Problems around Accessing Information in Rural Communities

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Abstract
Poverty is known to be a rural phenomenon regardless of developments taking place. Rural communities of underdeveloped countries are regarded to be living in those parts of the country that lack almost all kinds of services and basic needs even worse. Information society should be maintained because information has a significant impact in ensuring development in communities but this is not the case in rural areas because of information poverty caused by lack of means to access it. The study addresses the problems to access information in rural communities. This research explores the problems to access information through ICTs such as computer and Internet in rural communities and proposes guidelines on how to ensure proper access to information for rural residents. Rural communities and the government will benefit a lot from the success of this research. Government is the one that ensures that every citizen has the means to access information in order to bridge the gap of information poverty and digital divide.

Keywords: Digital Divide, Information Poverty, Information Society, Rural Communities, Telecentres

Introduction
It is said that the information society is maintained because information has an impact in ensuring development in communities (Koutsouris 2010). He continues to argue that information access, distribution and creation costs are

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lower through the use of ICTs. This research is based in the field of IT. Consequently this research explores the aspects of rural areas with reference to telecentres.

The study is about the problems to access information using ICTs, such as computer and Internet in rural communities. Rural residents are less likely to have access to telecentres due to the long distance that they have to travel to urban areas and lack of technological infrastructure (Hale *et al.* 2010). Having no access to such facilities, it causes the increase of digital divide (Koutsouris 2010).

The provision of telecentres enables access to computer training, the use of computers, Internet and other communication technologies. According to Soriano (2007), telecentres are resources that speed up the knowledge of creating development opportunities.

The background to problem statement and problem statement of the study is given. The objectives of the study are explained followed by a literature. The research method discourse of plan of the study is given next and a conclusion of the chapter is discoursed finally.

Problem Statement

Rural areas are those parts of the country with dispersed population outside urban areas. South African rural areas are distant from almost all kinds of services ranging from health, education to social and technology, therefore rural residents will have to travel to urban areas to access adequate services. Rural residents have a problem of accessing information as compared to those in urban areas (Jacobs & Herselman 2006). This may be because of lack of infrastructure in rural areas that contribute to digital divide.

Jacobs and Herselman (2006) argue that information is a driver of developments through knowledge but only becomes valuable and significant only if it can be accessed. People in rural areas needs to access information technologies that will enable them to gather information, create, learn, and communicate with others while they develop important digital skills. Computers are widely used in various environments such as workplaces, homes, and schools. Most rural residents don't have access to computers connected to internet because there are no public centres around their respective rural communities; therefore, for them to access computer they must first travel long distances to urban areas for telecentres or internet cafés.

Computers require specific skills that people in rural areas must acquire before they use computers because they are computer illiterate.

The study is conducted in Makgobistad village, Mafikeng, North West Province with a population of about 748. A quantitative methodology was used to randomly select a sample of 250 people to meet the requirements of accuracy and reliability.

Overview of Literature

The themes Telecasters, Information Technology (IT), Information and Communication Technologies (ICTs) Infrastructure and Digital Divide and lastly Rural Development are reviewed and serve as a key words for this section and other chapters that will follow. The search engines that were used to gather the literature include but not limited to Google, Google Scholar, Science Direct and other online search engines for journal articles and theses and dissertations.

Understanding Telecentres

Since telecentres form part of this, it is important that the term is explained through reviewing what various scholars have said about it. The term telecentre is a generic one for all kinds of arrangements such as Rural Knowledge Centre, Information Kiosks, Village Knowledge Centres etc- that seek to provide shared and mediated access to information and services by using new technologies especially computers and internet (Mukerji 2008).

Thus telecentres were conceptualised as space where public can access ICTs (Colle & Roman 2001). The concept of telecentre originated for the purposes of development of human capacity and encouraging social and economic development through ensuring access to ICTs (Oestmann & Dymond 2001) and digital-divide, with strong emphasis on providing shared access to expensive technologies like computers and internet services (Mukerji 2008).

The earliest forms of telecentres were established during the 1980s in developed countries with the primary purpose of overcoming the remoteness of rural and isolated location often characterised by low purchasing power and lack of quality telecommunication infrastructure (Mukerji 2008). In their establishment they provided a means of approaching and enhancing

participation of rural communities in the emerging information economy (Colle & Roman 2001).

Though telecentres were mainly established for rural communities to access and share to address issues such as socio-economic development, Soriano (2007) presents a contesting view that making telecentres available in rural communities, however, does not ensure that all poor people will and can use them to create and share knowledge that could help lift them out of poverty. In this regard views contained in this chapter from the reviewed works of other researchers that ICTs contribution to economic development stands to be contested or questioned.

Generally there is no universally approved definition of what a telecentre is, however what is of common understanding between scholars such as Mukerji (2008), Colle and Roman (2001), Hedberg (2010), Reilly and Gomez (2001), Soriano (2007), and Fong (2009) is that telecentres are various physical structures used by rural communities to access ICTs services and that telecentres contribute to educational, social and economic development.

Information Technology

As much as the term telecentre is important in this study, the term IT is equally important hence an understanding of the term is also essential. IT is concerned with the knowledge process and its applying methods, processing, transferring and making information in progress. IT involves the gathering, processing, storing, distribution and using the information in the form of sound, picture graphic, text, number, by using the computer and telecommunication tolls. From the above definitions of Information Technology, it is clear that IT and telecentre are two terms that are deeply related and inseparable as they both deal with knowledge transfer and sharing.

