Analyzing the usage patterns and challenges of telecenters among rural communities: experience from four selected telecenters in Tanzania

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ABSTRACT

The objective of this study was to examine use patterns, challenges and way forward for effective beneficial use oftelecenters in Tanzania. The study covered the following four telecenters, namely Kilosa, Mpwapwa, Kasulu and FADECO (Family Alliance for Development and Co-operation) telecenters. It was found that the studied telecenters in Tanzania are still at infancy and most do not offer adequate information to communities living in rural areas. Most are still faced with a number of challenges that make it difficult to meet people's expectations. It was concluded that so as to meet their objectives, telecenters should provide information relevant to people's needs, different formats should be used to present information as people have different information searching skills. Moreover; telecenter catchment area is an important factor in building an information rich society.

Keywords: *Telecenter; Tanzania; information service; information source; telecenter catchment area*

INTRODUCTION

1.1   The emergence and spread of telecenters

There is poor information accessibility among developing nations, a phenomenon creating the so called information gap. Various alternatives have been thought as solutions to minimize the information gap. Print media, radio, television and telephone all aim at enhancing information availability. Modern Information and Communication Technologies (ICTs) were also discovered so as to facilitate information sharing. ICTs are said to narrow the information and communication gap between rural communities and urban centers through giving rural people access to valuable information; and by transmitting indigenous information and locally produced knowledge (Sirimane, 1996:6). ICT like that of the internet are now offering valuable benefits in terms of improved vertical and horizontal communications among rural people, development agencies and decision makers. This in turn improves the quality of decisions that affect rural communities and agricultural organizations.

In recent years information centers have been thought as an alternative to bridging the information gap created as a result of developments in ICTs. Some of the information centers are developed and advanced more with technologies to facilitate a number of information services than others. Telecenters have been promoted due to what Gomez and Hunt (1999) in Latchem and Walker (2001) describe as their ability to minimize the information gap in rural and marginalized urban areas. According to Jensen and Esterhuysen (2001) and Etta and Wamahiu (2003), telecenters play informing roles through the provision of telephone and fax services, e-mails, internet and other information related services.

Telecenters originated in Europe and North America in mid-1980s. From the point of origin they spread to other various countries in Europe, America, Asia and Africa (Benjamin, 2001; Latchem and Walker, 2001).

Telecenters have one major objective; to enhance information accessibility among rural and marginalized communities (Rose, 1995; Proenza, et al., 2001). According to Benjamin (2001), telecenters in Europe, North America and Australia focus mostly on computer and internet connectivity rather than telephony. This is the opposite in Tanzania where this study found additional services such as radio, telephone, fax, photocopy, printing and scanning services being provided by telecenters.

1.2   Introduction of telecenters in Africa

Most African countries are poor, poverty among these countries are due to a number of reasons including poor information facilities and access. The introduction of telecenters in these countries in the 1990s aimed at improving information accessibility. Ojo (2005) points out that telecenters promote the use of ICTs for community development, provide information services to communities, provide communication services to communities and provide training in the use of computers, methods of carrying out different activities by way of demonstrations and so on.

Various national and international organizations funded telecenters in Africa. Mayanja (2003) acknowledges the role played by IDRC, UNESCO, ITU, IICD, and ECA and others in telecenter projects in Africa. Due to the support provided by these organizations, a number of telecenters have been introduced in Africa. For example Northern and Western African countries have the largest number of telecenters in the continent, Benjamin (2000) describes Senegal to have over 9000 telecenters by the year 2000, while Cairo and other cities in Egypt have the largest number of telecenters popularly known as phone shops.

Sub Saharan Africa, the poorest part of the globe suffers from poor information accessibility. To improve information flow in the region, telecenters were introduced and funded by various organizations including ACACIA. According to Rose (1999), the International Development Research Centre (IDRC) established ACACIA project aiming at promoting access to ICTs among rural and semi urban people and therefore between 1997 and 2000, ACACIA established a total number of 35 telecenters in Benin, Tanzania, Mali, Uganda, Mozambique, Senegal and South Africa.

Like the rest of Sub Saharan Africa, Tanzania has poor information accessibility (Hakielimu, *et al* 2005). The concept of telecenters was adopted to improve information flow. According to COSTECH (2005), Sengerema Multipurpose Community Telecenter developed in late 1990s and became officially operational in 2001 was the first telecenter in the country. From then various other telecenters have been introduced at Kilosa, Ngara, Mtwara, Kasulu, Dakawa, FADECO and Lugoba

