



**FACULTY OF TECHNOLOGY**

**DEPARTMENT OF ELECTRICAL  
ENGINEERING**

**TELECENTRE ASSESSMENT SURVEYS**

**NAKASEKE AND BUWAMA MULTIPURPOSE  
COMMUNITY TELECENTRES**

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## **ACKNOWLEDGEMENTS**

It is very clear that the effort put into the production of this work was phenomenal and could not have been produced by only the author. First and foremost, I would like to thank God who has never left me alone. He has stood by me all the way, leading me through all troubles and problems to the successful completion of this work.

I would like to thank my training colleagues Okwany Robinson Olyel and Asimwe Kyoma Paul for their cooperation during and after training. We have had similar challenges and they helped me understand some of the concepts in wireless technology.

I would like to appreciate Mr. Peter Balaba for all his support and help when I was carrying out the telecentre assessment survey Nakaseke Multipurpose Community Telecentre. He was very nice to me and I will always be grateful.

In a similar way, I would like to thank Ms. Lydia Nyanzi Nankabirwa, the manager at Buwama Multipurpose Community Telecentre, for the help she rendered me when I was carrying out the telecentre assessment survey in Buwama.

I would also like to thank the project consultants, Dr. Alberto Pascual Escudero and Louise Berthilson for their guidance and advice especially while formulating the survey questionnaires.

Lastly but not least, I would like to extend my appreciation in a special way to the project director, Dr. Kabagaju Okello Dorothy. She helped me all through in so many ways and this survey would have been impossible without her. She gave so much guidance and advice in formulating the survey questionnaires as well as giving guidance on how to carry out the survey.

## **ACRONYMS**

<b>CWNs</b>	Community Wireless Networks
<b>CWRC</b>	Community Wireless Resource Centre
<b>DSTV</b>	Digital Satellite Television
<b>GSM</b>	Global Systems for Mobile Communications
<b>HEP</b>	Hydro Electric Power
<b>ICT</b>	Information and Communications Technology
<b>IDRC</b>	International Development Research Centre
<b>IEEE</b>	Institute of Electrical and Electronic Engineers
<b>ISP</b>	Internet Service Provider
<b>LOS</b>	Line Of Sight
<b>MTN</b>	Mobile Telecommunications Network
<b>NGO</b>	Non Government Organization
<b>UN</b>	United Nations
<b>UNDP</b>	United Nations Development Program
<b>UTL</b>	Uganda Telecom Limited
<b>VSAT</b>	Very Small Aperture Terminal
<b>WOUGNET</b>	Women of Uganda Network





## **CHAPTER ONE**

### **1.0 INTRODUCTION**

Initial surveys were carried out in 2004 by Kyle Johnston, an independent consultant from Canada, at six IDRC sponsored telecentres. In addition to the telecentre, the surveys also targeted potential partners in the area that would take part in the planned wireless network in a cooperative kind of arrangement. During this initial survey, a set of potential partners were immediately identified for most of the telecentres.

This project is aimed at exploring the possibilities of sharing the existing bandwidth at the telecentres with neighboring institutions through the establishment of community wireless networks. This will ensure that the costs of VSAT connectivity at each telecentre could be managed collectively and more institutions could get access to the internet without heavy initial investments in VSAT hardware and subscriptions. The project is to use equipment based on the IEEE 802.11 protocol for wireless networks, and operating in the unlicensed frequency bands

### **1.1 THE MBALE PROJECT**

CWRC trainees took part in a study in the Mbale area to assess whether community needs driven wireless networks, supported by open access approaches, are effective models for ICT-enabled pro-poor development. In other words, the study was carried out to assess the possibility of setting up a community based and owned ICT network in this area and the benefits that would accrue.

The main reason for taking part in this study was to gain enough knowledge about community wireless networks and the technical requirements involved. This was necessary to prepare trainees to carry out telecentre and partner status surveys on their allocated telecentres in the project “Implementation of Community Wireless Networks and a Community Wireless Resource Center in Uganda”.

The Mbale study was part of a big project that is supported by the UNDP. Similar studies are being carried out in four East African countries of Tanzania, Kenya, Rwanda and Uganda. In Uganda particularly, the initial study was conducted by WOUGNET<sup>1</sup> in May 2006 in the districts of Mbale, Nakaseke and Apac. Mbale was then chosen for an in-depth study since it presented better qualities, for instance the success of its cooperative

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<sup>1</sup> WOUGNET is an NGO established in 2000 by several Women’s organizations in Uganda to develop the use of ICTs among women as tools to share information and address challenges collectively. Its objective is to strengthen the use of ICT among women and women organizations, build capacities in ICT use and application, and expand activities to reach out to women in the rural areas.

unions, for the implementation of the ICT program. Mbale is to act as a pioneer to assess the success of the program.

The Mbale study was basically divided into two major phases. The first looked mainly at the community needs especially those that could be addressed by ICT services. It also assessed the readiness of the area to embrace such an initiative and be able not only to cooperate and sustain the network but also be able to share information in an open access approach. The second phase mainly looked at the technical side of the project. It assessed whether it was economically feasible to put up the network and what kind of technical needs would crop up, for example technical personnel to maintain the network.

## **1.2 PURPOSE OF THE SURVEY**

The study was aimed at answering the overall question: *Are community needs driven ICT networks, supported by open access approaches, effective models for ICT-enabled pro-poor development?*

This overall question was sub-divided into four specific questions:

- To which development needs of poor communities can ICTs contribute?
- What is the value added of community needs driven models?
- What is the value added by networking (people and technologies) models?
- In what ways can open access approach contribute to sustainability?

In other words, the study was carried out to assess the possibility of setting up a community based and owned ICT program and the benefits that would accrue.

## **1.3 SURVEYS<sup>2</sup>**

The approach that was adopted during this study was to first assess the general community needs of the Mbale area and then mainly focus on those that could be solved directly if the community was ICT-enabled. The benefits can include, among others, delivery of education, health and public services as well as easing communication between the town and rural areas.

The survey mainly targeted potential partners such as educational institutions, local government offices, community internet cafes, cooperative unions and NGOs. The main objective was to obtain their views on such an initiative since they would be the beneficiaries and owners.

### **1.3.1 Educational institutions:**

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<sup>2</sup> The survey questionnaire can be found in Appendix A.

In this category, the following educational centres were visited:

- **Primary schools:** Fairway Primary School was visited. It is located in the senior quarters about 3 km away from the town centre. The deputy headmistress was interviewed. The school is supported by Forum for African Women Educations (FAWE) which mainly supports education of the girl child in science subjects. The school is spacious and has sickbay, good hostels and DSTV but lacks enough books in its library and also suffers from heightened load shedding.
- **Secondary schools:** Wanale View Secondary School was visited. It is located about 1 km from Mbale town centre just on the outskirts. It is a mixed 'O' and 'A' Level school. The deputy headmaster was interviewed.
- **Tertiary institutions:** Institute of Management Science and Technology (IMSAT) was visited. This institution is located about 1 km from the town next to Mount Masaba High School. The principle was interviewed.

### **1.3.2 Cooperative Unions**

The cooperative union that was visited is the Bugisu Cooperative Union (BCU) which deals mostly in coffee. It is located around about 2km from the town centre along the Mbale-Soroti road. The general manager was interviewed.

### **1.3.3 Local Government Offices**

Bungokho sub county offices, around 5km away from the town on the Mbale-Tororo road, was visited. The vice chairman, deputy speaker and three councilors of the sub county were interviewed.

### **1.3.4 NGOs**

The NGO that was visited is Uganda Women Concern Ministries (UWCM). It is located about 6 km from the town centre along the Mbale-Tororo road. It is a women's initiative that mainly helps needy children as well as help women set up projects to sustain them. The NGO has three computers of which one is connected to the internet. The Programs Coordinator and acting Executive Director was interviewed.

### **1.3.5 Radio Station**

The news editor, also acting Station Manager, of Open Gate 103.2 FM was interviewed. Open Gate FM is located in Mbale town near Bank of Uganda Mbale branch. It is a private entity that covers most parts of eastern Uganda and the western part of Kenya. It employs about 30 people of which 7 are female. It has been operational for about 5 years.

### **1.3.6 Community Internet Café**

Telekom Equator Limited internet café was visited. This café was set up by government as part of its policy to provide internet services to the masses. The internet operator (administrator) was interviewed.

#### **1.4 AN OVERVIEW OF PEOPLE'S VIEWS**

In general, the people interviewed noted a wide range of needs as the major community needs. These include access to good education for all ages, good and well-equipped health facilities, good transport infrastructure especially in rural areas where most roads are seasonal and food security to counter the possibility of famine and hunger. Others are good communication infrastructure to connect rural and urban Mbale, improved sanitation and wider access to clean water, connection of rural areas to the national grid for easy access to power, creating employment opportunities especially among the youth, devising projects to enhance the poverty eradication process among households as well as access to a public library to provide information for all sectors. However, health and educational needs were identified by most of the people interviewed as the priority needs of the community.

The people were asked to give what kind of *information would enhance development* in the area. The following kinds of information were cited: Agricultural information to improve agricultural production since the area is mainly agricultural, information about health and sanitation as well as information on income generation and savings so as to improve people's livelihoods.