Because of lack of access of ICTs through telecentres in most rural areas, it is suggested that the processing, transferring and gathering of information is limited if not impossible in such areas. Some scholars have argued that in the less developed world where there is lack of access to IT the poverty of information exists. To capture this more clearly, Gebremichael and Jackson (2006) observe that information poverty in the Sub-Saharan African region is part of a larger pattern of political, social and economic problems.

Mahmood (2005) maintains that owing to the unavailability of infra-

structure people living in rural areas cannot afford to have ICTs facilities. Both authors continue to note in agreement that because of the availability of ICTs infrastructure in urban areas, resident in such areas enjoy the fruits of ICTs better as compared to those in rural areas.

With respect to various countries, researchers commonly agree that developed countries take advantage of ICTs to further boost their development, while the developing and poorest countries are left behind as a result of lack of ICTs infrastructure. This is supported by Rose (1999) and Fong (2009) stating that there exists a positive relationship between ICTs and economic growth in developed countries as opposed to developing countries. In this sense, weak economic growth in the latter case was attributed to the absence of ICTs adoption in developing countries.

ICT Literacy and the Digital Divide

Information literacy is understood to be a dimension involving the use of a minimal set of skills to use information-seeking tools, to locate appropriate sources and retrieve useful information, to evaluate and access informational relevance, and to synthesize that information into a mechanism capable of solving an information problem (Bertot 2003). On the other hand IT literacy is known to be a determinant of the digital divide and as a divide itself (Ferro *et al.* 2010).

Hence as seen in the above section, scholars such Rose (1999) and Mahmood (2005) establish consensus on digital divide between the rural poor and urban communities. In their assertion they point out that the most poorest and rural communities lack access to ICTs infrastructure as opposed to urban communities who have access to ICTs infrastructure.

From the above section it is important to define digital divide and go into its detail as it is connected ICT literacy and tools to access content. Vengefeldt (2003) defines digital divide as the gap between communities, geographical areas and business at distinct social and economic levels regarding their opportunities and privileges to access Information and Communication Technologies (ICTs) more easily and to use internet to better their day-to-day activities.

Carpentier (2003) state that the definition and discussion of digital divide is based on the combination of three elements namely:

- Significance of accessing computers connected to the internet;
- Computers connected enhance level of information that will eventually lead to knowledge, also the level of communication and other valuable benefits being social or economic; and
- These benefits are essential in that without access, the resulting impediment for example computer illiteracy or any other issue will ultimately create a divided society

The low levels or non-existence of IT literacy levels in rural areas deal a negative blow to local schools and teachers (Poynton 2004). Rural community schools in the 21st century where IT is the way of life for various political, economic and social spheres should contribute in terms of ICTs literacy, Government and private organisations should take the blame for these low literacy levels in rural areas where schools exist (Poynton 2004).

Mossberger *et al.* (2003) described IT skills as the knowledge and skills needed to use IT effectively, highlighting the need for both technical competencies (e.g., skills needed to operate hardware and software) and information literacy (e.g., the ability to recognise when information use can solve a problem). The fact that there are low levels of IT literacy in rural areas means that rural people lack effective and technical skills to operate hardware and software products. However, as mentioned earlier in the section on ICTs infrastructure and digital divide, skills is necessary in a community dependent on agriculture for economic base for development. The argument seeking to contest that these skills are not necessary may be that, acquiring such skills may be useless as these skills will end up not being used. This will be primarily because such a community needs technical agricultural skills rather.

Rural Development

Poverty is known to be a rural phenomenon irrespective of society becoming more urbanised. Anriquez and Stamoulis (2007) argue that 75 percent of poor people in the world reside in rural areas or communities and they depend heavily on agricultural methods for survival. Falola and Salm (2004) also maintain that poor people are classified as rural people because they do not have proper access to clean water, electricity or sanitation facilities. Anriquez

and Stamoulis (2007) conclude the above section by asserting that rural economy can help to enhance employment opportunities in rural areas, reduce income inequality, reduce rural-urban migration, and eventually reduce poverty from its root if it is promoted and sustained.

Before giving a definition of rural development it is important to define and understand where the developments will be taking place. There is no clear or brief definition of what rural is but Joubert *et al.* (2008) describe the latter as a word that expresses exclusion in terms of characteristic of what urban areas is not and further defines what is meant by exclusion. Urban areas are defined as jointly, clustered group which meet population density requirement of at least 3 000 and by exclusion rural is defined as a population density less than 300 and geopolitically, urban is described as all districts, state, and region capitals or centres, and by the term exclusion rural is defined.

There is no exact definition of rural development because of changes in mechanisms and development goals and objectives. Many scholars have defined rural development differently. Since agriculture is being observed as the enhancer of rural development primarily on job creation and output in production, researchers such as Joubert *et al.* (2008) both state that the distribution of ICTs has been considered as an accelerator in terms developing rural communities. Rural development in terms of ICT is a broader issue that is under close scrutiny because it falls under the cloud such as digital divide, e-governance and systematic distribution of broadband.

A large quantity of literature has been documented by researchers such as Soriano (2007), Hammond and Paul (2006), and Chilimo (2008) on the role of ICTs in development. These researchers maintain that ICTs have a critical role in enhancing development, hence Fong (2009) notes the consensus around ICTs having propensity of contributing to economic growth and improving the quality of life. For instance these technologies can be deployed to facilitate integration of value chains within and among firms, industries and economic sectors (Fong 2009). In addition, they can enhance productivity and improve competitiveness for business through appropriate strategic applications.

These technologies have also been viewed by governments and international aid agencies as important tools for national integration because they are capable of enabling greater access to health and education services, and creating economic opportunities for the underprivileged masses (Mercer 2001; Reisman *et al.* 2001; The World Bank 2001;UNDP 2001; Oberski 2004; Jensen 2007).

