INFORMATION REQUIREMENT FOR RURAL DEVELOPMENT THROUGH TELECENTRE IN KADUNA STATE, NIGERIA

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By

Mohammed Aliyu Dogara

KOLEJ SASTERA DAN SAINS
(College of Arts and Sciences)
Universiti Utara Malaysia

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Nama Penyelia
(Name of Supervisor) : **ASSOC. PROF. DR. WAN ROZAINI SHEIK OSMAN**

Tandatangan
(Signature) : Rozaini Tarikh (Date) : 3/3/2011

Nama Penilai
(Name of Evaluator) : **MADAM ZAHURIN MAT AJI**

Tandatangan
(Signature) : Tarikh (Date) : 8/3/2011

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Universiti Utara Malaysia

06010 UUM Sintok

Kedah, Darul Aman

Malaysia

Abstract

Rural information telecentre content play major a role in information dissemination for the rural farmers. Telecentre information content system is a device in ICT that used to alert rural people to know what is going on in the community and updating them about improvement in their daily activities livelihood. This research work address the objectives of user requirement needs for rural ICT, in community development centers in south and north of Kaduna Nigeria. General research method was used. The prototype of telecentre content system was developed with the use of PHP, Java script for the programming language and micro media directory, Xamp as well as *Adobe* Photoshop. Ten people tested the usability of prototype. The developed telecentre content system brings about adequate information about their daily need when compare to previous way of life and improve the rural farmers to have basic knowledge in using computer. With the use of this device, positive turn around will manifest in Kaduna rural livelihood and increase in income level through market information alert.

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"In the Name of Allah the Most Gracious and Most Merciful"

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CHAPTER ONE: INTRODUCTION

1.0 Introduction

Information and communication technology (ICT) is an indispensable tool of the contemporary world. In fact, culture and society have to be adjusted to meet the challenges of the knowledge age. The advancement of ICT has brought about rapid technological, social, political and economic transformation which eventuated in a network society organized around (Castells, 1996). In addition, the development and proliferation of interconnected computers on a global scale has made the world to become compacted through telecenter and development of rural ICT. The quantum leap and advancements witnessed in recent times in generated tremendous wealth and economic prosperity in many countries around the world. The field of ICT has transformed virtually every facet of human activities and has

ICT have general impacts on all aspect of society whether rural or urban. Its impact has succeeded in molding the world and developing countries including Nigeria. VanBorn (2004), stated that the changing phases of most societies is influence by ICT in general and internet connectivity in particular. Yapa (2008), submits that the advancement of any nation today is measured by the degree to which its citizens have access to information communication technology

Moreover, mere non implementation of information and technology policy in Nigeria serve as one of the greatest impediment to achieving any ICT programmed in the country. In 2001, IT Policy is implemented during the establishment of a National Information Technology Development Agency (NITDA), but not well grounded in its implementation this is due to

lack of governmental commitment, political will and economic instability, couple with weak and uncoordinated information professional association (Asim, 2008).

In fact, ICT has been identified as a key enabler to help support in improving the overall well being of the Nigeria citizens. It has observed that Information and communication technology is currently playing a gradual important role in the local government's areas of Nigeria (Asim, 2008) especially for those who live in rural area where most of their activities is related to farming. By definition, telecentre can be describe as a multipurpose centre aim at providing computer and telecommunication facilities to support communities in remote rural area and in low income urban settlement (Qvortrup, 1994). Kaduna state is one of the states in Nigeria that has a large number of rural communities in which the study will be carried out.

1.1 Problem statement

Nigeria's infrastructure is rapidly developing, with the advent of information technology. Since 2000, internet usage has increased tremendously; however there is still a lot of work to be done as most of the development centered in urban areas while the rural communites are being rejected (Chester & Neelameghan, 2006). This revealed that there are little efforts in the establishment of the rural based ICT development and unfortunately those that are in existence are predominantly urban based. Even though, most of the populace does not have access to internet facilities.

Despite the spread of telecentre across the country, rural communities in Kaduna state do not have or relevant content information for the masses (Oyelaran-Oyeyinka, 2010). Thus this

research work intends to address this issue as regard in providing information content through identifies the use of ICT.

This call for a prompt attention on the part of the policy makers and other stakeholders as the rural poor were responsible for the sustenance of the Nigeria populace as far as production of food is concerned (Munyua, 2000). However, the information needs of this rural dweller must be identified first as to be able to provide appropriate information. It is in the light of the foregone discussions that the following research questions were formulated. Therefore, this study intends to provide solution to some of issues affect spreading of telecenter in rural communities.

1.2 Research Question

The following research questions are to provide answer to those factors mentioned in the course of this study.

(1) What are the information needs of rural community of Kaduna?

(2) What are the current processes of acquiring information in the community?

1.3 Research Objectives

The main objective of this study is to examine the user requirement or information needs for rural communities' development in south & north Kaduna, Nigeria. Specifically the study wants to achieve the following objectives.