It was discovered that most people in the area meet their food requirements although they sell most of it due to poverty. This brings about food insecurity especially during periods of drought. However, most people are able to meet their housing needs (shelter) although building materials are rather expensive. However, it was also discovered that most people were unable to meet their medical needs since was not possible to visit private clinics where the services are better due to poverty. Instead, such people resorted to the government health centres where medical services are free although such centres are ill-equipped and lack enough qualified personnel.

Asked whether the current ICT services existing in the area were responding to community needs, the people remarked that they were not focusing on the community needs. It was noted that most of these are private, profit-oriented and are both urban based and focused.

The people interviewed were asked the advantages of a cooperative model of service delivery as opposed to the business-oriented model. All remarked that it was a good thing that had a wide range of advantages:

- The cost of service delivery is lowered since that partners share it amongst themselves.

- Information gets easily delivered and shared.
- A group can easily lobby and contribute to general policy setting.
- The coverage of such a service is wide.
- Cooperatives provide jobs to the masses.
- They can be a source of income to run other services.
- Cooperatives enhance sharing of expertise.
- With such an arrangement, only a few people get left out.

Asked about the challenges that a cooperative model is likely to face, a number of challenges were foreseen. These include need for sensitization of the masses, some people might be uncooperative and the mode of communication might become a problem since the community is multi-ethnic with so many languages. Others are stiff competition posed by private investors who are not willing to join the cooperative, personalization of the service by some individuals, widespread illiteracy, security as well as transparency since some people might utilize the facility for personal gain.

The following benefits of an open access model were identified:

- Sharing of information is enhanced.
- More people access information at a cheaper price.
- There is room for competition which improves the quality of service delivery.
- It will provide employment in the area.

## **1.5 FOCUS GROUP WORKSHOP**

A workshop was held at Mount Masaba High School. The workshop brought together several district leaders and councilors, head teachers and other school leaders, leaders of NGOs, leaders of private business units (like radio stations and internet cafes) as well as other people in positions of responsibility. The workshop pitted together all such members from the old Mbale community before it was divided into the districts of Mbale, Manafwa and Sironko.

The workshop was aimed at assessing further the possibility of setting up in the area a community needs driven ICT program which is also community based and owned. A thorough explanation of the necessity of the workshop was given to the participants as well as a brief background was of the project. A useful explanation of WOUGNET and its responsibilities as regards this project was given.

It was remarked that the research was aimed at finding out the ways how the project can be implemented so as to meet its intended purpose of having a greater development impact on the area unlike existing ICT services which have still failed to target and prioritize community needs. The already existing ICT services include, among others, FM radio stations, a television station, and mobile phone services, internet services especially in internet cafes, computer networks and ICT training institutions.

The questions that the participants discussed were divided into four sections or sets. The first set had questions that were aimed at assessing the major needs of the Mbale community and identifying the priority ones, the second set of questions aimed at assessing the benefits of a community needs driven ICT program and any challenges that may be involved, the third set aimed at assessing the benefits of using a cooperative approach to ICT service delivery and finally, the fourth set aimed at assessing the benefits of having an open access approach to sharing ICT resources in terms of cost, sustainability, volume and capacity.

The participants were arranged in five groups of which two were same sex groups, one for only men and the other only women. The idea was to have women to largely discuss their needs as well as men. The first set of questions was given to each of the same sex groups

while each of the remaining groups was given each of the remaining three sets of questions. Discussions were held in these groups and then each group presented their findings to the rest in a presentation session. The following is a thorough representation of the findings of the workshop.

## **GROUP 1 (WOMEN)**

### **Question 1:**

What are the development needs of the whole Mbale community? Why? Prioritize.

### **Response:**

The needs of the community were subdivided into several categories.

#### **Social-cultural needs:**

These include quality education both formal and informal, quality health services for example medicine, privacy etc and the need for cultural reforms for example aggressive treatment or abuse, dowry issues, wife inheritance, unequal distribution of roles between women and men, etc. Others are access to clean and affordable water, access to energy like electricity, good transport infrastructure especially the road network in villages, good communication infrastructure in rural Mbale and access to cheap or free communication tools or gadgets like telephones.

#### **Economic needs:**

- Capital for development. This encompasses, among others, the aspects of land ownership, low interest rates on loans as well as enough sureties to acquire loans.
- A good saving culture to help fight poverty related problems.
- Access to good markets and market information.
- Cheap technology for processing, storage and packaging of products.
- Learn modern farming methods.

#### **Political needs:**

These needs include more affirmative action, political accountability and transparency of the leaders, unity, peace and political tolerance especially in families where men force their women to join political sides against their wishes; politicians should try hard to be approachable and sensitive, gender and development sensitive issues as well as enough political security.

### **Question 2:**

What type of information is considered to be very important for development?

**Response:**

The kinds of information necessary for development include educational and marketing information, information on health, information on modern and user friendly technologies, information on development opportunities, information on how to cooperate and network as well as information on how to tap unexploited resources.

**GROUP 1 (MEN)****Response to Question One above:**

- Education in terms of better and well equipped schools and man power.
- Good communication infrastructure for example access to good roads.
- Provision of basic needs of life for example food.
- Access to safe water and other health services.
- Access to information services and security.
- Access to markets for their produce as well as credit services.
- Better agricultural methods for example forming cooperatives.

**Response to Question Two above:**

The kinds of information necessary for development include information about loans and microfinance institutions, health and educational informational, market information for the agricultural and other products, current communication systems as well as other gadgets and revival of social centres.

**GROUP 2****Question 1:**

What are the benefits of a community needs driven ICT service?

**Response:**

- It reduces the cost of implementation and maintenance.
- Durability of the facilities is enhanced as each person is responsible.
- This arrangement fosters development of the area.
- Flow of information is made easier and quicker.
- Each person's individual needs are catered for in such a model.
- Implementation of government policies is made easy and quicker fro example AIDS programs, programs on agriculture, etc.

**Question 2:**

What are the challenges that might arise from using a community needs driven ICT service and how can they be addressed?

**Response:**

The challenges foreseen include lack of adequate knowledge by community members in the use of ICTs, difficult to ensure quality control (for example banning pornography), affordability problems in accessing services, lack of infrastructure to easily implement the ICT facilities as well as failure of ICTs to satisfy all community needs.

**Addressing the challenges:**

- Close partnerships with between NGOs and communities.
- Impart skills and positive attitudes to community members as regards savings and credit so as to reduce poverty.
- Encourage adult and general education of ICTs in schools. Include the study of ICTs in the school curriculum and improve the capacity of schools to teach ICTs by providing the necessary facilities.
- Involve political figures in the implementation of such an initiative.
- Sensitize the community members on the value and use of ICTs for development.
- Improve community infrastructure to the necessary level for proper implementation of such services.

**GROUP 3**

**Question 1:**

- a) What are the benefits of using a cooperative model in terms setting up infrastructure and utilizing this infrastructure in regards to the internet, community radio, ICT for education and telemedicine?
- b) What challenges do you anticipate in using a cooperative model and how can they be addressed?

**Response:**

The benefits foreseen include: Information is accessed by more people, cheap and affordable to access services, better chances of sustainability, more information sharing and easy access to information. Others are lower cost of maintenance on each partner, ease in mobilizing funds and other resources, efficiency (since the facility is used at all times) as well as the fact that such a facility can cause a social change like reducing poverty.

**Challenges:**

- Negligence is a possibility. People develop an attitude of “to whom it may concern”.
- The facility might fail to serve all people simultaneously.
- Personalization of the facility is a possibility.
- Mobilizing people and resources might prove difficult.
- More people are affected if the facility breaks down unlike in single ownership where the owner faces the costs alone.
- There is lack of competition. The cooperative model might become monopolistic thus leading to inefficiency.

***Addressing the challenges:***

- Create semi-autonomous cooperative unions. This reduces the possibility of more people being affected as well as increasing competition among these cooperative unions.
- Sensitize people about the benefits of cooperative model for service delivery.
- Develop rules and operational guidelines to follow in using the facilities.
- Form strong management committees to manage the cooperative unions.
- Involve the government (the concerned ministry) to help develop the necessary human resource to enhance the use of ICTs.

**GROUP 4**

**Question:**

What is your opinion about having an open access approach to sharing ICT resources in terms of cost, sustainability, volume and capacity?

**Response:**

**Cost:**

- Cost of maintenance is shared among people.
- Expertise is availed for example if all radio stations hire one ‘expert’ technician.
- Implementation costs are shared and therefore lowered.
- Partners increase due to lower costs.
- Open access would enhance competition which increases quality and lower costs.

**Sustainability:**

- Easier to keep the facility operational because of pooling together of resources.
- There is community contribution in terms of labor, finance, etc.
- Local experts are available and this reduces costs.
- Community ownership ensures security of the facility.

**Volume:**

- The users of the facility will increase.
- It encourages local innovation due to the open nature.

**Capacity:**

- The facility is used to the maximum.
- Capacity is limited by the closed nature of current ICT delivery.

## **1.6 CONCLUSION OF THE MBALE PROJECT**

The study brought to light the various development needs of the people of Mbale district. The opinions of the various individuals representing the communities as pertains to the relevance of open access and community owned networks was sought and noted.

It is clear from the survey that the people of Mbale have a great willingness to embrace this model of ICT service delivery. The local government officials pledged to assist in whatever ways possible in the event of setting up such a project. With the above findings it is very evident therefore that this kind of project is feasible and viable.