Telecenter services in Tanzania can be reliable and affordable means of communication in rural areas because they have a potential to provide a range of services such as computer training, internet access, conference facility and meeting, secretarial and consultancy services, telephone and fax services and community radios (Methusela, 2007).
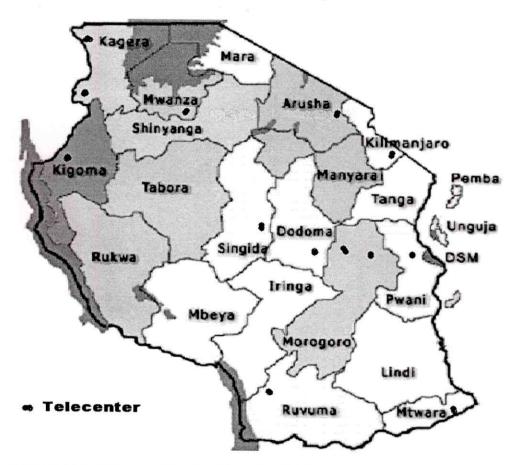
Figure 1: *Map of Tanzania Showing Telecenter Distribution*

1.3   Problem statement

There is a strong positive relationship between telecenter, information flow, meeting information needs and socio-economic development. Etta and Wamahiu (2003) and Kapange (2004) have emphasized the role played by telecenters in improving information flow and accessibility, satisfying information needs, promoting ICT services and bringing about socio-economic development in most marginalized communities.

Despite the fact that telecenters are potential services that can improve information accessibility, in Tanzania there are limited numbers of studies that have been done to find out how these services are used by local communities. There are also limited studies aimed at finding out the challenges facing the telecenters and how the operators of the telecenters try to overcome the challenges. This study therefore was carried to identify the services offered by telecenters in rural areas, the use patterns and challenges facing telecenters in Tanzania.

2.   LITERATURE REVIEW

The state of information accessibility in rural areas in developing countries

Most rural areas in developing countries have limited information. Limited means of electronic communication with the outside world are just one source of isolation of rural communities and economies from the forces of national and global integration, albeit an important one (Caspary and vidO'Cannor, 2003). According to Sunden and Wicander (2003), the majority of the poor people living in rural and often isolated areas have no contact with the world beyond their nearest neighbors. They live in information-deserted areas.

Due to limited information needed for decision making, most rural people in developing countries face difficulties in decision making regarding their socio economic activities hence contributing to poverty among them. The level of awareness among most farmers on agricultural innovations for example is too low due to limited information leading to poor decisions on the use of scarce resources and farming technologies. Supporting the scarcity of information for decision making, Manda (2002) points out that the majority of farmers do not necessarily make critical agricultural decisions on the basis of scientific and technical information. It is for this reason technological advancement has no impact to lives of most rural people in developing countries.

Various reasons are known to hinder information accessibility in rural areas. According to Ellen (2003), these factors include societal, institutional, psychological and intellectual ones. Societal factors are responsible with blocking the availability of resources necessary for satisfying the information needs within the society and institutional barriers are due to unwillingness of the information providers to provide information. Ellen (2003) states further that physical barriers to information accessibility are caused by poor information infrastructure while psychological barriers are due to the failure of the individuals to perceive their information needs or failure to obtain needed information from appropriate providers. Other factors according to Williamson (1997, 1998) include cost of the information and fear to access information by the community.

Generally, there is limited information needed for decision making in Africa and the rest of the developing world. This calls for studies to identify all the barriers to information accessibility and strategies to break such barriers. All stakeholders in the information field have a role to play in ensuring access of information in these areas.

Means used to disseminate information in rural areas

Several media and channels are used to disseminate information in rural areas. Maru (2003) and Etta *et all* (2001) mention radio, television, fax, internet and digital technologies, print (products of the press) and computer based or computer mediated modes as common media used in information dissemination. According to Yonah and Cons (2005), ICTs may include simple information centers with notice boards, books, brochures, posters and newspapers, simple content systems running on cheap (safely disposable) hardware, like audio and video cassettes, disconnected mailing systems, to locally browse-sable content accessible through a range of electronic technologies such as telephone, fax, television, and radio.

ICTs have been successful in providing information in developed nations. According to Kellerman (2000), information technology evolved in between 1960s and 1970s. Primarily there is communication technology and information technology. The two technologies have been incorporated into Information and Communication Technologies.

ICTs can act as facilitators to decision making. They enable communication, a process that links

individuals and communities, governments and citizens, in participation and shared decision making. ICT services like that of the internet are able to offer enormous benefits to rural communities and agricultural organizations. They are able to improve communication between the non-governmental organizations, government services, private sector entities and educational institutes that support rural and agricultural development. By sharing information about their activities in the fields of agriculture, rural development, forestry, fisheries, health, nutrition, and education, these agencies can better serve rural people and farmers. They can make use of "lessons learned," determine and use "best practices," and coordinate information about particular regions or successful development approaches. At the same time, rural communities and agricultural organizations can benefit equally from improved vertical channels of communication that enable rural stakeholders and farmers to communicate with decision-makers and others concerned with development (Jonathan and Matambalya, 2004; Yonah and Cons, 2005).

ICTs also improve horizontal communication through existing media services that serve rural stakeholders. For example, throughout the developing world, rural radio and, increasingly, television broadcast services, are important information delivery mechanisms. Their services improve significantly through the exchange of information and news by way of the Internet. African news items are commonly circulated among African news agencies via the Internet. Rural African radio stations are able to take advantage of Internet services to provide extension and rural development information from qualified research sources from around the world (Richardson, 1997).