(1) To determine the information need of rural communities of north and south Kaduna

(2) To develop a requirement model for Kaduna South & North local government areas communities.

(3) To test the functionality and validation of the content telecentre system

1.4 Significance of the study

The study will justified the need for a rural based telecentre in Kaduna rural communities and the providing of relevant content, as to aid economic and human developments. The expected benefits of ICT, in the Nigeria rural communities will contribute much to their vocation, mostly agriculture, which will enable them to move from the sedentary, crude, and unproductive agriculture to a more promising and modern technology.

1.5 Scope of the study

The study consists of identifying information requirement of people in two local government area of Kaduna state. The questionnaire will be distributed in Nigeria to collect information of several communities in Kaduna through telecentre. A model of information requirement was design and the prototype of application for content was developed with limited functionality by using technology.

1.6 Chapter Summary

This chapter discussed about telecentre and its development as well as problem statement of the study. Major objective of the study is to examine the user requirement needs for rural ICT, development in community development centers in Kaduna south at makera & north at Doka while specific objective is to determine the information need web-based for rural communities of Kaduna.

Other mentioned aspect of chapter one discussed were scope (it covers two local government area in Kaduna State) and significant of the study.

Chapter two

Literature review

2.0 Introduction

This chapter discussed about telecentre development in Nigeria, previous studies on telecentre development in rural community, roles of ICT, benefit of telecentre as well as content development.

2.1 Definition of terms

Rural areas are isolated areas of an open country with low population density. The terms "countryside" and "rural areas" are not synonyms:"countryside" refers to rural areas that are open. Forest, wetlands and other areas with a low population density as well nearest to nature (Prekop, 2011). Goodman (2005) sated that ICTs can be defined as a good medium for knowledge and acquisition of information which could be beneficial to all and stakeholder especially in the rural communities. According to Information Technology Association of America (ITAA) expressed that ICT is the study of design, development, implementation, support or management of computer based information system, particularly software applications and computer hardware.

On the other hand, ICT deals with the use of electronics computer and computer software to convert, store, protect, process, transmit and securely retrieve information (Prekop, 2005).

This eventually, will enhance the growth as well as development of the rural communities. Major occupation of rural communities is agriculture which is the leading sector of the economy in most developing countries. Thus ICT are essential for socio-economic growth because most of the rural poor depend on agriculture for their livelihoods. It is therefore noteworthy to say that rural communities based ICT interventions can increase quick access to relevant information and knowledge which may lead to better productivity in developing countries, especially in the rural areas (Kibat, 1991). Quick access to relevant knowledge and information is a good catalyst for the rural dwellers who are mainly farmers. This will assist them a great deal to make informed decisions regarding their agricultural production activities, marketing of their agricultural produce for better profits, and benefiting from health and disease prevention advice (Manir, 2009). It was well acknowledged that developing countries, are plagued with many constrained in their ability to access knowledge and information through ICTs for their agricultural growth and development agenda.

In a renewed efforts to solve some of the seemingly problems facing rural based community ICTs, a series of options have been open up as to bridge the gap that hitherto exist in the knowledge and information sharing between urban and rural areas. According to James (2010), the communities can either access the technologies at a distance (intermediation) or at close range (via telecenter, community radio). Most of these efforts are focus on assist the communities to access and use knowledge and information through ICTs for sustenance and enhancing rural communities' development.

Information system is any combination of information technologies and people's activities using that technology to support operations, management, and decision-making. In a very broad sense, the term information system is frequently used to refer to the interaction between people, algorithmic processes, data and technology (Information System, 2011).

This diagram below represents gadget application of rural information system as well as its accessibility process of the stake holder that involve in the community.