## **CHAPTER TWO**

### **2.0 TELECENTRE ASSESSMENTS<sup>3</sup>**

As a follow up of the initial survey, CWRC carried out preliminary surveys<sup>4</sup> on the six telecentres<sup>5</sup> to gauge the technical feasibility and economic viability of community wireless networks at the targeted telecentres. The next discussion represents a detailed report on the findings of the telecentre and partner status surveys at the Nakaseke and Buwama Multipurpose Community Telecentres.

#### **2.1 INITIAL SURVEY OF NAKASEKE TELECENTRE**

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<sup>3</sup> Details of the people contacted and interviewed during these surveys can be found in Appendix A

<sup>4</sup> The questionnaires used for the Mbale project as well as the telecentre and partner status surveys on this project are included in Appendix B.

<sup>5</sup> The author carried out telecentre and partner status surveys on two of the six telecentres, namely Nakaseke and Buwama Multipurpose Community Telecentres. This report will be limited to findings from only these two.

CWRC trainees made an initial survey of the Nakaseke area to gain enough hands-on experience before carrying out the real telecentre assessment surveys at the six telecentres considered under this project. This initial visit was very helpful as trainees were able to understand certain crucial aspects of the project as well as get acquainted with some technical issues like line of sight or terrain. A revised questionnaire was formulated after this initial survey, one that would capture all the necessary information needed for the successful implementation of this project. During this visit, all potential partners (shown later on) were contacted and interviewed accordingly. This initial survey was also helpful since trainees were able to gain enough experience and confidence and find the best way in which the surveys should be conducted.

## **2.2 NAKASEKE MULTIPURPOSE COMMUNITY TELECENTRE**

Nakaseke multipurpose telecentre is located in Nakaseke district, about 65 km north of Kampala city. It is situated on the same compound as the Nakaseke sub-county headquarters. The area is characterized by thick vegetation and there is a high hill (like a ridge) just about 2 km away from the telecentre.

In an interview with the telecentre manager, Mr. Peter Balaba, a lot of detail about the telecentre and its operations was obtained as well as a general description of the area. A number of potential partners were identified including some that have just been established and were not identified during the initial survey in 2004. The following table shows the potential partners that were identified for the partner status survey as well as those that were identified in the initial survey in 2004:

<b>Partners identified in 2006</b>	<b>Partners identified in 2004</b>
Nakaseke Hospital	Nakaseke Hospital
Nakaseke Core Primary Teachers' College	Nakaseke Core Primary Teachers' College
Nakaseke Sub-county Headquarters	Nakaseke Sub-county Headquarters
Nakaseke S.D.A Secondary School	Nakaseke S.D.A Secondary School
Christ the Rock Secondary School	Kiziba Parish World Vision
Mazzoldi College	Community radio station
Nakaseke International College	Mwagalwa Nursing School

### **2.2.1 FINDINGS OF THE TELECENTRE STATUS SURVEY**

The telecentre employs 3 full time personnel in total. In addition, the telecentre also has 30 volunteers from the community who facilitate the telecentre in its operations.

#### **A Infrastructure**

Nakaseke multipurpose community telecentre was established in 1997 and has been in operation for 10 years. For the first 9 years of its existence, the telecentre run primarily on

HEP but due to heavy load shedding in this area, the telecentre now runs on solar power and has no alternative source of power. Load shedding in the area alternates every 24 hours although when there are technical faults (for example broken wires, faulty transformers, etc), it can take weeks, even months to repair.

## **B General Description**

The telecentre has access to a roof top but the roof is weak that it cannot support heavy equipment. The telecentre also has a secure place to store equipment and has never lost any equipment because of tight security at the sub-county headquarters compound. The telecentre shares premises with UTL but UTL has no access to the telecentre's side of the premises.

The nearest big town is Wobulenzi town which is 16 km away, on the Kampala-Luwero road. The rainy seasons in this area range from March-May and August-October but they are not characterized by thunder storms. The hottest seasons range from June-July and December-February.

There is an MTN tower about 3.5 km away on top of the ridge. There is no relationship between the telecentre and MTN. There is also a mast located on the telecentre compound. It belongs to UTL and the telecentre has a good relationship with them (they even share premises). Both these are use for GSM services in the area.

## **C Telecentre Services**

The telecentre provides a wide range of ICT services as shown below. Note that the number of clients per day, related expenses per day as well as income per day for each service vary on a daily basis depending on the season (for example during holidays, students return and demand for the internet service increases as opposed to periods when students are in schools

- **Computer training:** This is an activity mainly carried out as part of the telecentre's outreach program mainly in the schools located in rural areas. Computer training also takes place at the telecentre premises. It fetches an average monthly income in the range \$81 (Shs.150,000) to \$108 (Shs.200,000).
- **Email/Internet:** This is a popular service among the relatively elite. It realizes about 10-15 customers per day and the numbers go up during school holidays when students in good secondary schools, universities and other institutions of higher learning return home. It fetches an average daily income of Shs.3,500 - Shs. 5,000 per day.

- **Community radio:** This generates income mainly from charging announcements and advertisements. It generates an average daily income of between Shs. 20,000 and Shs. Shs.30,000.
- **Telephone services:** This is among the poorest services offered by the telecentre. It fetches little income due to stiff competition from other calling points. It fetches an average daily income of between Shs.1,000 and Shs.2,000.
- **Library services:** This is another poor service that generates less than a dollar per day.
- **Photocopying services:** This is one of the best services and attracts many customers. It fetches an average daily income of between Shs.25,000 and Shs. 30,000.
- **Printing services:** This service also commands a significant customer base and fetches an average daily income of between Shs.6,000 and Shs.10,000.
- **Distance education:** Distance education is mainly a done on the World Space Program (WSP) and is therefore a free service.
- **Box services:** This is where schools are provided with boxes containing assorted reading materials like books, magazines, etc. Such schools will have subscribed as members to enjoy this service. The subscription fee is Shs.50,000 (about \$27) per year.
- **Outreach services:** These are accomplished by setting up outreach centres in every parish. These places are provided with radio receivers to be able to listen to news, announcements, debates, etc.
- **Indigenous knowledge (IK):** Here, the telecentre imparts local skills to the residents free of charge. These skills are used mainly in agriculture for example how to use green manure instead of artificial fertilizers. Other areas which are trained are hunting, crafts and pottery, maternity care skills, etc.
- **Video coverage and video shows:** This service is not demanded regularly and it is hard to compute the income it generates per day or even per month. It does not enjoy a big customer base but is used once in a while.

As seen from above, the most beneficial services include photocopy and printing, ICT training and the community radio services. The least beneficial ones include library services, IK services and the box services. The telecentre keeps user logs and maintain them on a daily basis.

The telecentre customers vary from service to service. The services which are popular to the youth include video, internet, library and computer training. Services like printing, radio and photocopying are more popular among men and women of all ages.

#### **D Internet**

The telecentre owns 15 fully functional computers of which six are used on the outreach program in schools. The 9 computers at the telecentre are fully networked and can share information. The telecentre also has internet connectivity by VSAT infrastructure. The ISP is AFSAT iWAY AFRICA (URL: [www.iwayafrica.com](http://www.iwayafrica.com)). The monthly cost of this internet connectivity is US\$250 (about Shs. 462,500). The telecentre serves an area of approximately a 20 km radius.

#### **E Cooperative Approach**

In his view, the manager gave the following as the likely benefits of the cooperative approach to ICT service delivery to both the telecentre and partners:

- The initiative will extend internet services to partners' offices in other places such that they can access it from the comfort of their offices other than traveling to the telecentre.
- The initiative will ensure that the costs of operation are shared. This means the fee per partner will be very small and affordable making the initiative sustainable.

The manager earmarked a number of challenges that could face the successful implementation and operations of the initiative. These challenges are:

- Internet connectivity of the partners might prove to be a difficult task.
- The cost of equipment is high. This might become a problem in future if a piece of equipment needs to be replaced.
- Partners might fail or delay payment of their internet fees or bills.
- There is need for training staff that will ensure the efficient operation of the network for example maintenance workers.
- Maintenance of the network infrastructure might prove difficult for example salaries for the maintenance personnel, spares, and technical know how, etc.

The manager gave ways of how the facility can be innovatively used to raise more money for sustaining the network. These are:

- Marketing to promote the telecentre.
- Sensitize the public about the telecentre services.
- Encourage membership where people pay a certain fee as subscription over a specified period of time.

#### **F Local Environment**

The average population of Nakaseke sub-county is 22,000 people. The area boasts of many secondary and primary schools, a number of health clinics, a mosque as well as over 20 churches. There are no factories in the area but other big businesses exist for example big wholesale shops and milling machines for both upland rice and maize. The activity that the people of Nakaseke generally do for a living is agriculture. There are many calling points (phone booths) in Nakaseke but no internet café exists.

## **G Technical Description**

The telecentre is located on a raised ground, just near the Nakaseke township. There is a high hill (like a ridge) about 2 km away from the telecentre. There is a tower belonging to MTN Uganda located on top of the ridge. There is also a mast about 25 metres high which is located just next to the telecentre premises. This mast belongs to UTL.

### **2.2.2 FINDINGS OF THE PARTNER STATUS SURVEYS**

The survey was arranged in a number of sections. Therefore, the results from each partner survey are arranged in similar sections.