Despite the usefulness of ICTs, information disseminated to users should be presented in relevant formats. Issues of language and ethical issues should be paid the relevant attention. Yonah and Cons (2005) mention three important variables necessary for ICTs in information dissemination to be connectivity, affordability and capability of the targeted users to use ICTs. The choice of what ICT to be used in a given rural area must depend on the availability of connectivity of the ICT tools, affordability of services and capabilities of users of the information services in the respective rural area.

Telecenters in disseminating information services in rural areas

Majority of people in developing countries live in rural areas and engage themselves in agricultural activities. Describing a Tanzanian case; Kapange (2004) mentions that more than 84% Tanzanians are rural dwellers and engage themselves in agricultural activities. For instance, in Tanzania, The scientific knowledge and information in the agricultural sector is generated through National Agricultural Research Institutes (NARIs), which comprise of the following: Department of Research and Development (DRD) of the Ministry of Agriculture, Food security and Cooperatives, Tropical Pesticides Research Institute (TPRI), Sokoine University of Agriculture (SUA), Tanzania Forestry Research Institute (TAFORI), and private sector that includes crop and animal research institutes (Kapange, 1999). However; the information generated by these units have not always reached farmers perfectly, and timely due to a number of reasons including a weak extension system. It is at this juncture that telecenters can help to improve information accessibility among rural people in Tanzania.

Telecenters have been seen as a means of addressing the lack of ICTs throughout Africa and of assisting in providing universal access, to both telephony and other forms of ICTs (Benjamin, 2000). Telecenter is one answer to the prevailing condition of uneven and unequal

access to information and communication technologies in rural and or remote areas (Etta, 2003). According to Harris *et al* 2001 in Songan (2004), one of the competitive advantages of telecenter over other information dissemination methods such as print media is its capacity to provide more than one information services.

There are very few rural telecenters to meet the demands of information access in rural areas. It is estimated that there are only 22 telecenters for the whole country in Tanzania.

Benjamin (2000) describes the importance of having a defined 'catchment area' (Telecenter catchment area is an area within which another telecenter can not be established).Telecenter catchment area ensures that people get access to information services within a walking distance from their residential areas. However, factors like the economic status of a country, population size of an area and distance neighboring villages are used in deciding the telecenter catchment area. Giving an example of telecenter catchment area in Senegal Benjamin (2000) points out that in central Dakar the catchment area can be as small as 100m, in outer Dakar it is 500m, and the area is much wider in rural areas.

Gómez *et al* (1999) mention various types of telecenters including; basic telecenter, civic telecenter, cyber café and multipurpose community telecenter. Multipurpose telecenters provide a many information services. Unlike multipurpose telecenters, basic telecenters provide very few information services. Gómez *et al* (1999) mention basic telecenter as the one located in rural or marginalized area, where the population has limited access to information services and are can hardly use sophisticated technologies to access information. Civic telecenters are the public institutions which offer information services including internet services to the public. According to Proenza *et al* (2001), cyber cafés are commercial internet and computer access points. Benjamin (2000) mention about mobile telecenter which have a potential of serving a large population as it can be moved from one geographic location to another.

Decision on what type of a telecenter to be introduced in a particular area depends on information need, literacy level, financial capabilities and infrastructural development. In place where people have varied information needs it is important to have a multipurpose telecenter. Unlike the illiterate people, literate people can be able to use sophisticated information and communication technologies that a telecenter with internet services can be suitable to them. Financial status rules out on the type of telecenter to be constructed in a given location depending on the economy in hand. If the economic status is favorable a multipurpose telecenter can be constructed, however, if there are financial difficulties a telecenter with one or two services can be a better option.

Services provided by telecenters

The number of services provided by a telecenter depends on the type of a telecenter. As Proenza *et al* (2001) state, multipurpose community telecenters provide more services than a basic or civic telecenter. However; telecenters provide different information services to the communities they serve.

Jensen and Esterhuysen (2001), Latchem and Walker (2001) and Benjamin (2001) mention telephone and fax services, printing and photocopy services, library, training, internet and computer services are some of the services provided by telecenters. Other services provided include e-mails, CD ROM, television/video and community radio. However; the type of information and information services provided by a telecenter depends on a number of factors including information need and literacy level of the expected information user. It is thus necessary

to know all community variables related to information need before deciding to provide a certain information service through the telecenter.

Sustainability of telecenters in Africa

Telecenter sustainability ensures the continuity of provision of information services. Mayanja (2002) describes telecenter sustainability in terms of "sustainability of services, relevancy of services, financial sustainability and human resource sustainability". However sustainability of facilities is vital for a sustainable telecenter.

Analyzing on telecenter financial sustainability, Mayanja (2002) suggests that the telecenters should have financial assistance from either governmental or private sector. This is important as funds are needed to cover daily operations of the telecenter such as telecommunications costs, power bills, repair of facilities and salaries.

