Information Heaven:
Online Information Access for
Rural Communities

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Abstract

This article addresses the needs for a community computer centre
(Telecentre) for the community of Emkhambathini. This study was part of
the Information Systems research exercise that was conducted by students.
The problem that the researchers experienced was that Emkhambathini has
no access to information and a need exists to ensure that this community
joins the 21st century. The Telecentre will also serve as a community
upliftment tool. The data was collected using a questionnaire, it was collated
and analysed using SPSS. The conclusion was that gender or employment
does not play a role when there is a real need to access information.

1. Introduction

There is evidence that important support for the Millennium Development
Goals can be achieved with the use of ICTs. Internet offer extensive
development opportunities, particularly for people in rural areas and living
in poverty. Wireless Internet technologies can allow developing countries to
leapfrog generations of telecommunications. Connecting local communities
in developing regions to the Internet will have a positive impact on education
and their health system [6], [14]. The Internet complements locally available

information, improves and accelerates knowledge flows, and can be used to deliver innovative education models to remote areas [5].

Support should therefore be given to start, maintain and run Telecentres because they perform a primary development function for information and education, which is considered a basic and important human right [2]. Telecentres are to information what schools are to education and health centres to health and bodily well being [7].

Telecentres still appear to be a good idea [8]. Market-based mechanisms may be penetrating, but it is questionable that they are sufficient to address social inequities and maximize the potential of ICTs for rural development. While current research hasn't produced any easy-to-follow instructions on how Telecentres are done, it has found broad support and validation for the idea amongst rural and other disadvantaged populations [11]. Amongst these communities, access to communication tools is highly valued. However, implementing Telecentres successfully in Africa remains a rare art mastered to-date only by a very few skilful social entrepreneurs. Creating access for all through Telecentres remains a distant goal and the passage to reach it, a mystery [1]. The next section will discuss the research questions.

2. Research Questions

Although the literature attempted to solve all the problems as described, certain issues still need attention. These are:

1. Why does the South African government take such a long time to create computer centres?
2. How will the community benefit from such a computer centre?
3. What other benefits are there for the community?
4. Can this help in other terrains?

3. Research Methodology

In this section the researchers discusses the choice of methodology that was used in this study. It will also cover issues like sampling, questionnaire administering and data analysis.

4. How this Study was Conducted

A quantitative research approach was adopted for this study because the aim of the study is to find solutions relevant to the people in rural areas. This approach will help in the understanding of rural areas in their context [9].

The motivation for doing quantitative research is that quantitative research methods are designed to quickly help researchers understand people and the social and cultural contexts within which they live. Kaplan and Maxwell (1994) argue that the goal of understanding a phenomenon from the point of view of the participants and its particular social and institutional context is an important feature of research. For this study the need to collect quality data from different people and the fact that reliable results should be found before any Telecentre project can be started has necessitated this choice of approach.

5. The Questionnaire

A questionnaire was designed to accomplish two main objectives: one was to maximise the proportion of subjects answering the questionnaire - that is, the response rate; and the other was to obtain accurate information for the survey. The questions were also divided into personal questions like age and gender, and knowledge questions like "How would you rate your level of computer competency?" The questionnaire was also made available in IsiZulu as rural people do not speak English fluently.

6. Sampling

The research was conducted from a sample of 125 randomly selected rural people residing in a rural area of Emkhambathini (Camperdown) outside Pietermaritzburg. This sample is taken from one district with the population of about 180 people according to municipal records. Respondents were chosen in no particular order to allow diversity in their responses. This was done by visiting them in their homes and in other public places such the tribal authority offices and clinics. Random sampling was adopted for its ability to allow every member of the community to get an equal opportunity of being selected for participation.

7. Data Analysis

After completion of this processes all questionnaires were analyzed using SPSS and graph plotters to derive possible conclusions from answers given by users. Graphs and charts were used for the purpose of presenting the findings in a user friendly and understandable format. The associations between the different variables measured will only be determined in a follow-up study by computing correlations and ANOVA. This information and all data gathered from other sources such as popular press articles helped to finalize the results. The literature review also formed part of the data analysis process. Upon completion of the data analysis the researchers derived answers to the research questions.