### **2.2.3 NAKASEKE SUB-COUNTY HEADQUARTERS**

The Nakaseke headquarters are located on the same compound as the telecentre. The sub-county has 29 employees in total of which 9 are female. These include councilors, parish chiefs and other elected leaders in their respective capacities. All these 29 people are potential users of the internet facility.

## **A Services and Equipment**

The sub-county has no fixed phone line although it is about to be connected. The sub-county has no computers at the moment but has already planned on purchasing some computers to ease their activities.

The chairperson identified the services that the sub-county would be interested in as computer training, internet, telephone, fax, library, photocopy, printing, distance education as well as community radio.

## **B Activities and Clients**

The sub-county chief and his team are responsible for running the sub-county on behalf of the central government and acting as a link between the government and the community. They are responsible for all the people in the Nakaseke community. The people of this area mainly speak Luganda and English.

## **C Financial Capacity**

The chairperson gave an estimate of the maximum contribution that the sub-county could afford as \$40 (Shs.74,000). However, they could pay even more if it is necessary.

The chairperson also said that the sub-county would be willing to contribute Shs.50,000 (\$27) towards the maintenance of the facility.

## **D Infrastructure**

The sub-county headquarter premises run primarily on HEP and has no alternative source of power. Load shedding alternates every 24 hours.

## **E General Description of the premises**

There is access to the roof top and it is possible to fix equipment there. Also available is a store to securely keep equipment and there has never been any loss of property due to theft because security is highly emphasized. The sub-county does not share its premises with any other organization or people.

## **F Local Environment**

There are other sources of radio communication in the area. An MTN tower exists about 3.5 km away as well as a UTL mast only 20 metres away. However, there is no sort of relationship between the sub-county and the respective owners.

## **G Cooperative Approach**

The sub-county chief was asked what in his view would constitute benefits of the cooperative approach to ICT service delivery to both the telecentre and the partners. The following benefits were listed:

- The development process will be enhanced.
- Information dissemination will be made easy.
- It will reduce cost of operation for example instead of traveling with information from place to another, you can just send an e-mail.

In his view, he anticipated the following challenges to be faced by this cooperative model involving the telecentre and partners:

- Power problems due to load shedding.
- Costs of maintenance may cause sustainability problems.
- There will be need for training personnel and staff.

## **H Technical description**

The sub-county headquarters are located on the same compound as the telecentre, about 30 metres away. There is a clear line of sight to the telecentre premises. Both premises are located on level ground (topology of the area between them is flat). There is a tower and a mast existing in this area as described in the telecentre technical description.

### **2.2.4 NAKASEKE HOSPITAL**

The Nakaseke hospital which is a government hospital is located about 200 metres away the telecentre. The hospital employs a total of 155 employees with the majority being female workers (over 110 of the employees).

#### **A Services and Equipment**

The hospital has a number of fixed phone lines as shown in part A above. It has 4 computers which are not networked. Also, presently it has no internet access.

The hospital would be interested in a number of ICT related services namely telemedicine, community radio, computer training and distance education.

#### **B Activities and Clients**

The hospitals activity is provision of health care to the sick. Its clients are all people of all ages and gender who need medical attention. These people mainly speak Luganda although some others can also speak English. Most hospital workers are potential users of the internet facility. The internet would improve the telecentre's activities in many ways including enabling telemedicine as well as connecting the hospital to other bigger hospitals like Mulago hospital.

#### **C Financial Capacity**

Mr. Mukunya gave an estimate of the hospital's maximum contribution for internet access as \$60 (Shs. 111,000). He also said that the hospital would be ready to contribute \$45 (Shs.83,000) towards the maintenance of the facility.

#### **D Infrastructure**

The hospital's primary source of power is HEP but due to load shedding, which alternates every 24 hours, they use a thermal generator as an alternative. Note that lanterns, candles, etc are also used for lighting when there is no power.

#### **E General Description of the premises**

The hospital has access to a roof top and it is possible to fix equipment there. It also has a place to store equipment securely and has never lost any equipment to theft. It also does not share their premises with any other organization or people.

## **F Local Environment**

An MTN tower exists about 3.5 km away on the ridge and a UTL mast just 200 metres away but there is no form of relationship between the hospital and the owners. The mast and tower are both used for GSM services.

## **G Cooperative Approach**

In his view, he gave the following benefits as those that are likely to accrue from embracing this cooperative approach to service delivery:

- Communication will be made easy for example telemedicine.
- The cost of communication will be reduced for example instead of traveling, you can send an e-mail.
- The cost of operation is shared which enhances sustainability.
- It creates better relationships between partners working together.
- It empowers people and the community at large.

He anticipated the following challenges to be the likely ones to face this approach:

- Some partners might fail to honour their promises.
- Problems might arise with maintenance of the network infrastructure due to lack of funds, poor training of technical personnel, etc.
- Information control might become a problem for example people might resort to surfing useless things like pornography.
- The internet can be a source of misinformation.
- This information might spoil our African culture since some information might encourage things like incest, homosexuality, pornography, etc.

The administrator suggested two ways how the network can be used innovatively to earn more money to enhance sustainability:

- Sensitize the community on the usefulness of ICT services so as to increase the market.
- Inform people on the benefits challenges, expectations of the project so as to ensure maximum cooperation.

## **H Technical Description**

There is a clear line of sight between the hospital and telecentre and there is no thick vegetation between. The area between them is flat. Again, the UTL mast at the telecentre is fully visible as is the MTN tower on top of the ridge nearby.

### **2.2.5 NAKASEKE INTERNATIONAL COLLEGE**

The Nakaseke International College is a privately sponsored secondary school that is located about 1 km away from the telecentre. The school employs 25 teachers of which 10 are female.

#### **A Services and Equipment**

The school has no fixed phone line. It also has 10 computers but is planning to buy more computers soon. The computers available are not yet networked although this is being planned for the near future. The school has no internet access at present. The school also has a DSTV installed at the school with full DSTV infrastructure like an antenna.

The head of ICT identified the services that interest the school and these are computer training, internet, telephone, fax, library, photocopy, printing, distance education, satellite radio (WSP) and community radio.

#### **B Activities and Clients**

The core activity of the school is teaching students (education). It has a total of 600 students aged between 13 and 20 years. They mainly speak Luganda and English. All students as well as teachers are potential users of the facility. The facility would help the students and teachers access more reading material and resources as well as easing communication.

#### **C Financial Capacity**

The head of ICT gave the school's maximum contribution towards internet access as \$20 (Shs. 37,000). He also said that the school was ready to contribute \$27 (Shs.50,000) towards the maintenance of the facility

#### **D Infrastructure**

The school's primary source of power is HEP but due to load shedding, which alternates every 24 hours, the school uses solar power as well a thermal generator as alternatives.

#### **E General Description of the premises**

The school has access to a roof top and it is possible to fix equipment there. The school has a store to keep equipment securely and it has never lost any equipment from its premises. The school does not share its premises with any other organization.

## **F Local Environment**

There is an MTN tower on the ridge clearly visible from the school about 4 km away. It is used for MTN's GSM service. The mast at the telecentre is not visible from the school.

## **G Cooperative Approach**

In his view, he gave the following as the likely benefits that will accrue if the cooperative is finally implemented:

- Communication and information dissemination will be made easy.
- It will be possible and more affordable to advertise on the community radio.
- The internet service will increase the number of students interested in joining the school.
- It will enhance the learning process especially for the students.

However, he anticipated the cost of access of the services to be the most likely challenge to the cooperative approach. That people might fail honour their bills.

He proposed a number of ways that the network can be used innovatively to earn more income.

- Open the services to other people at a cost.
- Keep the price low so that it is affordable.
- Let the facility be consistent such it is accessible always.

## **H Technical Description**

There is no direct line of sight to the telecentre. It is located on a raised ground with a valley existing between the telecentre and the school. There is thick vegetation in the valley. There is a tall support structure used to support water tanks. On top of it, the UTL mast at the telecentre compound is visible. However, the MTN mast is clearly visible from the college. An interesting observation is that this college offers a direct line of sight to another potential partner, Mazzoldi College.

### **2.2.6 CHRIST THE ROCK SECONDARY SCHOOL**

Christ the Rock Secondary School is a privately sponsored secondary school located about 1.5 km away from the telecentre, near Nakaseke International College. The school has 21 members of staff of which 7 are female. They also have 250 students.

## **A Services and Equipment**

The school has no fixed phone line. The school has one computer although it is about to purchase another one. It has no internet access. The school would be interested in the

following ICT related services namely computer training, internet, telephone, library, photocopy, printing, distance education and community radio.

## **B Activities and Clients**

The school's core activity is teaching students (education). Students lie in the range 14-20 years of age. They mainly speak English and Luganda. All students, as well as teachers, are potential users of the internet service.

## **C Financial Capacity**

The headmaster gave an estimate of the school's maximum financial contribution for internet access as \$27 (Shs.50,000). The school would also be ready to contribute \$8 (Shs.15,000) towards the maintenance of the facility.

## **D Infrastructure**

The school's primary source of power is HEP but due to load shedding, the school also acquired a thermal generator as an alternative.

## **E General Description of the premises**

The school has access to a roof top and it is possible to fix equipment there. The school also has a place to store equipment securely and has never lost any equipment from its premises. It also does not share its premises with any other organization.

## **F Local Environment**

There is an MTN tower about 4.5 km away on a ridge but it is not visible from the school. There is also a UTL mast about 1.5 km away at the telecentre but it is also not visible from the school. Both these are used for GSM services but there is no kind of contact between the school and the owners.