Fund raising strategies must be necessary to cover such costs. Mayanja (2002) mentions one of the commonest ways of raising funds which is through user fee. However he cautions on the effect of this fund generating method as it depends much on the number of users of the telecenter. It is difficult for such centers to be sustainable without support from other organization keeping in mind that most rural people in Africa are poor (Benjamin, 2000). Rose (1999) stresses that the total expenditure of telecenter exceeds the revenue generating potential of the concerned communities, and that, for reproducibility and sustainability, major efforts are needed both to decrease costs and to balance them by revenues.

Human resource sustainability is very important for each telecenter. Most telecenters can be at a risk of human resource instability due to the fact that most learnt people do not like to work in rural areas. As is the case with other developing countries, most skilled manpower prefer to work in urban centers where most basic services are located. As Rose (1999) puts it in the case of telecenters, most skilled human resources work at national levels. This phenomenon ruins efforts to reach a majority of rural populations with information using an approach of telecenters. This is a policy issue which requires commitment from both the governments on one side and the ICT personnel on the other side.

Community involvement and participation in the establishment of telecenter and other ICT projects in all stages is another important sustainable factor of any telecenter. This factor is important in promoting sense of belongingness among community members. According to Etta *et al* (2001) when the community is involved in telecenter and ICTs projects in their areas they become more motivated to use the project and take good care of it. However there can be other sustainable factors necessary for a telecenter.

Factors influencing the use of telecenters in rural areas

Various factors are known to influence the use of telecenters. Gender may influence the use of a given telecenter. For instance, Hudson (2000) reported that women are more likely to use the telecenter more if there is a female staff in the telecenter. Describing the barriers to using telecenters; Ellen (2003) mentions lack of telecommunication networks, limited types of services, costs of using services and lack of information skills among users as the common factors affecting the use of telecenters. Owen and Darkwa (2000) point out poor communication infrastructure in rural areas and human resource limitations as other factors limiting the use of telecenters in rural areas. However according to Etta (2003), traditional barriers to new technology is another factor which affects the use of the telecenter. Such factors influencing the

use of telecenters may not always have the same influence from one community of telecenter users to another; it is at this juncture that a thorough study of the factors influencing the use of telecenters with respect to a given community is important.

3.0 STUDY METHODOLOGY

3.1 Design

The study applied ethnographic exploration which included a combination of participant observation and key informant interviews with key actors in the stakeholder communities. Purposive sampling of rural telecenters was done to get the four study sites, namely Kilosa, Mpwapwa, Kasulu and Karagwe (FADECO) telecenters.

3.2 Location of the study areas

3.2.1 Kilosa telecenter

This telecenter is located in Kilosa district which is located in Morogoro region. The district borders Tanga region in the north, Morogoro rural district in the east, Kilombero district and Iringa region in the south and Dodoma region in the west. It has a total land area of 14,245 sq. kilometers, which is 19.5 % of the total land area of Morogoro region. According to 2002 census the population of the district was 488,191. In this study, the population was limited to the residents of Kilosa and Kimamba divisions. The sample frame was of 22,535 people living in 5 villages included in the study area and only 100 people were randomly included in the sample.

3.2.2 Mpwapwa telecenter

This is located in Mpwapwa district. This district is located in the eastern side of Dodoma region. It shares the boundaries in the western side with Dodoma rural district and Kongwa district in the northern side, Kilosa district in the eastern side and Iringa rural district in the south. It has an area of 7,485 sq. kilometers which is equivalent of 18.1 % of the total land area of Dodoma region. According to 2002 census the population of the district was 254,500. It is situated at an altitude of 1040 metres above sea level. The major economic activities are agriculture and livestock keeping. The main crops include maize, fingermillet, bulrush millet, sunflower and sweet potatoes. Livestock types include cattle, goats, sheep, donkeys, pigs and poultry.

Secondary data regarding use of telecenter services was collected from the telecenter. Data on equipment available and information services provided, users statistics and other facilities available at the telecenter was collected.

3.2.3 Kasulu telecenter

This is located in Kasulu district. This district is located central-north-western part of Kigoma region. It borders Burundi in the north, Kibondo district in the east, Kigoma district in the south and west. It has a total land area of 9,324 sq. kilometers, which is 25.2 % of the land area of Kigoma region. According to 2002 census the population of the district was 626,742. The major economic activities include crop farming and livestock keeping. The major crops cultivated include maize, cassava, beans, banana, coffee, cotton and tobacco. Livestock include cattle, goats, sheep and poultry.

Secondary data regarding was collected from Kasulu telecenter. Data collected was about equipment and information services provided, users statistics and other facilities available at the telecenter.

3.2.4 FADECO telecenter

This is located in Karagwe district. Karagwe district is located north western corner of Kagera region. The district borders Uganda and Bukoba rural district in the north, Bukoba and Muleba districts in the east, Biharamulo and Ngara district in the south and Rwanda in the west. It has a total land area of 7,558 sq. kilometers, which is 25.8 % of Kagera's total land area. According to 2002 census the population of the district was 450,000. The major economic activities are crop farming and livestock keeping. Major crops cultivated include coffee, banana, beans and maize. Livestock kept include cattle, goats, sheep,, pigs and poultry.