8. Discussion of Results

The aim of this section is to provide a detailed explanation on all responses gathered by using questionnaires. The analysis also utilise other existing literature to support (validate) the findings of this research study. 125 questionnaires were distributed to the Emkhambathini community. Of the 125 questionnaires, 123 questionnaires were collected and 2 questionnaires were never returned to the researcher. Of the 123 questionnaires returned, one was considered unusable as the respondent had ticked more than one response and in some cases left the response blank. The following analysis is therefore based on the 122 responses that the researchers consider usable. The return rate is therefore 98%.

Fifty nine percent of the participants were females and this is attributed to the nature of rural life as women are still expected to remain at home and take care of the house and children while men go to the cities to find employment. This is supported by a study conducted by Ryan (2004) in African countries. He argues that old traditions have led men to believe that it is their duty to be responsible for income generating while women look after children. Lack of employment opportunities in the rural areas is a problem. Nearly all (97%) of the respondents are African, 2% Coloured and only 1% White. The Emkhambathini area is a deep rural area and the researchers could not find people of other races in the area except for those who came to work on government projects.

Age of Respondents who Participated in the Study

The Table below reflects the age groups of the respondents. The biggest age group is 20 years to 29 years (30%) followed closely (29%) by the 0 years to 19 years group. A further explanation of these figures would be the fact that older rural people are mostly uneducated and usually avoid participating in things they perceive to concern education [7]. They referred the researchers to their children who attend school.

Table 1: Age distribution

	Respondents	**Percentage**
0 - 19	36	29
20 - 29	36	30
30 - 39	27	22
40 - 49	18	15
above 50	5	4

The results show that of the 122 responses gathered, 60 went to secondary school and that 45 respondents had gone to tertiary institutions. The educational level measured was taken as the highest level of education reached which means that it also took into account the people who have dropped out of school. The pass rate at matric level in rural schools is low which has led to rural students not being able to go beyond secondary education. Another problem facing rural students is that tertiary education is expensive for them. Six respondents ignored this question possibly because they had no formal education to select.

Employment

Table 2: Employment

	Respondents	**Percentage**
Yes	57	47
No	65	53

Of the 122 responses, 57 (47%) respondents answered that they were employed. This consists mostly of teachers and people working as unskilled workers (like construction). Epodoi (2002) made a similar finding that more employed people in rural KwaZulu-Natal were engaged in the teaching

profession than in any other type of paid employment. In bringing ICTs to this community people will benefit as this will provide them with tools to gather new knowledge. Also, the integration of services like youth portals and government information give them the opportunity to access services like internships and skills development initiatives. Telecentres also provide them with the opportunity to learn new skills that they could have not afforded to go to educational centres to learn. They access information to help them start businesses through government grants. All respondents answered this question showing interest in issues of employment.

Only 37% of the respondents have reached tertiary levels of education which presently is the only level a rural student can learn computing as rural schools do not offer these facilities. Due to the complexity of computers most people in Africa will never own a computer [11]. Campbell (1995) states that by their very nature, rural communities do not produce economies of scale that make it less expensive to provide an advanced telecommunications infrastructure, powerful computers, and well developed networks. Etta (2004) agrees that the need for basic literacy, computer skills and training in the use of ICT applications remains a challenge for rural areas. The low level of computer literacy presents a challenge in the implementation of Telecentre projects as it requires that expertise be imported from urban areas which might increase the cost of implementation.

Training to Use the Computer

Of the 25% respondents who stated that they can use a computer 21% have received formal training at University, Technikon or College. None of the respondents indicated that they have obtained an IT related Diploma or degree but stated that they have learned the basics of computing as part of their studies. Others have taken computer courses at private colleges but these institutions are not available in rural areas. The results agree with the statement made by Campbell (1995) which states that in urban areas, single organizations such as large corporations, school systems, and city government can operate systems that are beyond the reach of any single entity in any rural community. Access remains an obstacle to rural participation in the ICT arena. Only 3 respondents had access to computers at school.