## **G Cooperative Approach**

In his view, the Principal identified a number of benefits as those most likely to accrue as a result of this cooperative approach to ICT service delivery:

- Communication will be enhanced and made easy.
- Relationships with other partners will grow.
- The initiative will help other members of the community.

However, he anticipated a number of challenges likely to face the network:

- Networking might be a problem.

- Partners might face a problem during payment.
- Load shedding, especially in this area, might prove a big problem.

On how to use the facility innovatively to raise more money for sustaining the network, the principal suggested that the school can open up a computer club such that members can pay.

## **H Technical Description**

There is no line of sight to the telecentre. The school is situated about 1.5 km away from the telecentre but much closer to the Nakaseke International College (about 300 metres). It is also located on a raised ground but there is a valley in between. The valley is characterized by thick vegetation. Again, the MTN tower is very visible from this school. The UTL mast at the telecentre is not fully visible.

### **2.2.7 MAZZOLDI COLLEGE**

Mazzoldi College is a privately sponsored secondary school, located about 1.5 km away from the telecentre. However, it is located so close to the Nakaseke International College and has a good line of site from it. The school employs 12 teachers of which 5 are female.

#### **A Services and Equipment**

The school has no fixed phone line. It has only one computer and has no internet access. It also has no other kinds of technical equipment. The school would be interested in a number of ICT services namely computer training, internet, telephone, fax, photocopy and printing, library, distance education as well as community radio.

#### **B Activities and Clients**

The school is an educational institution whose core activity is teaching. The school has a total of 220 students who lie mainly in the age range of 13-19 years. They mainly speak English and Luganda. All these students, as well as the teachers, are potential users of the facility.

#### **C Financial Capacity**

The head teacher gave an estimate of the school's maximum financial capacity for internet access as \$20 (Shs.37,000). He explained that the school was not yet stable in its operations and therefore could not promise much. He also said that the school would be

able to contribute towards the maintenance of the facility as necessary although he declined to give a definite sum.

#### **D Infrastructure**

The school's primary source of power is HEP although due to load shedding, which alternates every 24 hours, the school also uses a thermal generator as an alternative.

#### **E General Description of the premises**

The school has access to a roof top and equipment can be fixed there. It also has a place to store equipment securely and has never lost any equipment from its premises. It also does not share its premises with any other organization or people.

#### **F Local Environment**

There is an MTN tower on top of a ridge about 4 km away with a good line of sight. There is also a UTL mast at the telecentre compound, about 1 km away but it is not visible from the school.

#### **G Cooperative Approach**

The administrator identified a number of benefits that will accrue if this cooperative approach is taken:

- Assistance in accessing information (join the global village).
- It will enhance the learning process of the students.

However, a number of challenges that are most likely to face the network were identified:

- The partners might fail to pay on time.
- It may necessitate training experts which is not exactly an easy task.

The administrator suggested that opening services to the whole community (at a cost) was one way how the network could be used innovatively to attract more interest and earn more money.

#### **H Technical Description**

It is located on a slightly higher altitude than the telecentre but there is no line of sight to the telecentre. However, there is a very clear line of sight to the MTN tower, about 3 km away. The UTL tower is not visible from this point as is the telecentre. There is a valley characterized by thick vegetation in the area between the two places.

## **2.2.8 NAKASEKE CORE PRIMARY TEACHERS' COLLEGE (PTC)**

The Nakaseke Core PTC is a government aided teacher's college is located about 1 km away from the telecentre. It is located on the opposite side of the telecentre as the other partners like Mazzoldi College. The PTC employs 15 teachers on the outreach program, 16 pre-service tutors, 3 administrators as well as 8 members of non-teaching staff.

### **A Services and Equipment**

The PTC has a fixed phone line as shown above. It has 5 computers in the computer laboratory and 3 in the administration block. Those in the lab are fully networked. The other kind of technical equipment that the PTC possesses is an existing dial-up internet connection infrastructure.

The PTC would be interested in a number of ICT services namely computer training, internet, telephone, fax, photocopy and printing, distance education, library as well as community radio.

### **B Activities and Clients**

The PTC's core activity is training student teachers to become future teachers. These students lie in the age range 16-24 years and are both male and female. The PTC has a big number of students who are all potential users of the facility. They mainly speak English and Luganda.

### **C Financial Capacity**

The bursar estimated the PTC's maximum financial capacity as \$40 (Shs.74,000). He said he goes for quality services but at a low price. He also said that the PTC would be ready to pay \$27 (Shs.50,000) as contribution towards the maintenance of the facility.

### **D Infrastructure**

The PTC's primary source of power is HEP although due to load shedding, which alternates every 24 hours, the PTC also uses a thermal generator as an alternative.

### **E General Description of the premises**

The PTC has access to a roof top and it is possible to fix equipment there. The PTC also has a place to store equipment securely and has never lost any equipment from its premises. It also does not share its premises with any other organization.

### **F Local Environment**

An MTN tower exists on top of a ridge about 2 km away. There is a clear line of sight. A UTL mast also exists at the telecentre compound, about 1 km away, although it is not visible from the PTC.

## **G Cooperative Approach**

The administrator identified a number of benefits that were most likely to accrue if this project was implemented:

- It will reduce cost of operation.
- It encourages face to face interaction with fellow partners.
- It allows sharing of the services.

However, he anticipated the following challenges to the cooperative approach:

- Problems may rise up if partners fail to pay on time or pay at all.
- It might be a big challenge to bring in other partners and expand the network.
- Power fluctuations and load shedding is a big problem in this area.

## **H Technical Description**

The PTC is located on a hill, at a higher altitude than the telecentre but there is no line of sight to the telecentre. There is a valley characterized by thick vegetation in between the two areas. The UTL mast at the telecentre is not visible but the MTN tower (about 2 km away) is fully visible.

### **2.2.9 NAKASEKE S. D. A SECONDARY SCHOOL**

This is a privately sponsored secondary school which is located approximately 1.5 km away from the telecentre. It is located behind a hill as regards the telecentre. The school employs a total of 24 teachers 5 of which are female.

#### **A Services and Equipment**

The S.D.A has no fixed phone line. It also has 5 computers which are functioning but they are not networked. Otherwise, the school does not possess any other kind of technical equipment.

The school would be interested in a number of ICT services namely computer training, internet, telephone, library, photocopy and printing, distance education and community radio.

## **B Activities and Clients**

The school is an educational institution whose core activity is teaching. The school has a total of 578 students who lie mainly in the age range of 12-20 years. They mainly speak English and Luganda. All these students, as well as the teachers, are potential users of the facility.

## **C Financial Capacity**

The deputy head teacher gave an estimate of the school's maximum financial capacity for internet access as \$60 (Shs.111,000). She also said that the school would be able to contribute \$22 - \$27 (Shs.40,000 – Shs.50,000) towards the maintenance of the facility.

## **D Infrastructure**

The school's primary source of power is HEP but due to load shedding, the school also acquired a thermal generator as an alternative.

## **E General Description of the premises**

The school has access to a roof top and it is possible to fix equipment there. The school does not have a place to store equipment but it can be provided easily. However, the school has never lost any equipment from its premises. It also does not share its premises with any other organization.

## **F Local Environment**

An MTN tower exists on top of a ridge about 3 km away. There is no line of sight to this tower. A UTL mast also exists at the telecentre compound, about 1.5 km away, although it is not visible from the PTC.

## **G Cooperative Approach**

Asked what in their own view would constitute benefits in using a cooperative model of ICT service delivery, he gave the following:

- Students would get access to more reading material.
- Teachers can also access more resources for teaching their students.

However, they gave the following challenges as those that might face this approach:

- There will be need for sensitizing both teachers and students alike.
- Cost of internet access might be high which will generate affordability problems.

They suggested one way how the facility can be used to earn more revenue. This is to encourage membership where community members can access the internet at a cost.

## **H Technical Description**

There is no line of sight from the telecentre since it located behind a small hill. There is thick vegetation between the SDA and the telecentre. It is located on a higher ground than the telecentre but behind a hill. There is no line of sight to the International College either.

## **CHAPTER THREE**

### **3.0 BUWAMA MULTIPURPOSE COMMUNITY TELECENTRE**

Buwama telecentre is located about 64 km along the Kampala-Masaka highway. It is 60 km southwest of Kampala city. It is located just next to the Buwama sub-county headquarters. The area around has thick vegetation and there is a hill (like a ridge) located only about 2 km away.

- In an interview with the telecentre manager, Ms. Lydia Nyanzi Nankabirwa, a lot of detail about the telecentre and its operations was obtained as well as a general description of the area. The manager identified a number of potential partners in the area. These were the same partners identified during the 2004 initial survey. She remarked that many of the would-be partners mainly secondary schools have no source of power at their premises.

Details of the potential partners that were identified for the partner status survey as well as how they compare to those identified in 2004, are shown in the following table:

<b>Partners identified in 2006</b>	<b>Partners identified in 2004</b>
St. Balikuddembe Senior Secondary School	St. Balikuddembe Senior Secondary School
St. Joseph's Institute of Education	Nkozi National Teachers' College
Business Systems, Buwama	Business Systems, Buwama
Brain Trust College	Brain Trust College
Buwama Sub-county Headquarters	Local Government Offices
	CMC Project Radio Station

### **3.1 FINDINGS FROM THE TELECENTRE STATUS SURVEY**

The telecentre employs 4 people in total of which 2 are female.