The study collected secondary data from the telecenter. Data collected was about equipment and information services provided, users statistics and other facilities available at the telecenter.

3.3 Data collection instruments

Two data collection implements were used to gather data. Structured questionnaire was used to gather data from community around Kilosa telecenter where as semi-structured questionnaire was used to gather data from telecenter staff from the four telecenters.

Radio tuning was done in community around Kilosa and FADECO telecenters and observation of facilities and documentary review were done at all the four telecenters. The other two telecenters had no community radio.

3.4 Data analysis

After data collection, data were processed and analyzed using SPSS and content analysis.

4.0 STUDY FINDINGS AND DISCUSSION

4.1 Number and kind of telecenter facilities available at the telecenters involved in the study

All the studied telecenters had varying number and types of equipment as indicated in the Table 1. Two of the studied telecenters offered community radio services, which are Kilosa Community Radio in Kilosa district and FADECO Radio in Karagwe district. In addition centers at Mpwapwa, Kasulu and FADECO had a number of CD-ROMs. Tape recorders and digital camera were present at Kilosa and FADECO telecenters.

Table 1: Number and kind of facilities available

Facility/Telecenter	Kilosa	Mpwapwa	Kasulu	FADECO
Computers	10	72	41	4
Fax machine	1	1	1	1
Photocopier	1	1	1	1
Printer	1	1	1	1
Radio and accessories	1	-	-	1
Satellite dish	1	1	1	1
Landline phones	1	1	1	1
Television screen	1	1	1	-
Scanner	1	1	1	1

Source: Field data 2007

4.2.0   Description of telecenters studied and kinds of services and users of telecenters

The studied telecenters were all basic telecenters (basic telecenters provide limited information services).

4.2.1   Kilosa Telecenter

Kilosa telecenter offered two services namely community radio and computer training to the community despite having different types of equipments. It was mentioned that other equipment had either various technical; problems or meant for telecenter management. The services such as internet, photocopy, scanning, and printing services were accessed from other information services providers in the district. It was also found that these services are mainly used by a majority of civil servants and secondary students in the district town. Farmers mainly tune in to the community radio.

4.2.2   Mpwapwa Telecenters

Mpwapwa telecenter started in 2006 and became fully operational in April 2007. The major aim of the telecenter was to respond to global challenges with regard to integration of ICTs in learning activities, equipping teachers with skills to use computers in education and to transform teaching material preparation and information access and sharing. The telecenter offers internet services to the community around that include teachers and students of the college (Mpwapwa Teachers College), council workers, NGOs in the district, Red Cross staff, school headmasters, Open University Students and many more. In addition, the telecentre conducts short term training of computer courses to form four student leavers. The most frequently used telecenter service is the internet.

4.2.3   Kasulu Telecenter

The center started in 2002 with a major aim of providing information services to the community. The telecenter provides internet services, offers photocopying and facsimile services, these services are offered at a fee. A majority of users at this center are youths from secondary schools especially during months of December and June when they are in long vacations. The most frequently used services include internet surfing, photocopy, and e-mails. Users communicate with colleagues in the region and those outside Kigoma region. Most students and other users mainly surf Google and Yahoo search engines to read newspapers, e-mail services and few

access information resources for their education work.

Findings from these telecenters show that very few people especially rural farmers use and benefit from the potential that is offered by telecenters in terms of information access (Table 2 below). For example, the in charge at Kasulu telecenter was able to remember that only one farmer used to visit the telecenter to search for information related to environmental conservation. On in-depth interview with that farmer he was found to be an owner of an NGO dealing with tree planting in the neighborhoods of Kasulu Township. At Kilosa and Mpwapwa the in-charges could not remember whether farmers have ever visited the telecenters for information seeking. Thus, there is still a long way to go for telecenters to yield tangible benefits among the rural farming communities.

Table 2: Number of Telecenter users compared to population in districts studied

District	*Population (2002 census)	Average telecenter users per day	$Number of users per year	% population using telecenter per annum in the catchment area
Karagwe	450,000	10	3650	0.8
Kilosa	488,191	20	7300	1.5
Mpwapwa	253,602	50	18250	7.2
Kasulu	626,742	30	10950	1.7

Source: Field survey (2007).
*Source: NBS (2006).
$Assumption: every day the same average number of users uses the telecenter throughout the year.

As figures indicate from Table 2 above, very few people were found to use the telecenter services at station at FADECO telecenter in Karagwe. FADECO telecenter was transforming to community radio services for communities in the villages away from the telecenter. At Mpwapwa and Kasulu most services are used at the stations and therefore operators of telecenters are able to keep a record of a number of people using the services.