With respect to rural communities, ICTs have a huge potential to play a role for social and economic development of rural population, this is more so since ICTs have had a great impact on local empowerment and employment (Mahmood 2005). Thus ICTs through telecentres are major catalysts for information and knowledge that can create development opportunities and choices for rural communities (Soriano 2007).

There are various empirical studies carried out by researchers that have investigated the impact of ICTs on economic development. A case in point Canning (1999) and Breitenbach *et al.* (2005) in their studies found the existence of a positive causal relationship between the Gross Domestic Product (GDP) and telephone penetration rate. In addition, Maiorano and Stern (2007) in their study concluded that mobile telecommunication infrastructure contributed to higher levels of per capita GDP in 30 low and middle-income countries between 1990 and 2004.

Similarly, Jensen's (2007) study on fishermen in Kerala found that the usage of mobile phones can promote economic and social welfare for the fishermen and consumers. The above findings have led to researchers such as Mukerji (2008) arguing that telecentres affect economic development by generating direct or indirect employment; integrating relatively isolated communities into national and international information network, thus accelerating the exchange of private goods and services. Telecentres can lead to an increase in income and hence improvements in the livelihoods of the people by providing increased access to information related to market, better farming practices, available job opportunities etc.

This usage of mobile phones both as a phone and a gadget to access the Internet promoted economic and social welfare for rural communities and it also applies to macro-economic sectors of government and big co-operations (Maiorano & Stern 2007). Therefore this research document tries to explore with specific focus on Makgobistad village the effects of ICTs or lack thereof on economic development. In this regard the unavailability of telecentres in Makgobistad negatively impacts local economic development of the community at large. Although for the latter and former questions may be legitimate, the general view by scholars who have contributed on the subject of ICTs and economic development is that ICTs access through telecentres has direct positive impact on economic development. Thus, access to telecentres has been accepted by international agencies and national bodies as a development strategy (Mukerji 2008).

Computer Literacy

Prior to giving a discussion on ICTs it is also important to give a detailed discussion on the abilities needed to use ICTs referred to as computer literacy. Scholars such as Poynton (2004) defined it concisely as knowledge, skills coupled with behaviour required by all member of the society to effectively interact with a computer and its technologies.

In today's information and computer-centric society, computer literacy is as important as acquiring normal literacy and numeracy in a formal education system (Gallagher *et al.* 2005). Poynton (2004) states that as societies move into 21st century people's lives are changed and partially relies on the technologies that are widely circulated by computers and Internet ranging from social to economic. In support of the latter Gallagher *et al.* 2005) also maintain that in the job market computer literacy is one of the prime requirement and it also include one in social and economic aspects around the world. In the most organisations computer and Internet plays an important in helping to satisfy its goals and objectives.

Poynthon (2004) encourages the issue of computer literacy by asserting that computers are capable of doing what printing press did many decades ago by actually making the process of information reproduction and distribution much easier. Thus as one require writing and reading skills to gain from information accessed through printing press, one also requires computer literacy skills to gain from information accessed through a computer.

Gupta (2006) and Gallagher *et al.* (2005) argue that older people who left schools prior to the introduction of computers on the mainstream curriculum or people who have lower level of education in the rural communities are computer illiterate and this illiteracy act as an impediment to access ICT tools such as the internet and electronic communication as well as e-commerce participation on trade and perform transactions online. Older people who are computer illiterate contribute a high risk to information poverty. Gallagher *et al.* (2005) conclude the above statement by stating that it must be ensured these groups of people are not overlooked when developing an information society. Older people aged 50 to 60 dominate by larger number in rural areas; therefore it won't make economic sense in terms of development if this group is isolated.

Schools in rural communities should contribute effectively in childhood computer literacy because it will give children the required knowledge and skills to use current computer technology and adjust to emerging

computer technologies. Children without computer access either at schools or at homes will negatively impact information society and eventually creating information poverty. In today's society computer interaction is as significant to early evolution of computer literacy as they are to reading and writing being taught at schools (Poynton 2004).

Research Questions

Though literature review provided the background and history on information access and telecentres, most questions were addressed but the following questioned remained unanswered:

- Are people in the community computer literate or not?
- Can availability of ICT infrastructure in the form of Telecentre contribute positively to information access and bridge the gap of digital divide?
- Can access to Telecentres contribute in social and economic development?

Research Methodology

Blumberg *et al.* (2005) provide a distinction between two widely used research approaches, namely quantitative and qualitative research and goes to assert that the choice between then depend heavily on the research problem. Many scholars still find the differentiation between qualitative and quantitative data problematic

Questionnaires are mainly used in research surveys and determine how data are collected (Blumberg *et al.* 2005). They assert that questionnaires are special document that permits the researcher to collect data and the opinion form potential respondents. Questionnaires permit the researcher to collect data form a larger sample while maintaining uniform responses by asking same variety of questions.

Based on the above section the researchers developed a questionnaire to collect data and were administered to targeted sample. This permitted quantifiable data to be collected and also permitted data to be analysed in a quantitative manner to find out patterns and relationships between variables.

Research questions can be regarded as vital questions based on the problem investigated. Research questions were used to implicate questionnaires as follows:

- Are people in the community computer literate or not?
- Questions 7 – 11 in the questionnaires
- How can the availability of ICT infrastructure in the form of telecentres contribute positively to information access to bridge digital divide?
- Questions 12 – 16 in the questionnaires
- Can accesses to telecentres contribute in social and economic development?
- Questions 17 – 20 in the questionnaires

The entire Makgobistad Village residents served as a population element that can be included in a sample but due to the population being large and the inability of the researcher it cannot all be included. The population of 748 consists of both male and female who resides in Makgobistad Village. In this research a sample consists male and female ranging from the age of 21 to 60. A sample size of 250 was randomly selected for statistical purposes.