#### **A Infrastructure**

Buwama Multipurpose Community Telecentre was established in 1999 and has been in operation for over 7.5 years. The telecentre runs on HEP as a primary source of power. However, due to load shedding, which is done 4 days a week, the telecentre employs a generator as an alternative source of power.

#### **B General Description**

The telecentre has access to a roof top and it is possible to fix equipment there. The telecentre has a place to store equipment securely. The last time equipment was lost from the telecentre premises was last year. However, the telecentre shares premises with other people and these people have access to its premises.

The nearest big town is Mpigi town which is about 32 km away from Buwama towards Kampala. There is a mast just about 150 metres from the telecentre and it belongs to the local government. The telecentre enjoys a good relationship with the owners.

#### **C Telecentre Services**

The telecentre provides a wide range of services namely:

- Computer training
- Internet/Email
- Library service
- Photocopy
- Printing
- Community radio

Of these, computer training, internet/email, photocopy and printing are the most beneficial ones while library service is the least beneficial one. The telecentre enjoys clients of all ages and professions, both male and female. Among its clients are NGOs, CBOs, health units, local government, the police, the court, etc. The telecentre manager confirmed that the telecentre keeps user logs.

#### **D Internet**

The telecentre has 10 computers which are fully networked. The telecentre has internet access and its ISP is iWAY AFRICA (URL: [www.iwayafrica.com](http://www.iwayafrica.com)). Other kinds of equipment that the telecentre possesses include a generator, a VSAT and a switch. The kind of infrastructure that the ISP uses to deliver the internet service is a VSAT. The internet service costs the telecentre a monthly sum amounting to \$250 (about Shs.462.500).

#### **E Cooperative model of ownership**

The manager expects the significant reduction in the cost of internet access (monthly subscription) to be the major benefit from this cooperative approach of service delivery. However, a possible challenge is to make sure that all partners honour their obligations and pay up their share of the cost.

The manager gave the following as the ways in which the facility can be used to generate more money so as to be sustainable:

- Letting it out to other people at a cost.
- Charging fees from the users of the service.

The manager said that the telecentre was very ready to contribute towards the salaries of the maintenance personnel since it had already been doing so.

#### **F Local environment**

The area has an average population of about 40.000 people. The area also boasts of a number of NGOs and schools. There are also a number of large private businesses in the area. They are located in the local towns of Buwama, Kayabwe and Nkozi.

About what people in this area generally do for a living:

- Most are peasant farmers.
- Others do small scale trade / petty businesses.
- Others do fishing (they are fishermen).

As far as communication services are concerned, the area has number of calling points but there are no internet cafes. This means that internet service can only be accessed at the telecentre.

## **3.2 FINDINGS FROM THE PARTNER STATUS SURVEY**

The questionnaire was arranged in a number of sections and the findings are hereby presented as to conform to these sections:

### **3.2.1 ST. BALIKUDEMBE S. S. SCHOOL**

The school employs a total of 54 teachers of which 19 are female and 35 are male.

#### **A Services and Equipment**

The school has no fixed phone line. However, it possesses 5 computers in the school computer laboratory which are not networked and a sixth which belongs to the school secretary. The school does not possess any other kind of technical equipment.

The Head teacher identified a number of ICT services that the school would be interested in if available. These are computer training, e-mail/internet, telephone, fax service, library service, photocopy, printing, distance education and community radio.

#### **B Activities and Clients**

The core business or activity of the partner is education since it is an academic institution. However, it forms clubs of students to do some community work for example helping in agriculture, building, cleaning water wells, etc in the community.

The Head teacher identified the following as ways in which the internet would help enhance the schools activities:

- The internet can be used as a means of accessing more teaching and reading materials by both teachers and students alike.
- Students, teachers and other community members can benefit during holidays.

The school currently has 825 students in total, and together with the 54 teachers, they are all potential users of the facility. The students are mainly in the 12-24 year age bracket. These people mainly speak English and Luganda. A few of them speak Runyankole / Rukiga and Lugbala.

### **C Financial Capacity**

The Head teacher gave an estimate of the school's maximum financial contribution for internet access. She said the school could afford to pay not more than \$100 per month (about Shs.1850,000).

She said that the school was very ready and willing to join and access the internet for its activities. She said the school would be able to commit \$27 per month (Shs. 50,000) as contribution towards the salaries of maintenance personnel.

### **D Infrastructure**

The school runs on HEP but due to load shedding, a thermal generator is usually used as an alternative. Load shedding alternates every 24 hours. This means power is on one day and off the other.

### **E General Description of the premises**

The school has access to a roof top and it is possible to fix equipment there. The school also has a store to keep equipment securely. The last time the school lost equipment from its premises was more than 3 years ago. It does not share its premises with any other people or organization.

### **F Local Environment**

There one mast and one tower visible from the school. The tower (located about 4 km away) belongs to MTN Uganda and is used for its GSM service while the mast (located about 2 km away) belongs to the local government.

### **G Cooperative model of ownership**

The head teacher gave the following benefits as among those that would accrue from using this model of cooperative ownership of the facility:

- It will reduce cost of internet access.
- It enhances relationships between the partners.
- It enhances knowledge and exposure.

However, a number of challenges are likely to face this arrangement and the facility at large:

- Partners may develop problems or conflict amongst themselves.

- Some partners may find problems with or fail to pay their bills completely.

She suggested that allowing students and other community members to use the network even during holidays at a cost would ensure that the facility is used effectively.

## **H Technical description**

The school is located about 2 km away from the telecentre. There is no line of sight from the school to the telecentre. The telecentre is covered by thick vegetation. The school is, however, located on a raised ground (higher altitude) as compared to the telecentre. Due to tall trees, only the top of the mast located near the telecentre is visible. Likewise, only the top of the MTN-owned tower is visible.

### **3.2.2 ST. JOSEPH'S INSTITUTE OF EDUCATION**

#### **A Services and Equipment**

The school has no fixed phone line. However, it possesses 40 computers in the computer laboratory which are networked. The secretary also has one. The institute does not possess any other kind of technical equipment.

Mr. Habimana identified a number of ICT services that the institute would be interested in if available. These are computer training, e-mail/internet, telephone, fax service, library service, photocopy, printing, distance education and community radio.

#### **B Activities and Clients**

The core business or activity of the partner is training future teachers. He identified the following as ways in which the internet would help enhance the institute's activities:

- It could be used for research by both students and teachers alike.
- It is a source of reading and teaching material for both students and teachers respectively.

The institute currently has about 1000 student teachers and all these are potential users of the facility. The students are mainly in the 18-24 year age bracket. These people mainly speak English and Luganda. A few of them speak Runyankole/Rukiga and other local languages.

#### **C Financial Capacity**

Mr. Habimana gave an estimate of the institute's maximum financial contribution for internet access. He said the institute could afford to pay not more than \$40 per month (about Shs. 74,000). He however stated that this figure was liable to change.

He said that the institute was very ready and willing to join and access the internet for its activities and would be able to commit \$16 - \$27 per month (Shs. 30,000-50,000) as contribution towards the salaries of maintenance personnel.

#### **D Infrastructure**

The institute primarily runs on HEP but due to load shedding, a thermal generator is used as an alternative. Load shedding alternates every 24 hours. This means power is on one day and off the other.

#### **E General Description of the premises**

The partner has access to a roof top and it is possible to fix equipment there. The institute also has a store to keep equipment securely. The last time equipment was lost from its premises was more than 5 years ago. Burglar proofs were installed and the place is now very secure. More so, the institute does not share its premises with any other people or organization.

#### **F Local Environment**

There is one mast and one tower but these are not visible from the institute since it is behind a small hill. The tower (located about 4 km away) belongs to MTN Uganda and is used for its GSM service while the mast (located about 2 km away) belongs to the local government.

#### **G Cooperative model of ownership**

The head teacher gave the following benefits as among those that would accrue from using this model of cooperative ownership of the facility:

- The institute will gain access to the internet.
- It will enjoy e-mail services which enhances communication.
- It will reduce cost of internet access.
- The institute can develop its own intranet and be able to communicate with the rest of the world.
- Research methods will be boosted.

However, a number of challenges are likely to face this arrangement and the facility at large:

- Lack of cooperation between the partners.
- Maintenance costs might be too high for the partners to afford.
- Training of users and workers will be necessary.
- Information control might become a problem since students will most likely use it for bad things like pornography.

He suggested that allowing students and other community members to use the network during holidays at a cost would ensure that the facility is used effectively.

## **H Technical description**

The institute is located about 2 km away from the telecentre just close to St. Balikuddembe S.S.S (in fact, the two are separated by a fence) . There is no line of sight from the institute to the telecentre. The institute is located on a hillside facing away from the telecentre. None of either the mast or tower is visible. Note that there is a clear line of sight between the institute and the school.

### **3.2.3 BUWAMA SUB-COUNTY HEADQUARTERS**

#### **A Services and Equipment**

The sub-county has no fixed phone line. It possesses 2 computers which are networked. The secretary also has one. The sub-county other kinds of technical equipment including the mast on its compound as well as radio equipment of Buwama radio station (currently not working due to technical problems).

Mr. Mutanda identified a number of ICT services that the sub-county would be interested in if available. These are computer training, e-mail/internet, telephone, fax service, library service, photocopy, printing, distance education and community radio.