The Level of Computer Literacy

More than 50% respondents indicated that they are completely illiterate and 6 respondents ignored this question. Only 41% of the respondents indicated that they have some knowledge of computers. Twenty one percent specified they their knowledge is limited. Most of them only know word processing and are not able to use tools like the Internet effectively. Rural people have not been able to access these tools because of the disadvantaged background and due to the lack of infrastructure. Benjamin (2000) argues therefore that the legacy of apartheid is as strong in the telecommunications as other parts of life.

Table 3: Computer Literacy level

	Respondents	**Percentage**
Beginner	35	21
Medium	12	10
Expert	3	2
None	66	54
No response	6	5

It appears from this table that rural people think it is important to get a certain level of computer training. Twenty five percent of the respondents indicated they are prepared to up to R150.00 for their training. These people chose the minimum amount and there are several reasons for this. Firstly most rural people don't know how much computer training is worth in practice. Adverts usually promise free training with participants required to pay around R75.00 for administrative costs. This has led these rural people to believe that computer training is cheap.

Not having enough information on service fees is a concern in the deployment of ICT solutions and the need to grow awareness arises [4]. Secondly they might believe that computer training is for the rich and they don't have enough money to afford it or they do not see its importance in a rural setting. This is supported by Campbell (1995) who states that when payment is involved to access information, people at rural information centres are less likely to have disposable income to spend. They hesitate to

use family food, education, and clothing money for information. Twenty percent might pay up to R250.00 which is enough money in many cases to cover essentials of basic computing like word processing, spreadsheets, e-Mail and Internet.

Money Available for Computer Training

More than 15% of the respondents are prepared to pay more than R350.00 to receive computer training. This number probably consists of people who have already received basic training and feel they need advanced training like programming. They have been exposed to computer training and know it can be an expensive exercise. Telecentres can help them in areas such as education, health care, local democracy and small business support [2]. On the other side these people might be coming from the group that has never used a computer before and have always regarded computers as expensive equipment that are only available to the urban communities. This has made them believe it is more expensive to learn anything about computers. This is an area that must be addressed in the establishment of Telecentres in rural areas. There is a need to develop subsidised services, group rates (e.g. for women, students, or members) [7].

Table 4: Money for training

	Respondents	Percentage
100.00 – 150.00	31	25
150.00 – 250.00	24	20
250.00 – 350.00	16	13
Above 350.00	20	16
Nothing	30	25
No response	1	10

The last group of respondents is not willing to pay anything for training. Their reasons can range from the fact that the unemployment rate in rural areas is very high and people do not have money to use on training. There is also a belief that Telecentres are for the elite educated [7]. The results confirm the fact that rural people are falling behind in the advances in technology. Only 9 respondents own a computer at home indicating that rural people do not know about computers or cannot afford computers. Ryan

(2004) agrees that most people in Africa will never own a computer in their lifetimes.

Telecentres provide a solution to introduce them to the information society and bridge the digital divide and will enable the community to share resources and information. This will allow the people who already have a certain understanding of computers to help the community members who do not know how to use computers. Rural people and organizations must be organized to work together and pool resources and demand [3]. Telecentres also provide an alternative to buying a computer and refrain from spending maintenance costs allowing this to become the responsibility of the centre authorities. Ninety percent of the respondents would like to own a computer. This figure corresponds to the previous discussion of people who do not have a computer at home. People show an interest in owning their own computers and believe that having computers will improve their standard of life in terms of skills. It enables them to access the Internet. They want to use the Internet for job searching and learning about opportunities on the Internet. It shows they understand that ICT are a condition for freedom in the modern world [5].