Data Handling

Permission was required to conduct a survey in Makgobistad Village and it was granted prior to provision of the letter from the Information Systems department. Questionnaires were administered to and collected from the respondents. Data was analysed through the use of Excel application and the University's Statistics Department staff were consulted.

Data Analysis and Interpretation

Two hundred and fifty respondents answered the questionnaire designed by the researcher. Some respondents grew up in Makgobistad village and others in urban areas of South Africa.

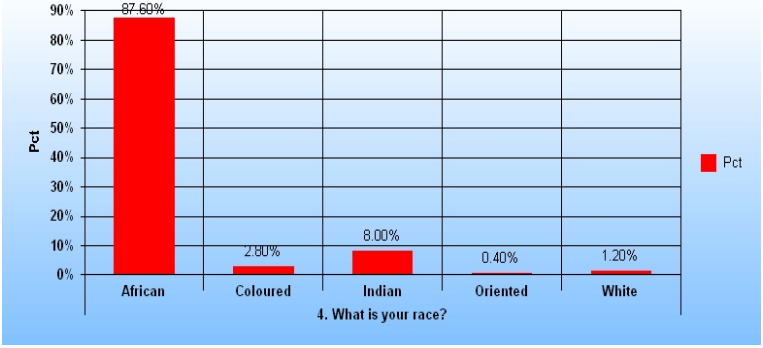

Figure 1: Respondents by Race

The population is made up of various races and ethnic groups. The African race makes up 87.60% of the respondents in the community. The reason for this high percentage might be for the fact that the black ethnic group, are Zulu, Xhosa, North Sotho, South Sotho, Tsonga, Venda, and Ndebele. Coloured made 2.80% of the respondents followed by Indians 8%. Coloured, Indian and white populations are found mostly in urban areas. More Asians and Coloured are found in Kwazulu-Natal and the three Cape provinces, but few of these groups live in Gauteng. From this analysis it can be noted that the majority of population that live in the community are blacks. These people are classified as rural people since they do not have proper access to clean water, electricity or sanitation facilities (Falola & Salm 2004).

As stated by Anriquez and Stamoulis (2007), poverty is known to be a rural phenomenon irrespective of the community developments, and they went on to support this by saying that high percentage of blacks resides in rural communities and they depend heavily on traditional agricultural methods for survival. Based on the study the large percentages of race groups are African which differ significantly from Indians when it comes to the knowledge and use of technologies.

Based on Figure 2, below, females are 56.80% of the respondents followed. From this it can be noticed that in rural areas males are not easily accessible, this is because males are deputed to perform physical work and they take control as they are considered as the head of the family. This low percentage on males is due to the fact that the male embark out to the cities and towns away from the community to look for jobs. Many males work away from

the community and frequently visit the community to provide their families with money.

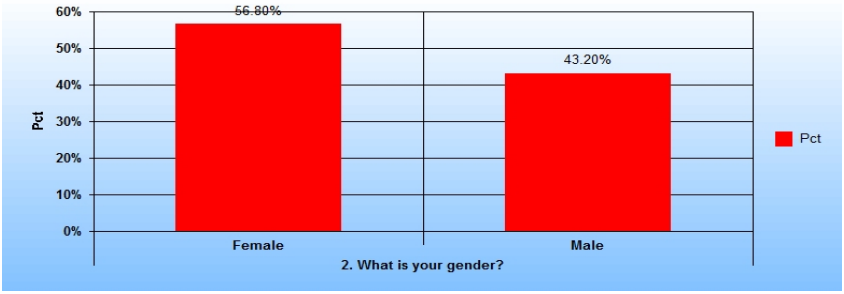

Figure 2: Respondents by Gender

As males go out to work in towns and cities they get exposed to IT because it is used on a daily basis. High percentage of females in the community demonstrates that females don't generally go out and work in cities because they are taking care of the children, thereby forcing them to stay in the community. Therefore gender is a contributing factor to information haves and information have-nots.

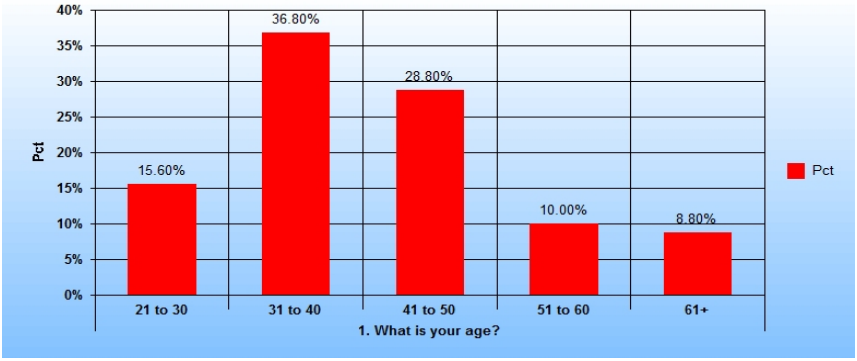

Figure 1: Age groups

Based on the diagram above, only 10% of the respondents ages between 21 to 30 live in Makgobistad Village; the reason for the low

percentage in this age category is because most of them finished matric and they move to urban areas to seek for jobs to help their families in rural communities financially or to further their studies in Colleges, Technikons or University. In support of the above reason, Falola and Salm (2004) state that lack of adequate job opportunities and quality education in rural areas contribute to rural-urban migration in Africa. According to them, the method by which employment is measured counts only for individuals looking for jobs and not others.