4.2.4   FADECO Telecenter at Karagwe

Karagwe district with 120 villages (a district in this case consists of more than one division and more than twenty villages) had a population of 450,000 of people according to population census of 2002 (NBS, 2006). It is very far from Dar es Salaam (the capital city of Tanzania), over 2200 km. There are no newspapers and the national radio does not reach the population there. Thus there are very few means that people use to get information regarding various activities. To confront this situation, FADECO telecenter was started in 1999 to serve the people with information access in the district. Before the centre came into full operation, it passed through a series of transformations such as the establishment of rural library/resource center with books, CD-ROMs, and newsletters between 1999-2002; introduction of notice boards at ward offices in the district, introduction of public information access points with computers sharing resources on a local area network between 2002-2004 and the introduction of public internet access (e-mail and internet) from 2004 to 2007. As of recent (2007), the center is going away from internet services to community radio services.

The major activities and services this center is offering to the community in Karagwe district are to

repackage information into radio programs on the following major areas: markets, environmental conservation, water and sanitation, education sensitization programs, agricultural and livestock production, health and nutrition, business issues and entertainments. All the programs are broadcasted in Kiswahili and sometimes a native language (kinyambo) spoken by community within the district. Moreover, the telecenter allows people to go and talk in radio to share experiences in the community like farming using certain indigenous knowledge with other people at no fee. Sometimes live talk shows and online discussions via telephone are performed.

However, the center suffers several challenges worth mentioning here some of which are different from the rest of the three telecenters. . For example it lacks modern equipment for information gathering such as recorders, computers and means of transport for travel to reach people in villages located far from the center. It lacks a modest amount of funds to train its staff in information gathering and repackaging into useful programs for rural farmers, and running the center. It faces some policy restrictions by the communications authority due to closeness to borders of Rwanda and Burundi which are known to frequent troubles because of refugee movements. Lack of trained qualified staff to run the radio is another challenge the centers is tasked to overcome.

4.3 Factors influencing use patterns of services from telecenters studied

The findings of this study show that the telecenter service use is influenced by a number of factors. These include the type of information services offered, distance of users from a telecenter, costs attached to services, education level of users, presence of other similar services, reliability of the telecenter, age, sex and occupation of respondents.

The quality and type of telecenter services has a strong impact on use of the telecenters. It was discovered that the quality of radio programs as compared to other popular radio stations in Tanzania was not good enough to attract many listeners at Kilosa. The services offered by the telecenters were also not very well known by a great majority interviewed at Kilosa. Between the two services offered by Kilosa telecenter for example, radio was better known by 87% of respondents interviewed while computer training was only known by 5% of the respondents. High rates of telecenter usage were reported Mpwapwa and Kasulu.

For better performance of the telecenter, the number of information services should be many so as to supplement each other. Moreover, many information services can help to meet preference of information users who may prefer one information service over the other. For example, one can prefer to use internet to newspaper while the other can prefer books to radio. If there are few information services, preference of users will be limited hence affecting the capacity of the telecenter to meet its objectives. However, the type of information services provided by the telecenter must be chosen on the basis of preference of users. The variety (number of information services provided) and quality of information service influences the user either to use or not use a given information source. The level of satisfaction of information services offered by a telecenter was linked with variety and quality of information services. Those who were not satisfied with telecenter services mentioned that the few information services offered limited the ability of the telecenter to meet their information needs. The quality of services offered was also mentioned as another important factor which influenced one's level of satisfaction with telecenter services.

Telecenter managers reported that the services of their telecenters are not known due to the fact that there are financial constraints in marketing and publicity of their telecenters. Most telecenter operators are unable to publicize their services beyond their gates due to inability to travel to a

wide catchment for that purpose. Thus, many remain inaccessible to target stakeholders (the rural population).

With regard to distance, residents living closer to telecenters are in a better position to afford visiting the centers and can keep away with costs that may be involved in travelling to reach the centers. Similarly, for services of radio, reception is always better near the radio station than distances far from the station. Thus, the community living near the station is placed in a better position to know and access the telecenter services than is community living far from the telecenters. This is why managers of telecenters reported that a majority of users of their services have been students, and servants often arriving for long vacations and or working at district headquarters respectively where the telecenters are often located.

Table 3: Distance from respondent's resident and usage of the community radio at Kilosa

Distance from telecenter (community radio) km	Percentage distribution of users and non users of community radio among the respondents	
	Users	Non users
1-7	53 (98.13%)	1 (1.85%)
8-18	14 (46.7%)	16(53.3%)
Above 18	11 (68.8%)	5 (31.2%)
Total	78	22

SOURCE: Field data (December, 2007)

For instance, responses obtained when respondents were randomly interviewed at different distance intervals (as indicated in Table 3), in respect to Kilosa community radio, the results show a gradation in number of users of the community radio. The number of respondents reporting use of the radio decreased from 98.13% at an interval of 1-5 km to 68.8% at the interval above 18 km.

The major reason for such a decline can be due to the fact that the radio had limited frequency coverage and therefore, as one moved away from the telecenter the signal strength decreased which also means decreased number of people able to use the radio. The strength of radio signals was high from the telecenter up to 10 kilometers. A majority of people living around the periphery of district town center at Kilosa had almost a similar economic status, a majority lacking radios from where to listen to even if signals were strong. These are living eight kilometers and above in this study. Therefore one finds a small decline in users and non-users of the community radio from eight kilometers on wards. Computer training service was also least used by respondents as only 5% of the respondents used it. It was also discovered that all of the 5 respondents who attained computer training live within the 7 kilometers from the telecenter. It is at this point the concept of a defined telecenter catchment area arises. If there is a well defined catchment area people can be able to enjoy telecenter services without distance barriers. Distance between neighboring villages, population size and availability of other information services are some of the important factors in defining a catchment area.