#### **B Activities and Clients**

The main activity of the partner is that of administration (running Buwama sub-county on behalf of the central government). In his view, the main benefit that the partners will be able to gain is improved communication. He identified 20 people as the potential users of the facility. These speak mainly English and Luganda.

#### **C Financial Capacity**

The senior accountant gave an estimate of the sub-county's maximum financial contribution for internet access. He said they could afford to pay up to \$100 per month (about Shs. 185,000).

He said that the sub-county would be very willing to contribute to the salaries of technical personnel to keep the facility in good working condition. An amount in the range \$81 - \$108 per month (Shs. 150,000 - Shs.200,000) was possible.

#### **D Infrastructure**

The sub-county headquarters primarily run on HEP but due to load shedding, a thermal generator is used as an alternative. Load shedding alternates every 24 hours.

#### **E General Description of the premises**

The partner has access to a roof top and it is possible to fix equipment there. The institute also has a store to keep equipment securely. Secure is very good that the partner has never lost equipment to theft. More so, they do not share premises with any other people or organization.

#### **F Local Environment**

There is a mast on the same compound and it is an asset of the local government. It was being used by Buwama radio station. A tower also exists on top of a ridge (about 2 km away). This tower belongs to MTN Uganda and is used for its GSM service.

#### **G Cooperative model of ownership**

He gave the following benefits as among those that would accrue from using this model of cooperative ownership of the facility:

- Service delivery will be improved.
- Other community members will gain from the facility.
- It will reduce the cost of internet access.

However, a number of challenges are likely to face this arrangement and the facility at large:

- Maintenance costs might be high if the facility breaks down.
- Security of the network infrastructure for example antennas might be difficult to ensure.

He suggested that allowing community members to use the network at a cost could raise more money for sustainability.

#### **H Technical description**

There is direct line of sight to the telecentre, located just 150 metres away. There is a banana plantation in between, though. It is located on the same altitude as the telecentre. A mast exists on the same compound as well as a tower nearby as already stated.

### **3.2.4 BRAIN TRUST COLLEGE**

The school employs 19 teachers, of whom 2 are female.

## **A Services and Equipment**

The school has no fixed phone line. It possesses 5 computers in the computer laboratory but they are not networked. The school also owns a television antenna.

Mr. Nuwamanya identified a number of ICT services that the school would be interested in if available. These are computer training, e-mail/internet, telephone, fax service, library service, photocopy, printing and community radio.

## **B Activities and Clients**

The core business or activity of the partner is education (teaching students). He identified the following as ways in which the internet would help enhance the institute's activities:

- It will improve teaching methods.
- It will help teachers acquire more teaching materials. The students can also access reading materials.

The school has about 300 students and all these, together with the teachers, are potential users of the facility. The students are mainly in the 12-19 year age bracket. They mainly speak English and Luganda.

## **C Financial Capacity**

The headmaster gave an estimate of the school's maximum financial contribution for internet access. He said the institute could afford to pay not more than \$20 per month (about Shs. 37,000). He said the school was located in the village and was poor. It cannot afford high sums of money.

He said that the school was very ready and willing to join and access the internet for its activities and would be able to commit \$27 per month (Shs.50,000) as contribution towards the salaries of maintenance personnel.

## **D Infrastructure**

The institute primarily runs on solar although some of the batteries have broken down. A thermal generator is used as an alternative.

## **E General Description of the premises**

The partner has access to a roof top and it is possible to fix equipment there. The school also has a store to keep equipment securely and have never lost any property from their premises. The institute does not share its premises with any other people or organization.

## **F Local Environment**

There is an MTN tower about 2 km away from the school. It is used for GSM service in the area.

## **G Cooperative model of ownership**

The headmaster gave the following benefits as among those that would accrue from using this model of cooperative ownership of the facility:

- Public relations will improve.
- The school will attract more students.
- It reduces cost of internet access.
- The internet can be used for recreation purposes.

However, a number of challenges are likely to face this arrangement and the facility at large:

- Power problems.
- Lack of technical personnel to repair and maintain the network.
- Paying the bills might be difficult for some partners.

He suggested that opening the facility to other community members at a cost would ensure that more income is earned to sustain the project.

## **H Technical description**

The school is located about 4 km away from the telecentre. There is no line of sight from the school to the telecentre. The school is approximately on the same altitude as the telecentre. The area is characterized by very thick vegetation. A mast will be needed for any connection to be guaranteed. Due to thick vegetation, the MTN tower is also not visible from the school.

### **3.2.5 BUSINESS SYSTEMS BUWAMA (BSB)**

Business systems Buwama employs 5 people, of whom 3 are female.

#### **A Services and Equipment**

BSB has no fixed phone line. It possesses 9 computers in its premises which are not networked. However, the network infrastructure (for example hubs, cables, etc) is in place and it is a matter of completing the network. BSB was connected to the internet by dial-up (Celtel) but it was not sustainable and management abandoned it. However, the antenna still exists on the roof top.

The manager identified a number of ICT services that BSB would be interested in if made available. These are computer training, e-mail/internet, telephone, fax service, library service, photocopy, printing and distance education.

## **B Activities and Clients**

BSB is a commercial business located in the centre of Buwama town.

The manager identified the following as ways in which the internet would help enhance BSB's activities:

- BSB will get global because it will be connected to the whole world.
- People who are still seeking jobs can access the job advertisements on line.
- Internet access will enhance research.
- Community members can access information on agriculture, trade, markets, etc.
- Email services will be available.

BSB commands at least 10 customers per day but can exceed 50 customers per day on a good day. Most customers speak Luganda and English.

## **C Financial Capacity**

The manager declined to give an estimate of the maximum amount of money that BSB would afford to pay. She argued that the partners and other stake holders should reach an amount which should be as low as possible so that it is both manageable and affordable.

On how much BSB was willing to pay towards the maintenance of the network, the manager still declined to give a definite figure arguing that the partners would meet and decide what amount was right or appropriate.

## **D Infrastructure**

BSB primarily runs on HEP but due to load shedding, a thermal generator is used as an alternative. The generator is however used only when there is a lot of work to finish or there are many customers. Load shedding alternates every 24 hours.

## **E General Description of the premises**

BSB has access to a roof top and it is possible to fix equipment there. It also has a store to keep equipment securely. The last time equipment was lost from its premises was early July, 2006. That was the first and only time that BSB has lost equipment to burglary.

Burglar proofs have now been installed and the place is now very secure. More so, they do not share premises with any other people or organization.

## **F Local Environment**

There is one mast and one tower visible from the BSB premises. The tower (located about 2 km away) belongs to MTN Uganda and is used for its GSM service while the mast (located about 400 metres away) belongs to the local government.

## **G Cooperative model of ownership**

The manager gave the following benefits as among those that would accrue from using this model of cooperative ownership of the facility:

- The internet will be accessed more cheaply.
- The internet will attract more customers who will bring in more income.
- More community members will gain from the facility.

However, a number of challenges are likely to face this arrangement and the facility at large:

- Maintenance costs might be too high for the partners to afford.
- Paying up the bills might become difficult for some partners.
- It will increase competition among the different stakeholders.

## **H Technical description**

BSB is located in the centre of Buwama town, about 200 metres from the telecentre. There is no line of sight to the telecentre because of a number of short buildings and trees. There are many trees in the telecentre compound. The telecentre is located on a slightly higher altitude than BSB. There is an MTN tower on top of a ridge about 1.5 km away. A mast located at the sub-county headquarters (about 300 metres) is also visible from the partner premises.

## **CHAPTER FOUR**

### **4.0 Summary of Telecentre Assessments**

<b>Telecentre</b>	<b>Partners</b>	<b>Location</b>	<b>Address</b>	<b>ISP, Cost</b>	<b>Comment(s)</b>
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<b>Nakaseke</b>	7	Nakaseke district, 65 km north of Kampala	P.O Box 1051, Nakaseke	AFSAT Uganda. USD 250	Very thick vegetation may complicate installations.
<b>Buwama</b>	5	60 km along Kampala-Masaka road	P.O Box 163, Buwama	AFSAT Uganda, USD 250	Has one commercial partner and another partner located behind thick vegetation.