The age group of 31 to 40 that makes 36.80% which is the higher percentage of the respondents and the age group of 41 to 50 that make 20% which is the second highest percentage; these are people who contribute to high birth rate in the community. In the African ethnic practices, when females fall pregnant they usually leave their jobs in urban areas and come to the rural community to take care of the young. This process usually takes about seven to 8 years once children have started and settled in school, hence the high percentage in these two age groups.

Lastly ages 51 to 60 make 10% of the respondents and ages older than 61 make 8.80% of the respondents. These age groups have lowest percentages because they are financially secure and they tend to move to urban areas to settle. In rural communities, such old age groups contribute to high mortality rate.

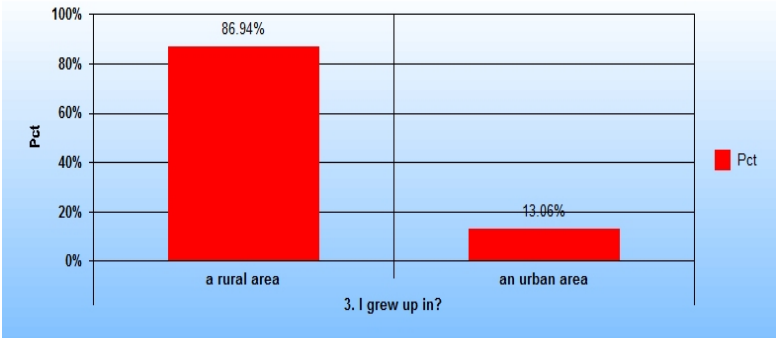

Figure 2: Rural and urban demographic

The analysis demonstrates that 86.94% of the respondents grew up in rural areas. Based on the interpretation of Figure 4, it can be noted that large

percentage of Africans grew up in the community. Based on literature provided it is a phenomenon that black race resides in rural areas and Coloured, Indians, and Whites resides in urban areas. He further asserts that more Whites are exposed to ICTs and most of them are computer literate than African in rural communities.

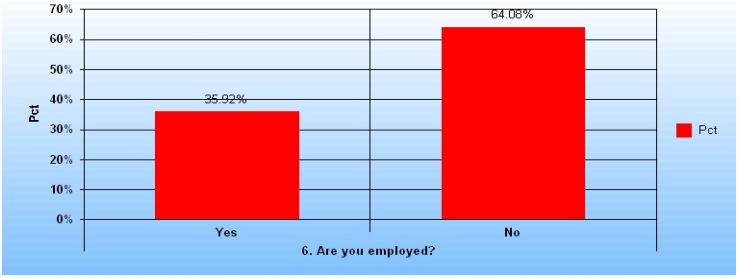

Figure 3: Employment rate

Based on literature reviewed, scholars such as Anriquez and Stamoulis (2007) showed that 75% of poor people in the world live in rural communities. In support of this statement, Figure 4.5 demonstrates that 64.08% of the respondents are unemployed.

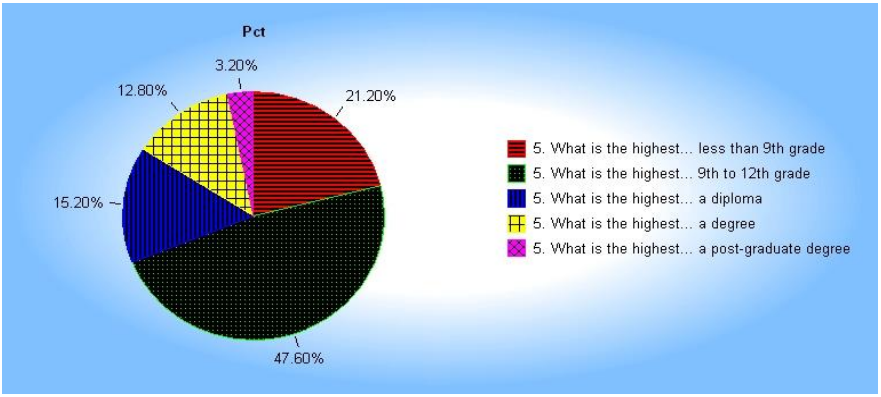

Figure 4: Level of formal education

As stated in the theory by Bertot (2002), the majority of people in rural communities particularly African is illiterate. In African culture, female were

assigned to stay at homes and take care of the household chores and also children, while males were assigned to do the physical work at the farms or move cities and towns to look for jobs. Form the figure above 21.20% of the respondents have less than 9th grade of formal education, followed by 47.60% of those with 9th to 12th grade, 15.20% of those with a diploma, 12.80% of those with a degree. The level of education is low in this community because most of these people live in poverty and what they do is spending their time in agriculture for survival instead of education and it is also due to high unemployment rate in the community.

Computer Literacy in the Community

Computer Skills	Non-user	Beginner	Average	Good	Expert
Frequency	144	23	47	34	0
Percentage	58.06	9.27	18.95	13.71	0.00

Figure 7: Level computer skills

Most respondents never used computer in their lives (144). As asserted in literature review by Vengefeldt (2003), lack of social, economic, educational, political and financial aspects may negatively impact the existence of computer skills level and he goes further to conclude that lack of such skill will impedes others the possibility to gain from the benefits provided computers and related technologies. These contribute to digital divide which is an issue of concern in this research. Twenty-three of the respondents were average, followed by 47, which were good. These respondents are those that were employed or had higher education.