Amount of Money to Spent on an Own Computer

Table 5: Monetary value spent on PCs

Response	Respondents	Percentage
500 – 1000	28	23
1001 - 2000.	15	12
2001 - 4000.	21	17
Above 4000	40	33
No response	18	15

A number of respondents are prepared to pay amounts above R4000.00 to buy computers. This confirms that some rural people understand the value of computers and the contribution they have in development. More than 85% of the respondents are prepared to buy computers for their personal use. Computers have the potential to help leapfrog the development process and empower communities [6].

Table 6: Access to PC

	Respondents	Percentage
Local School	17	14
Public Library	3	2
Internet café	5	4
At Work	19	16
Other	5	4
No response	73	60

Lack of infrastructure has been the biggest threat to the implementation of Telecentres in rural areas. Nearly 60% of the respondents do not have an alternative place to access computers. This number indicates that rural people are still living outside the information society. Telecommunications connectivity in developing countries is usually available only within the capital and in major centres. Yet the majority of the population lives outside these cities [11]. To find out the kind of alternative places available to this community the researchers asked them to explain where they can alternatively access computers. Nearly 40% responded to the question.

Most respondents only use computers at work [12]. Second largest is that of users at a local school with 17 responses. The people who have access to a computer at the local school are teachers and other people doing administrative work at these schools. If the schools can be used in the establishment of Telecentres more people will be able to access computers. This view was supported by Benjamin (2000) who proposes that existing institutions be used to establish Telecentres. In the Northern Province a secondary school has been used to establish a Telecentres and they are control of this facility [11].

The majority of the people do not have an alternative place to access computers which confirms that the alternative places mentioned above are not available to the whole community. Sayed (2003) argues that there are two views in the public about Telecentres and ICTs in general. In this community of Emkhambathini the optimistic view is that the establishment of a community computer centre will bring advantages to the community. It

will bring development and open up opportunities that never existed before. This is particularly encouraging to the researchers as it indicates community readiness for ICT implementation. According to CINSA (2004) establishing a shared vision around measurable goals is an important part of the implementation process. Fuchs (2000) agrees that the first step is often to demonstrate how the facilities in a Telecentres can be made to work for community. In this community this task looks simpler as most people support the establishment of a Telecentre.

The responsibility of who will finance community initiatives like computer centres has been a key theme in the debate around Telecentres [2]. The majority of the people (84%) thought it is the government's responsibility to build community computer centres. This was influenced by the background that rural people come from which has made them dependent on the government for their needs. These people often think the government is the only institution that can afford these services. Their view is supported by Fuchs (2000) who argues for public funding of centres just like the funding given to schools and public libraries. About 10% of the respondents suggested that business people are the ones who should finance this initiative. Although there are no big businesses in the rural areas the new movement of popular government officials to the business sector has made rural people to think these people are rich and can finance any project in the community. Benjamin (2000) also supports that Telecentres must be run by profit focused organizations to encourage quality service.

Use of the Computer Centre

Table 6: Uses of Telecentres

	Respondents	**%**
Community Empowerment	37	30
Computing business	9	7
Education	53	44
Internet and E-mail	13	11
No response	10	8

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Responses were collected into four categories. The first was community empowerment where 30% of the respondents indicated that they will use the computer centre to teach youth life-skills and starting community projects. The projects mentioned ranged from HIV/AIDS awareness, Adult Basic Education and youth empowerment. This can go a long way in improving lives and governance in the rural community [5]. Only 9 respondents wanted to start their own businesses in the computer centre (e.g. typing assignments and curriculum vitas).

Some respondents already had businesses and believe the Telecentre would give them added advantages. Also, access to government information like business registration records and tax records will be of benefit to small rural businesspeople. More than 40% of the respondents view the establishment of the computer centre as an opportunity for them to improve their education, learn skills like computer literacy skills, e-mailing and also take courses online. ICTs are known to bring about distance shrinking possibilities [3]. The computer centre is therefore seen as a tool to promote information literacy and provide access to information.