#### 4.1 Summary of Nakaseke Telecentre Partner Assessment Surveys

<b>Partner</b>	<b>Address</b>	<b>Contact Number</b>	<b>Financial Capacity</b>	<b>Distance to Telecentre</b>	<b>Comments</b>
<b>Nakaseke Hospital</b>	P.O Box 1022, Nakaseke.	041-650033, 041-650011	USD 60 for internet access per month	300 metres	Has good LOS and needs internet connection quickly
<b>Sub-county Headquarters</b>	P.O Box 1032, Nakaseke.	None	USD 40 for internet access per month	30 metres	Good line of sight exists
<b>Nakaseke International College</b>	P.O Box 1057, Nakaseke	0772400504, 0782563999	USD 20 for internet access per month	About 1.5 km	No line of sight to the telecentre
<b>Mazzoldi College</b>	P.O Box 1089, Nakaseke	0772583800	USD 20 for internet access per month	About 1.5 km	No LOS to the telecentre
<b>Nakaseke S.D.A</b>	P.O Box 1003, Nakaseke	0772492659	USD 60 for internet access per month	About 2 km	No LOS as the partner is located behind a small hill
<b>Nakaseke Core PTC</b>	P.O Box 1050, Nakaseke	041-650036	USD 40 for internet access per month	About 1.5 km	No LOS to the telecentre

<b>Christ the Rock S.S</b>	P.O Box 1033, Nakaseke	0782087880	USD 27 for internet access per month	About 2 km	No LOS to the telecentre
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#### 4.2 Summary of Buwama Telecentre Partner Assessment Surveys

<b>Partner</b>	<b>Address</b>	<b>Contact Number</b>	<b>Financial Capacity</b>	<b>Distance to telecentre</b>	<b>Comments</b>
<b>St. Balikuddembe S.S.S</b>	P.O Box 32, Buwama.	0772445559	USD 100 for internet access per month	About 2 km	Located on higher ground, there is no LOS
<b>St. Joseph's institute of Education</b>	P.O Box 9504, Kampala	0772618677	USD 40 for internet access per month	About 2 km	Located behind a hill, good LOS from St. Balikuddembe
<b>Buwama Sub County headquarters</b>	P.O Box 73, Buwama	0772338527	USD 100 for internet access per month	About 150 metres	There is a tall mast on its compound
<b>Brain Trust College, Buwama</b>	P.O Box 99, Kampala / P.O Box 99, Buwama	0782672752	USD 20 for internet access per month	About 4 km	There is no LOS and partner is behind thick vegetation
<b>Business Systems, Buwama</b>	P.O Box 87, Buwama	0772601676	Cannot commit to an amount	About 300 metres	No LOS to telecentre due to trees and buildings

## **5.0 CONCLUSION OF TELECENTRE ASSESSMENT SURVEYS**

The people of Nakaseke and Buwama showed great willingness to get internet access. Some even remarked that they could not wait to have the internet in their premises. However, they appealed that the project should be done fast enough such that they can be able to access the *net* sooner rather than later. The Nakaseke hospital administration, in particular, said that they had already been planning to acquire their own VSAT connection.

On the technical side, these surveys were carried out without the necessary instruments like a GPS and digital camera to help produce more accurate decisions as regards the terrain. However, the contents of this report have been made as accurate as possible.

Considering the surveys, it is clear that certain concrete decisions cannot be made especially those affecting procurement of equipment. As a recommendation, more technical surveys need to be carried out for each partner to investigate further the necessity of masts or towers and repeaters alike. Further more, certain things must be addressed before the project is complete; these include training of personnel, good business models to enhance sustainability of the project, training of maintenance personnel, etc.

## APPENDIX A

### Summary of Telecentre employees

#### Nakaseke Telecentre

Name	Age	Position	Languages	Work load	Contacts
Peter Balaba	30	Manager	English, Luganda	Full time	<a href="mailto:balapet2001@yahoo.com">balapet2001@yahoo.com</a> +256-78-2902991
Ssenabulya James	20	Radio Presenter	English, Luganda	Full time	<a href="mailto:jimmiesen@hotmail.com">jimmiesen@hotmail.com</a>
Kwagala Sharon	20	Assistant Librarian	English, Luganda	Full time	<a href="mailto:kwagala2006@yahoo.com">kwagala2006@yahoo.com</a>

#### Buwama Telecentre

Name	Age	Position	Languages	Workload	Contacts
Lydia N. Nankabirwa	28	Centre manager	English Luganda	Full time	0772660562 <a href="mailto:lnankabirwa@yahoo.com">lnankabirwa@yahoo.com</a>
Edrine Namutebi	25	Information officer	English Luganda	Full time	
Joseph Keeba	48	Security guard	Luganda	Full time	
Lutalo G. William	25	Support staff	Luganda	Full time	

## Summary of the people interviewed

### Nakaseke Telecentre

<b>Partner/Contact Address</b>	<b>Person interviewed</b>	<b>Position, Responsibility</b>	<b>Contact</b>
Nakaseke Hospital P.O Box 1022, Nakaseke 041-650033, 041-650011, 041-650010	Dr. Mukunya J. Emmanuel	Medical Superintendent, Has an administrative responsibility.	077-2645972 <a href="mailto:mukunya1@yahoo.co.uk">mukunya1@yahoo.co.uk</a>
Nakaseke International College, P.O Box 10657, Kampala / P.O Box 1057, Nakaseke 0772400504, 0782563999	Mr. Murisho Moses	Head of ICT, controls ICT learning in the school.	078-2624839 <a href="mailto:murmose@yahoo.com">murmose@yahoo.com</a>
Nakaseke Sub-county headquarters P.O Box 1032, Nakaseke	Mr. John Bosco Kezaara	Chairperson, Nakaseke sub-county	077-2970369
Mazzoldi College P.O Box 1089, Nakaseke via Wobulenzi 077-2583800	Fr. Patrick Watikha	Head master, runs the school	077-2583800 <a href="mailto:pwatix@yahoo.com">pwatix@yahoo.com</a>
Nakaseke S.D.A P.O Box 1003, Nakaseke 077-2492659	Mrs. Muyanja Jessica / Mr. Ssenabulya James	Deputy Head teacher / ICT Master	077-2918538 / 078-2699495 <a href="mailto:ssenajimmie@yahoo.com">ssenajimmie@yahoo.com</a>
Christ the Rock S.S	Mr. Ssekyanzi Tonny	Headmaster, runs	078-2087880

P.O Box 1033, Nakaseke 078-2087880		the school	<a href="mailto:ssekyanzitonny@yahoo.com">ssekyanzitonny@yahoo.com</a>
Nakaseke Core PTC P.O Box 1050, Nakaseke +256-41-650036	Mr. Mukasa Peter / Mr. Simon Enyutu	Deputy Bursar / Deputy Headmaster in charge of the Outreach program.	077-2828881 / 077-2312659

### Buwama Telecentre

<b>Partner/Contact Address</b>	<b>Person interviewed</b>	<b>Position, Responsibility</b>	<b>Contact</b>
St. Balikuddembe S.S.S P.O Box 32, Buwama +256-77-2445559	Mrs. Immaculate N. Kibirango	Head teacher, runs the school	077-2445559
St. Joseph's Institute of Education P.O Box 9504, Kampala +256-77-2618677	Mr. Habimana John Baptist	Coordinator for Academic studies	077-2454281 <a href="mailto:jbhabimana@yahoo.com">jbhabimana@yahoo.com</a>
Buwama sub-county headquarters P.O Box 73, Buwama +256-77-2338527	Mr. Mutanda D Aggreys	Senior Accountant, Buwama	077-2338527
Brain Trust College P.O Box 99, Kampala / P.O Box 99, Buwama +256-78-2672752	Mr. Nuwamanya Amos	Headmaster, runs the school	078-2672752
Business Systems, Buwama P.O Box 87, Buwama +256-77-2601676	Mr. Florence Bakka	Manager, runs this commercial ICT centre	077-2601676

**APPENDIX B**

**MBALE SURVEY QUESTIONNAIRE**

**UGANDA PRO-POOR (Access and Networking Model) COUNTRY STUDY**

**SECTION 1:**

**COMMUNITY NEEDS ASSESSMENT:**

Let in the field investigator describe the environment the study community is located in (proximity to trading centre and how prominent the nearest trading centre is, homestead spread, average family size, social service delivery facilities, nature of typical homestead and how close the consumer mains line are).

**Bio Data**

Name.....

Sex.....

Level of education.....

1. What do you consider to be the four greatest development needs of the community as a whole?  
.....  
.....
  
2. Of the needs mentioned in 1 above, if your leaders were to tackle some of the development issues for the community as a whole, which two things would you like them to start with?

.....  
.....

3. What type of information do you consider to be very important to help your community to develop?  
.....  
.....

4. Are people in your community able to easily meet all their food needs each year? How do you do this?  
.....  
.....

5. Are people in your community able to easily meet all the medical needs of each member? How do you do this?  
.....  
.....

6. Do you know of any members in the community who have no proper shelter? How many?  
.....  
.....

**SECTION 2**

**INFRASTRUCTURE:**

The field investigator should give a brief description of the nature and state of the current infrastructure.

1. How long has the telecentre (ICT) been in operation?  
.....

2. What is the current operational state?

ITEM	STATUS
Staffing	
Assets	
Capitalization	
Monthly revenue	
Expenditure	

3. What services are provided? (Please tick)

- Computer training
- Email/Internet
- Radio Station
- Telemedicine
- Telephone
- Fax service
- Library service
- Photocopy
- Printing
- Distance education
- Community radio
- Other service (Please state) .....

4. What services are addressing whole community needs?  
 .....  
 .....

5. What are these needs?  
 .....  
 .....

6. What business model is it based on? (Please tick)

- Hybrid model
- Private-Public Partnership (PPP)
- Cooperative model

7. How many staff does it employ? .....

Sex	Elementary Technical Skills	Intermediate Technical Skills	Advanced Technical skills
Female			
Male			

8. Who is your Internet Service Provider (ISP)?  
 .....

9. What infrastructure is used to deliver the service? (Please tick)

- VSAT
- Copper
- Fiber Optic
- Wireless
- Other (specify) .....

10. What is the monthly cost of the services?  
.....
11. How many customers (each month) does the telecentre serve at present?  
.....
12. What is the radius of the area (in Km) that it serves?  
.....
13. What are the distances of the following from the ICT centre?

Item	Distance (in Km)
Furthest Health Unit	
Furthest School	
Furthest Extension service	
Main trading centre	
Division administration headquarter	