The above-mentioned electronic technologies can empower councilors on Information Communication Technologies.

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
-------------------	----------	--------	-------	----------------

### Question 18

Community-Based Digital Hubs can help communities to access municipal and other government information.

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
-------------------	----------	--------	-------	----------------

## **Appendix 7**

## Turnitin Originality Report

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The perspective of Stakeholders regarding access to ICT in rural communities of uMgungundlovu District Municipality by Mbali Pearl Myeni A thesis submitted in fulfilment of the requirements for the degree of Master of Commerce in the School of Management, Information Technology and Governance, University of KwaZulu-Natal, Pietermaritzburg, South Africa Supervisor: Prof. M. S. Maharaj University of KwaZulu-Natal June 2018 DECLARATION I declare that "The Perspectives of Stakeholders Regarding Access to Information Communication Technology in Rural Communities of uMgungundlovu District Municipality" is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references. Sign..... Date

..... Candidate: Mbali Pearl Myeni

Sign..... Date..... Supervisor: Prof. M. S. Maharaj ii ACKNOWLEDGEMENT I would like to express my sincere appreciation to the following persons and institutions: ? The lord almighty for giving the strength to continue and complete this task. ? My children, Sinenhlanhla, Silungile and Ndalo, for their patience and understanding. ? My mother and my siblings Phumzile, Sifiso, Khanyi and Brenda, for their love, support and encouragement. ? Professor Manoj Maharaj, my supervisor, for believing in me and gave me a chance to push until the end. Without his confidence in my ability, the study would not have been possible. ? Professor Rembrandt Klopper, my former supervisor, for his guidance in the initial phase of my research. I thank him for the encouragement. ? Professor Zulu from Durban University of Technology, for allowing me to use her skills in the transcription of my recorded data. Her contribution to this task was appreciated greatly. ? The municipalities, Mshwathi, uMngeni, Mpoana, Impendle, Msunduzi and Richmond, that allowed me to do the research, without their permission, this study would not have been possible. iii ABSTRACT Understanding stakeholders' perspectives regarding access to information and communication technology (ICT) is a critical aspect of ICT for Development (ICT4D). The rural communities of uMgungundlovu District Municipality in KwaZulu-Natal in South Africa were studied to investigate the current means of accessing information using ICT; the factors that affect access to ICT in the rural communities; the literacy level and technological skills of local communities and the stakeholders. The challenges that have the potential to undermine the implementation of ICTs were also identified. The study used a sequential mixed methods design that entailed the collection of qualitative data subsequent to the quantitative data collection to address the research questions. A non- proportional stratified sampling technique to collect data from 61 stakeholders was utilised. Self- administered questionnaires were used to collect quantitative data from 26 councillors, 5 municipal managers, 5 corporate services managers, and 5 ICT managers, while semi-structured interviews were used to collect qualitative data from 20 ward committee members. The quantitative data was analysed using SPSS statistical software and the qualitative data was analysed with thematic content analysis. The findings of the study from the rural stakeholders' perspectives revealed that radio was used the most to access information followed by word-of-mouth, cellular phone, newspaper, community gatherings, while TV, letter writing and internet had the lowest usage. On the other hand municipal managers recognise the need for ICT for the economic advancement of the region, which requires the adoption of suitable ICT policies and their annual review. Furthermore municipal managers understood that current information on the municipality website and access to the municipality website were important. Almost all of the Ward committee members had knowledge of Community based digital hubs and all of them wanted the Community based digital hub (CBDH) to be established in their communities. The perspective of the committee Ward members on the technological and computer literacy levels of their