Correlation between Age and Level of Computer Skills

The variables are defined as follows: level of computer skills = X and age = Y.

X		Non-user	Beginner	Average	Good	Expert
	21 to 30	17	8	9	5	0
	31 to 40	47	4	22	19	0

Y	41 to 50	38	8	15	10	0
	51 to 60	20	3	2	0	0
	61+	22	0	0	0	0

Figure 8: Correlation between age and level of computer skills

Most respondents that did not have computer skills were between the ages of 31 to 40. Most of these people were not educated or dropped out of school due to ethnic obedience. The government should consider this issue when it plans to introduce methods of reduces the digital divide.

In support of the above interpretation, Gupta (2006) and Gallagher *et al.* (2005) argue that older people who left schools prior to the introduction of computers on the mainstream curriculum or people who have lower level of education in the rural communities are computer illiterate and this illiteracy act as an impediment to access ICT tools.

Correlation between Gender and Level of Computer Skills

Correlation was used to determine if there is a relationship between gender and computer skills, defined X = level of computer skills and Y = gender.

X		Non-user	Beginner	Average	Good	Expert
Y	Female	82	15	26	19	0
	Male	62	8	22	15	0

Figure 9: Correlation between gender and level of computer skills

Figure 9 demonstrates that more female were computer illiterate than males. As discussed earlier this is mostly due to cultural, socio-economic and political issues. Coefficient of correlation is 0.026, which it is close to zero. It is evident that the respondent's computer skills does not depend on gender because any one can be taught or learn how to use computer despite gender.

The figure below demonstrates the attendance of computer training courses in the community. A large percentage of respondents (63.27%) never attended computer-training courses. Poynton (2004) stated that people who never attended computer training or taught how to use a computer due to lack on ICT infrastructure or unemployment contribute a high risk to information poverty.

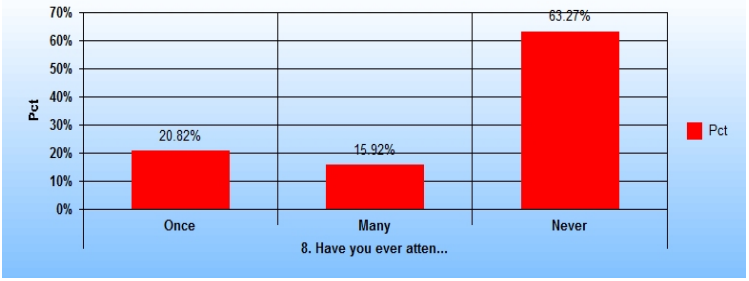

Figure 10: Attendance of computer training courses

According to Gallagher *et al.* (2005), to encourage computer literacy by saying that the latter is as important as acquiring normal literacy and numeracy in a formal education system.

Correlation between Level of Computer Skills and Attendance of Computer Training

Correlation is used to determine the extent of relationship between level of computer skills and computer training attendance, defined Y = Level of computer skills and X = attendance of computer training.

X		Once	Many	Never
Y	Non-user	0	0	143
	Beginner	12	2	9
	Average	25	17	6
	Good	13	21	0
	Expert	0	0	0

	X	**Y**
X	1	0.585
Y	0.585	1

Figure 11: Correlation of level of computer skills and computer training attendance

It is evident from the results that there is a statistical significance, positive correlation between variable X and Y where r = 0.585 (n = 250, p < 0.05). This positive relationship between two variables demonstrate that the more one tend to attend computer training courses the more one's computer skills level will improve.

Computer and Internet access	**Just computer**	**Computer and Internet**	**None**
Access	40	62	147
Percentages	16.06	24.90	59.04

Figure 12: computer and Internet access

The analysis above indicates that 147 respondents never access computers in their lives. This could be interpreted back to the issues of high percentage of computer non-users in the community. In support of the interpretation, Vengefeldt (2003) broaden the issue of access in the literature review by saying that the access to ICT is accompanied by the skills describing the capabilities to use them.

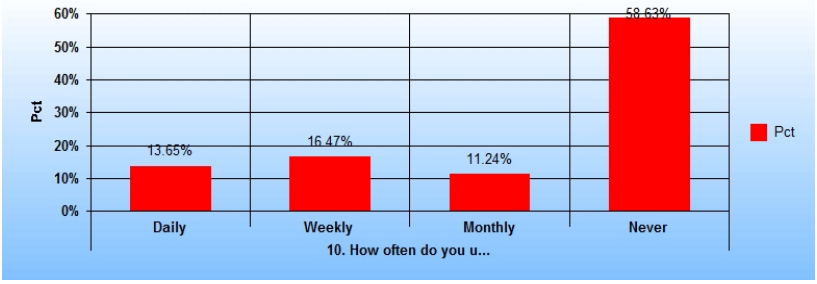

Figure 13: Computer usage

The figure above shows that 58.63% of the respondents never used computers in their lives. The reason for this might be high level of computer illiteracy and high rate of unemployment in the community. Mahmood (2005) stated in that due to high rate of unemployment and unavailability of ICT

infrastructure people living in rural areas cannot afford to have ICTs facilities. It is also noted that most of those who access computer daily and weekly they access it at their workplace. Lastly 11.24% access it monthly from home, Internet café or neighbourhood.