9. Conclusion

In this section a discussion of the results collected from the respondents was presented by means of tables and charts. In examining the results of this study it was found that the majority of the population of Emkhambathini is characterised by high illiteracy rate, high unemployment, high level of male absenteeism and poverty. The results indicate a negative level of readiness in the community for ICT initiatives. More programmes aimed at the reduction of poverty and unemployment must be started to address the problems faced by rural people in accessing ICTs. Government and private sector programmes must also be focused in the provision of necessary infrastructure like electricity, water and roads as these might hinder the supply of ICTs to rural areas. Festa (2003) made similar remarks in his study.

10. Recommendations

Information access in the lives of rural people around the world has become important and this study focused on their use for rural development. The

advancements in technology must be used to help rural communities take advantage of the digital opportunities. The need to bridge the digital divide between the urban and rural communities has encouraged many researchers to investigate the implementation of ICTs in rural communities. This study makes a contribution by investigating the establishment of a computer centre for a rural community of Emkhambathini (Camperdown).

The study investigated the feasibility of establishing a community Telecentre for a rural community and the overall result of this study found that the centre can be established in this community. The area studied had access to electricity which plays an important role in the implementation of ICTs in rural areas.

The study established if any rural people have computer knowledge and what they would best use the computers for. The finding was that the level of computer literacy in the community was very low in that only thirty one respondents know how to use computers. This indicates that the project must focus on the training of the community to use computers and that other service that does not require computer knowledge must be offered. These projects include a government information centre where leaflets can be given to the community to read. This will improve government understanding in the community. The community was interested in using the Telecentre for educational purposes. These include distance learning, Adult Basic Education and computer studies. The community computer centre must also address issues of community empowerment like Life Skills, youth development and small business development. This can be achieved by the provision of information to the community and connecting them to government departments and other organisations offering help to small businesses.

Business Model

The study focused on the question of a business model that should be adopted for Telecentres. The popular view on the business model for Telecentres is that the government in partnership with the private sector must be responsible for establishing Telecentres. For this study the researchers find that the community of Emkhambathini would like the government to take responsibility for Telecentres. Taking into account that

this rural community is poor and cannot afford the costs of running a Telecentre, the researchers agrees with this view. The fact that more than 80% of the community stated that the government must provide support similar to that given to public schools and libraries helped to make this conclusion.

Policy

Realising the importance of the role played by policy makers in the establishment of community computer centres the researchers reviewed literature by other authors in the theory. This study has found that South Africa already has a policy on Telecentres which is the Telecommunications Act of 1996 (this act specifies guidelines on the how to establish Telecentres). The Reconstruction and Development Programme also addressed the issue of Telecentres but unfortunately both this policies still fail to achieve their goals because of a lack of funds and information on the part of the local governments who are the ones to drive these initiatives. The researchers conclude that local councillors who are in daily contact with the people do not understand the different policy documents of the government.

Government involvement must also contribute to other projects like electricity, water and sanitation as these are important infrastructural requirements for Telecentres. This means that the South African government must start drafting other policy documents to address the rural Telecentre situation.

These policies must consider the following:

1. The role of the private sector;

2. What kind of software and hardware will be used; and

3. How will the running costs be recovered?

Services

The research found that people would most use the Telecentre for educational purposes. It was discovered that the level of education in the community was low and people wanted to improve their education and

acquire more knowledge through the Telecentre. Services that are aimed at improving the conditions of living for the community must be provided. These include Telehealth, distance education facilities, youth portal to house organisations like Umsobomvu Youth Fund and the Youth Commission for the people to get information that can help address the high levels of unemployment and illiteracy.

The Telecentre should also be used to provide information for small businesses as this is an alternative to unemployment. For the success of these services the Internet plays a crucial role to provide a platform for communication and information sharing. It must also be used to help school children in their assignments as there is no local library in the community. This will improve the quality of assignments the students complete as they normally have limited information for this purpose.

Training and Skills

In any rural community computer literacy levels are low because of limited resources to learn these skills. Training is therefore needed in this community as 75% of the community cannot use computers. The study found that the rural community of Emkhambathini will need training before the Telecentres project can succeed.

Infrastructure

The findings supported the fact that the infrastructure in this community is not as bad as in most other communities studied before. The community already have access to electricity, water and tar roads. Although only a few individuals have access to their own telephone lines but the community has access to phone shops which means providing Internet is possible.