At Karagwe (FADECO) and Kilosa, listening radio services are free to the community as it is just a matter of tuning to the right frequency. However, advertisements are charged at a rate ranging

from TZS 1000 to 5000 depending on the time taken for the advert. Greeting cards cost TZS 500.

Computer training and other services such as photocopying, facsimile, printing and scanning are charged a fee. For example, computer training at Mpwapwa, Kilosa and Kasulu till December 2007, was charged at a rate ranging from TZS 15,000 to 20,000 per program. Photocopying stand at between 100-150 TZS per page, scanning at TZS 1000 per page and facsimile at 500 TZS per page. This amount is thought by telecenter staff to be unaffordable for the majority of rural communities most of whom are peasants. Thus, the services were reported to be most popular for businessmen and white collar job employed staff around the telecenters studied. This is what Yonah and Cons (2005) mentions to be a hindrance to ICTs capability to disseminate information to rural areas. When people lack sufficient finance to pay for the telecenter services it is quite difficult for them to appreciate the services offered.

Thus the impact of user fee on the telecenter services use is significant among local communities. Despite the fact that fund raising strategies are important, such charges per program in rural areas were so high.

Education level and nature of work too can influence the pattern of use of telecenters. In all the four telecenters visited, staff reported that the use of internet, fax, photocopy and telephone was high among secondary school students and employed staff from organizations working within the districts than are rural farmers. It was reported that the use of internet peaks during months of December and June when examinations results are released by the ministry of education and vocational training. At Mpwapwa telecenter, it was reported too that headmasters of primary and secondary schools use the internet frequently to send reports to the ministry of education and vocational training, a system launched recently by the ministry. As a means to provide fast tracking mechanisms and reporting by the Ministry of Education and Vocation Training, headmasters have been asked to send their reports to the ministry using internet services. As a pilot scheme, Mpwapwa telecenter was picked for the exercise in order to be replicated to other centers should the exercise prove useful to the ministry. A majority of people living in rural areas have low levels of literacy in terms of using ICTs let alone the ability to read and write (general literacy). It is not astonishing therefore that most users of the telecenters have been those from schools.

The availability of other information services influences the way the telecenters are used. During the period of study, several other information sources and channels were identified among the communities around the telecenters and were preferred and used differently among the community. The sources and channels identified include radio, television, cell phone, internet, newspaper and magazines, and library. Others included extension officers, leaflets and posters, researchers and face-to-face communication as shown in Table 4.

From Table 4, it can be seen that radio stations other than community radio station aired at the center were most preferred by respondents as 97% of respondents mentioned them as the preferred information sources. This was most notable at Kilosa community radio because in Karagwe, the only radio in operation which is also a channel to connect to other local and international radios was FADECO radio. Most respondents at Kilosa and Mpwapwa mentioned such other radio stations as; Radio Free Africa, Radio Abood, Ukweli, Radio Iman, Radio Tumaini and Radio Tanzania Dar es Salaam both from Tanzania. At Kasulu the most popular radio station was radio Kwizela (broadcast from Ngara district), Radio Free Africa, British Broadcasting Corporation and Deustch Welle.

Table 4: The other information channels/sources used by respondents in the study areas

Other channels/source of information	Percentage distribution of respondents who preferred the sources/channels
Other radio stations	97%
Radio Jamii Kilosa (community radio)	78%
Newspaper and magazines	68%
Television	67%
Cell phone	66%
Face to face communication	64%
Leaflets and posters	18%
Library	11%
Extension officers	11%
Internet	5%
Researchers	5%

Source: Field data (December, 2007)
Note: Respondents gave more than one response

It was also found that 67% of respondents preferred televisions as an information source, 66% preferred cell phones and only 5% preferred the internet. It was found that 68% of respondents preferred newspaper and magazines as the alternative information source while only 11% of respondents preferred libraries and extension officers as their other information sources. 18% of the respondents preferred leaflets and posters as an information source, 5% of respondents mentioned researchers as an information source while 64% mentioned face to face communication. The internet and researchers are the least preferred information sources. Other radio stations and television were most preferred to community radio by respondents because of their wide coverage strength and good programs. The FM radio stations are popularly known and preferred for their gospel songs and music. Others like radio Tanzania, BBC and Deustch Welle are preferred for their local and international news coverage. Other sources/channels like leaflets, extension staff, library, and posters were least preferred because they are few or not existing in many parts in the district.