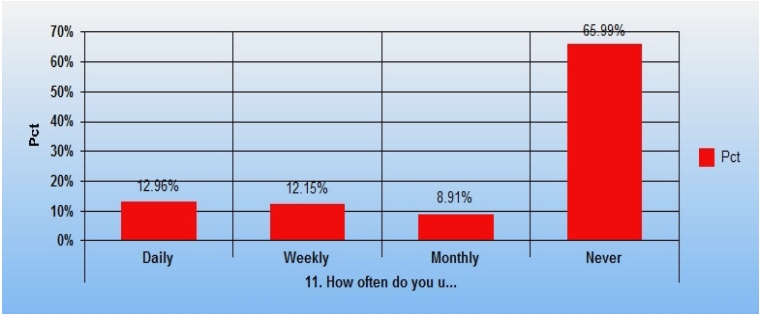

Figure 14: Internet usage

Based on the figure above 65% of the respondents never used an Internet and most of these respondents are those that don't have access to a computer. This is followed by 12.96% of those who access it daily and 12.15% who access it weekly mainly from the work place. Lastly 8.91% access it monthly, which is either from home, Internet or neighbourhood.

Correlation between Computer and Internet Usage

Variables are defined as follows, X = Internet usage and Y = computer usage.

X		**Daily**	**Weekly**	**Monthly**	**Never**
Y	**Daily**	32	2	0	0
	Weekly	0	27	4	9
	Monthly	0	0	18	9
	Never	0	1	0	145

	X	**Y**
X	1	0.794
Y	0.794	1

Figure 15: Correlation on computer and Internet usage

It is noted from the results that there is strong and positive correlation between the two variables, the excel results are summarised as ($r = 0.9981$, $n = 250$, $p < 0.05$). The correlation is close to zero, which means that there is a relationship between the two variables. This implies that for to use the Internet, one must have access to a computer.

ICT Infrastructure and Digital Divide

Method of computer and Internet access	Home	Internet Cafe	School	Workplace	Neighbour	None
frequencies	26	12	11	52	3	145
percentages	10.44	4.82	4.42	20.88	1.20	58.23

Figure 16: Primary method of accessing computer and Internet in the community

Most of the respondents (52) access computers and Internet from where they work followed by those that access mainly computers at home (26). Most of the respondents work at the town (Mafikeng), which is 50 kilometres away from Makgobistad Village and also 12 respondents access computers and Internet in Internet cafes which are found only in town. Few access computers and Internet in schools and in the neighbourhood. This clearly shows that there is a lack of ICT infrastructure in the community and it is most found in urban areas. In support of the interpretation, researchers have largely agreed through documentation that the most poorest and rural communities lack access to ICTs infrastructure as opposed to urban communities who have access to ICTs infrastructure.

Rose (1999) observed that the poorest countries particularly in their rural, remote or disadvantaged communities often are prevented from fully enjoying the advances of modern ICTs because of factors such as lack of infrastructure. It must be considered that lack of ICT infrastructure contribute positively to digital divide, in support of this statement, Vengefeldt (2003) defined digital divide as the gap between communities, geographical areas and

business at distinct social and economic levels regarding their opportunities and privileges to access ICTs more easily and to use internet to better their day-to-day activities.

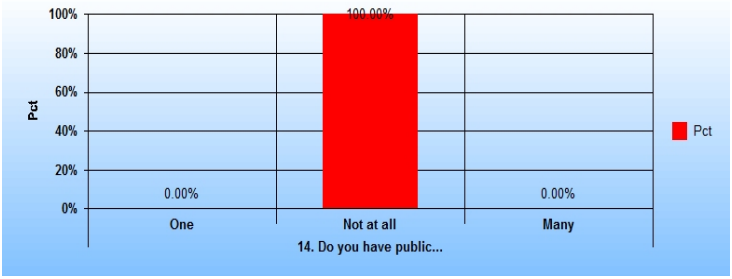

Figure 5: Public centers where computer and Internet can be access in the community

Based on the analysis of primary method of accessing computer and Internet in the community, it is evident from this figure why people travel long distance to town only to access computer and Internet. This figure demonstrates that there are no public centres where computer and Internet can be accessed.

Rural Development and Telecentres

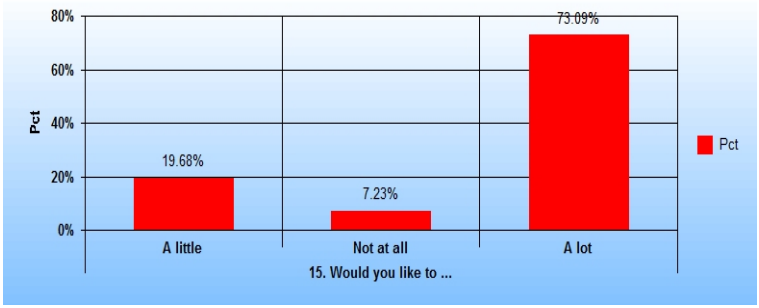

Figure 18: Implementation of telecentres in the community

Due to the statistical evidence that there are no public centres (telecentres) where computer and Internet can be accessed in the community,

73.09% of the respondents would like to see telecentres be implemented in the community. This also shows that people want to access computer and Internet without travelling long distances to urban areas and they believe that they can benefit from the implementation of telecentres. Only 7.23% of the respondents don't want telecentres to be implemented in the community, these are mostly those that have computer and Internet access at their homes.

This analysis is in agreement with Fong (2009) that developed countries take advantage of ICTs to further boost their development, while the developing and poorest countries are left behind as a result of lack of ICTs infrastructure. He goes further to assert that there is a positive relationship between ICTs and economic growth in developed countries as opposed to developing countries. In this sense weak economic growth in the latter case was attributed to the absence of ICTs adoption in developing countries. Oestmann and Dymond (2001) concluded the above supporting research literature by stating that the telecentre originated for the purposes of development of human capacity and encouraging social and economic development through ensuring access to ICTs with strong emphasis on providing shared access to expensive technologies like computers and internet services in order to bridge the gap of digital divide.