11. Research Questions

Why does the South African government take such a long time to create computer centres?

According to the findings of this study the South African government does have a programme at national level to create computer centres but slow delivery shows the lack of commitment by the provincial and local governments. This can be a result of a lack of information and funds for these projects. The rural communities are facing other problems such as limited electricity, clean water, health facilities, education facilities and limited tar roads. The local governments prioritise these neglecting Telecentre projects which are viewed as a luxury and people should be better educated as only 26% of secondary people are employed.

How will the community benefit from such a computer centre?

As discussed previously, the community will use the computer centre to improve their education and acquire new knowledge. Information about child nutrition, agriculture and tertiary institutions application procedures will be provided by use of leaflets or through the Internet. For a rural community this information is important as they do not have access to experts like the urban communities. For local business, the computer centre will enable them to obtain information on stock prices and free business training on the Internet. The government departments will find a place to make available information about grants, bursaries and other useful services. More people should have access to information and could impact on the association figure between gender and ownership. Computer literacy in the community will be improved through the provision of computer classes at cheaper rates. This will also help in creating employment opportunities for the local trainers who have an understanding of computers.

What other benefits are there for the community?

The Telecentre can be used as an incubator for small business and youth will have a chance to form co-operatives and take advantage of the governments youth empowerment programme. For teachers and health workers in the community this centre will give them a chance to improve their knowledge which will in turn ensure that the quality of service is kept in line with developments in their fields. It also emphasises that more money should be made available for training to increase this figure to at least 70% and not below 50% as was shown.

Can this help in other terrains?

The study did not only focus on the use of computers in the Telecentre but also looked at other fields that might benefit from the Telecentre. Apart from the fields of education, business and health which have been discussed in the previous pages the Telecentre can be used by government to train municipal councillors and staff on local government policies and update them on the policies being adopted at national level. This will help speed government service delivery and address the slow creation of computer centres as the information will easily get to the local government. Training on computer repairs, call centre and science and technology are other terrains that will benefit (Table 6).

12. Recommendations

Training

The researchers recommend that computer skills training be incorporated into the normal school curriculum to address the problem of high illiteracy in the community. The Telecentre must as its first priority offer training to the community at low rates so that they are able to use the services offered effectively.

Infrastructure

As rural schools do not have modern facilities to house a computer centre the Telecentre must be built as a separate building that is reachable and accessible to the whole community. This involves taking into consideration disabled people, children and female needs.

Government Involvement

The government must, in addition to drafting policy documents, set up a formal committee to lead the establishment of Telecentres. The committee must be allocated a budget similar to that given to other departments for this purpose. The government must also embark on a fundraising programme to attract big business to sponsor Telecentres. This has been achieved in the Mogalakwena Hewlett i-Community project. Government supported companies like Telkom, Transnet and others must also be encouraged to sponsor Telecentres.

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Staff Requirements
The researchers recommend that the governments SETA learnership project must be used to recruit Information Technology graduates to work at the Telecentres while they receive experiential training. This will decrease staff costs and help give unemployed graduates work experience which will help them in applying for employment.

13. Conclusion

The advantages that come with the use of ICTs in the lives of ordinary people have started to show in South Africa. Although the South African government is determined to improve the lives of rural people more support is still needed from the communities, the private sector and international investors to address the imbalances of the past.

This research study has shown that the rural communities are disadvantaged in terms of accessing Technology and information. The digital divide that exist between the urban and rural communities has played a contributory factor in deepening the crisis of poverty, malnutrition, high unemployment, high illiteracy and other social ills in these communities. The lack of information can be easily addressed through the establishment of Telecentres that will provide a single point of information and its sharing. It has been shown that information is an important part of a human's life and its unavailability isolates one from the progresses in real life. Telecentres are possibly a cheaper way of speeding rural development. It is the conclusion of this study that it is possible to establish a Telecentre for the rural community of Emkhambathini.

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