4.4 Challenges of telecenters in Tanzania as an avenue for information access

One of the challenges in usage of telecenters in Tanzania is a lack of many of them in different parts of the country. It is estimated that there are only 22 telecenters for the whole country. Thus, it is difficult for a majority of the population estimated to be over 40,000,000 to explore the opportunities of these few telecenters. Another challenge is insufficient funds to run the telecenters. In all the four telecenters studied operators cried of lack of sufficient funds to buy enough ICT facilities. This means also that they fail to send staff for training to upgrade their skills, difficult to market their services and failure to meet costs for electricity and bandwidth bills.

Low bandwidth is another challenge for most telecenters in Tanzania. Thus, users are discouraged by slow speed of the internet whenever they use it. Lack of enough funds makes it difficult for owners to buy high bandwidth. Although managers of the telecenters were not asked to give the band width for their services, it was apparent that it was low as most of them cited slow speed of their internet connection. Studies in many developing countries have indicated that slow connectivity is a result of low band width. Again this is supported very well by Yonah and Cons when they assert that a pre-requisite for effective information dissemination and accessibility include connectivity (good connectivity), affordability and capability.

The owners of telecenters also mentioned high prices of ICT facilities as being a major challenge. Although there is tax exemption of imported ICT facilities in Tanzania, the operators still find them expensive due to distances that they have to move them to remote locations in rural areas where they are located. Besides transport inside Tanzania, there is also the cost of transport *to* Tanzania.

Unreliable and expensive power supply is another big challenge. For telecenters connected to National Power Supply (such as Karagwe, Mpwapwa and Kilosa), the owners of telecenters complained that they usually experience frequent power interruptions during rain season, which interferes a lot with effective service delivery. At Kasulu telecenter, the power source entirely used is solar and a standby Genset. Even then, it is expensive to maintain them and put them on through out the day.

Lack of skilled staff and technicians for ICTs in rural areas is another big challenge. Most skilled ICT staff and technicians live in urban areas where modern services are found. Thus it becomes difficult for rural telecenters to operate smoothly for most of the time due to lack of frequent servicing. A telecenter manager at Kilosa stated that whenever a computer fails he used to call a PC technician from Dar es Salaam to make repairs, a distance of over 300 km. He has to pay technical work and night for the technician and transport.

For users lack of information in local content in the internet is another challenge for most telecenters. A lot of web based information resources are in foreign languages not understood by local communities. Moreover, information materials are about foreign countries. This hinders communities to appreciate the opportunities offered by telecenters. Since computer and internet phenomenon are recent technologies and since a majority of local communities are information and computer illiterate it means they lack appropriate skills to access telecenter services information searching. Therefore they end up using wrong search strategies, terminologies and key words in the search process. This gives them poor results and frustrates them from continued use of the services.

5 CONCLUSION

From this study, it is found that not many rural communities use the services optimally. The level of use of the four studied telecenters was very low despite the limited access to information faced by people in such areas. Very few people afford to use the telecenters mostly due to large catchment area and service associated fee. There are also a number of factors influencing the use of telecenters such as the type of services offered, the number of services and the quality of services provided. Other factors like distance from the telecenter to the user's resident, occupation, cost of services provided and level of education of users influenced too the use of the telecenters.

So as to meet their objectives, telecenters should provide information relevant to people's need. Information packages should be in different formats that different groups of information seekers can be able to access information.. As different information seekers prefer different information services, the number of information services provided should base on user preference, moreover; user fee should be relevant to the average income of the telecenter users, this can optimize the use of information services by a majority of farmers who are financially poor. Consideration of telecenter catchment area is of an equal importance towards an information rich society.

6 RECOMMENDATIONS

Since telecenters are meant for provision of information services in rural and marginalized areas, it is expected that they will be located in relevant areas. Location consideration is important for telecenters to meet their objectives. So as to enable telecenters in Tanzania meet their objectives better, the following are recommended:

1   For better performance of telecenters, the quality existing services provided should be improved. This is a strategic process which involves the improvement of human resource and facilities at the telecenters. Moreover; financial stability is equally important in the process of improving such services. It is therefore, recommended that the number of telecenter services should be improved so as to provide a variety of services among users. This will help to attract many users and provide opportunities to earn more income that can in turn be used to expand the services.

2   When a specific area has many information sources; the telecenter which for sure must have started before the other information sources should provide information services not provided by the rest of the information sources. Telecenters should assess the importance each information service provided from time to time; those considered to be redundant should be eliminated.

3   Some of telecenters in Tanzania are not located in rural areas per se; they are located in areas with many alternative information sources. As there are many areas in Tanzania which are marginalized, and are information-deserted despite their agricultural production potentials. It is recommended that telecenters should be located in appropriate areas.

4   Telecenters owners should strive to market their services intensely to create awareness to as many people in the community as possible so as to improve the viability of their services. If possible the existing telecenters should form a consortium to increase their lobbying capacity to approach donor community communities. This will also help them to eliminate possibilities of service redundancy.

5   Telecenters should collaborate with institutions dealing with research in different areas in the country (particularly with agricultural research centers that could offer materials in agricultural areas specific for requirements of a particular zone in the country).

Lastly, it is important to consider the catchment area whenever starting a telecenter project, with financial difficulties a mobile telecenter can be the best alternative due to its ability to reach a wide area and serve more people.

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