Conclusion

This chapter provided a discourse on data obtained through questionnaires that were completed by Makgobistad Village residents. The results that were obtained from data and demonstrated in tables and graphs were analysed and interpreted. The relationships between data variables and the summary of statistics were also provided through interpretation. The essence of this was to investigate the preliminaries into problems to access information in Makgobistad village.

The research discovered that most people in Makgobistad Village are illiterate, they don't have computer skills, access to computer and Internet, are unemployed, and they travel long distances to access computer and internet. In addition, the statistics demonstrated in Figure 4.10 that 100% of the respondents maintain that there are no public centers where computers and the Internet can be accessed in the community. Most of the respondents want to see telecentres be installed in the community because they believe that they will benefit from them. Next, we provide a conclusion of the study and possible

recommendations and identify possible future research.

Conclusion and Managerial Guidelines

The community that was used as a case study for this research is Makgobistad Village found in Mafikeng, North-West province. The community comprises of people who grew up in rural and urban areas were investigated in terms of computer literacy and computer and Internet access.

The study was directed at establishing the problems to access information through computer and Internet access in the community. It was also directed to determine the level of computer skills and access to computer and Internet.

This research provided an analysis of impact of computer skill on accessing computer and Internet form Information systems perspectives. It was observed that computer illiteracy and lack of ICT infrastructure were significant problems to information access and the very same factors play an important role in the gap of digital divide.

Data analysed and interpreted in the previous chapter disclosed that 100% of the respondents stated that there are no public centers where information can access through computer and Internet connections. Also the statistic revealed that 73.09% of the respondents want to see telecentres implemented in the community so that the information is accessed easily through computer and Internet.

Answers to Research Questions

The essence of this section is to establish the relationship between the main research findings provided in the previous chapter and the research questions outlined in the research literature review.

Are people in the community computer literate or not?

The research found out that more than 58% of the people in the Makgobistad Village are computer illiterate. Vengefeldt (2003) argues that computer literacy involves three levels of capabilities instrumental, structural, and strategic skills and he emphasize that must have at least foundation or certain level of formal education to grasp these capabilities. The reason for this computer illiteracy is due to the fact that most people in the community are not educated and they

leave school early due to ethnic practices. Another reason for this is that there are no telecentres that provide computer access and training easily.

In support of the findings, Vengefeldt (2003) argues the low levels or non-existence of IT literacy levels in rural areas deals a negative blow to local schools and teachers. Rural community schools in the 21st century were IT is the way of life for various political, economic and social spheres should contribute in terms of ICTs literacy and government and private organisations should take the blame for these low literacy levels in rural areas where schools exist.

How can the availability of ICT infrastructure in the form of telecentres contribute positively to information access to bridge digital divide?

The findings disclosed that 73.09% of the respondents wanted to see telecentres implemented in the community. Due to the fact that there are no telecentres in the community and people are computer illiterate, information available through computer and Internet cannot be accessed. Hedberg (2010) argues that telecentres can be used to bridge the gap of information poverty and digital divide if they provide necessary ICT literacy skills and making sure that it allows proper access to computer and Internet so that information can be easily accessed without travelling long distances to towns and cities.

Can accesses to telecentres contribute in social and economic development?

Telecentres were conceptualised as space where public can access ICTs, for example, access to fax, e-mail, social network, Internet banking, and even access to training on various software packages (Colle & Roman, 2001). The concept of telecentre originated for the purposes of development of human capacity and encouraging social and economic development through ensuring access to ICTs (Oestmann & Dymond 2001) and digital-divide, with strong emphasis on providing shared access to expensive technologies like computers and internet services (Mukerji 2008). Soriano (2007) maintains that telecentres were mainly established for rural communities to access and share to address issues such as socio-economic development.

Managerial Guidelines

Based on the outcomes of this study the following managerial guidelines are given the rural communities that have problems of accessing information through ICT tools such as computer and Internet:

- Educational facilities must be enhanced in order to improve the level of formal education. Findings revealed that there is a high illiteracy level in the community of about more than 60% and government, and rural schools are blamed for this illiteracy level. Formal education is a foundation of computer literacy (Vengefeldt 2003).

- Community members must be taught how to use computer and associated technologies so that they can realise ICT benefits. Study indicated that 57.83% of the community members are computer illiterate and 73.09% want to access computer through telecentres but due to their computer illiteracy it can be possible. These implicate that community members must be trained on how to use such.

- ICT infrastructure in form of telecentres must be implemented in the community so that necessary ICT tools, such as fax, computer and Internet can be accessed without travelling long distances to towns and cities. The study found out that there are no public centres where computer and Internet can be accessed in the community and 100% of the respondents agree with that.

Conclusion

There are various factors that impact information access and the very same factor influence its success. The research was about the investigation of preliminaries to the problems to information access in Makgobistad Village, how they contribute to digital divide and impact the social and economic development of the community.

People in the community are willing to acquire computer literacy skills and have access to computer and Internet but due to lack of ICT infrastructure in a form of telecentres in the community this is not possible. Financing is very important in terms of funding implementation of telecentres.

Rural communities without information access and necessary ICT Infrastructure increases digital divide.

In order to bridge the gap of information poverty and digital divide and familiarise the community members with ICT tools will need the large amount of capital particularly from government but on the other hand community members must not depend entirely on external sponsors but themselves.

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