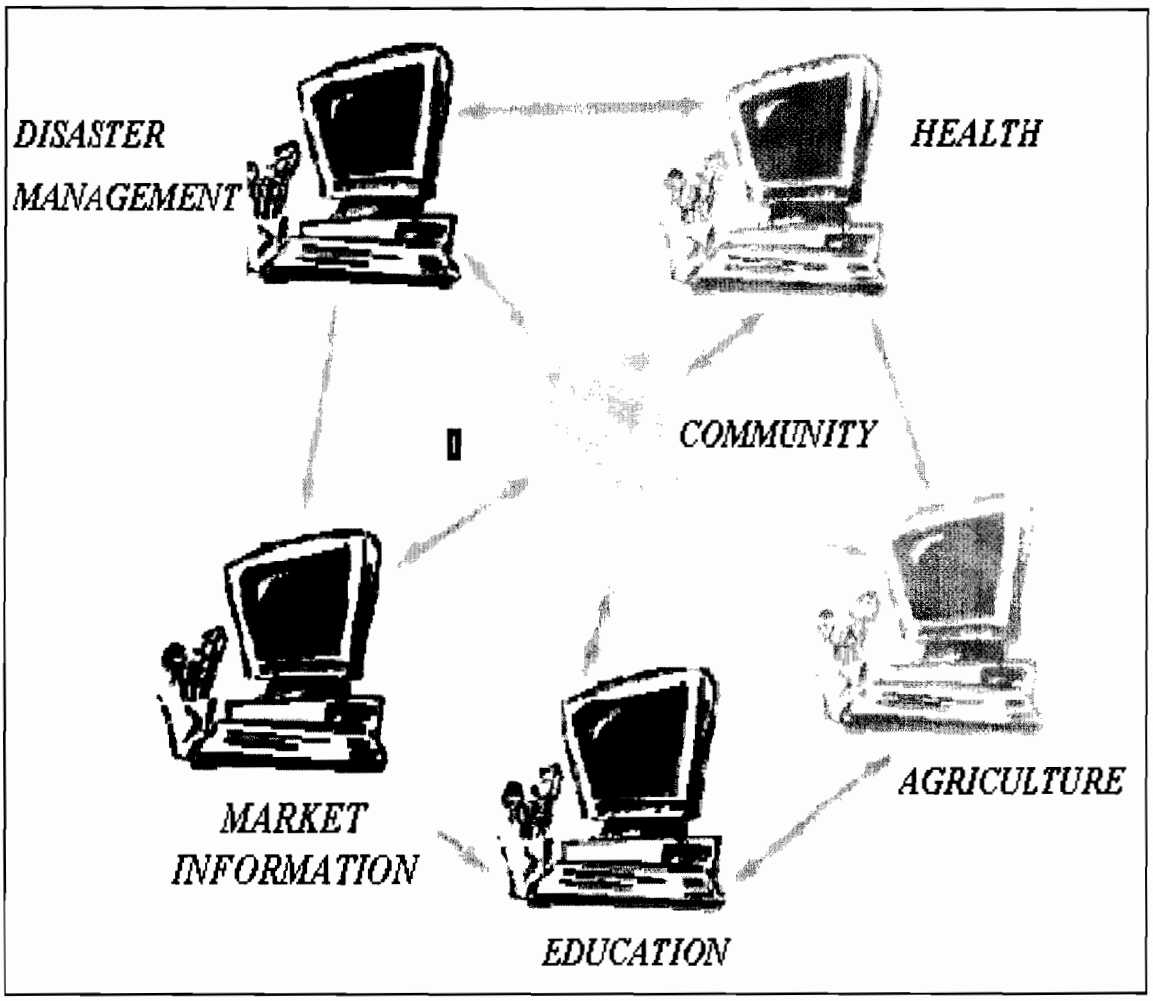

Figure 2.1: People involve in rural community information web system UNDP, (2010)

2.2 Telecentre in Nigeria

Back to the history, telecentres originated from Scandinavia (Sweden Demark), where limited telecommunications facilities in remote rural areas left communities disadvantaged in terms of access to training, education and public and private services (Qvortrup, 1994). According to Harris (2010), the concept of telecentre or rural based information centre as pointed out

that been seen as the mode of wide spread delivery of access to ICTs .It was as a shared resource a single computer connected to the internet can provide a whole communities with access to an unlimited information resources and enhanced communication capability which it could be used for their development.

Nevertheless the challenges still exist as to the type of information they needed, its format and the means of delivery including the mode of presentation and also the charges to be made. Furthermore there is no clear cut definition with respect to the necessary interactions and integration that need to be involved between the rural information community promoters and the benefited communities with regards to the necessary adjustments that communities will have to make in order to make full use of the technology provided for them at the telecentre. Various telecentre has been established in Nigeria particularly in the urban settlement while few or little were concentrate in rural communities.

The implementation and incorporating of telecentre in Nigeria has the specifics of local context of a rural community which scaling up the successes of focused grassroots initiatives to wider implementations is also proving to be a challenge. Some literature have proved it beyond reasonable doubt that some communities do better with their ICTs than other, whilst the technology is the same, many of the disparities in the performance could be attributed to differences between communities (Harris, 2001).

A study by (Yusuf, 2005) provide empirical evidence on the role of the telecenters in providing access to knowledge and information for the enhancement of the rural poor welfare and to develop the communities at large and to ascertain the necessary requirements for the telecentres in rural communities of Nigeria. Studies have revealed that there are few telecentres in Nigeria, but most of them were establish in urban area unless there is political

will of the policy makers the rural poor will continue to be left out in the accessibility to knowledge and information necessary for rural development.

In Nigeria some programs such as better life for rural women, poverty alleviation program etc were put in place for development of the rural settlements by various government, these programs consequently offer a basis for developing a methodology that can be implemented alongside rural telecentres, preferably preceding them so that the targeted rural settlement are able to get the most out of the technology, and eventually enhanced the development of the communities.

Figure 2.1 shows the map of Nigeria with its thirty six (36) states. Kaduna state is one of the states in Northern part of Nigeria.

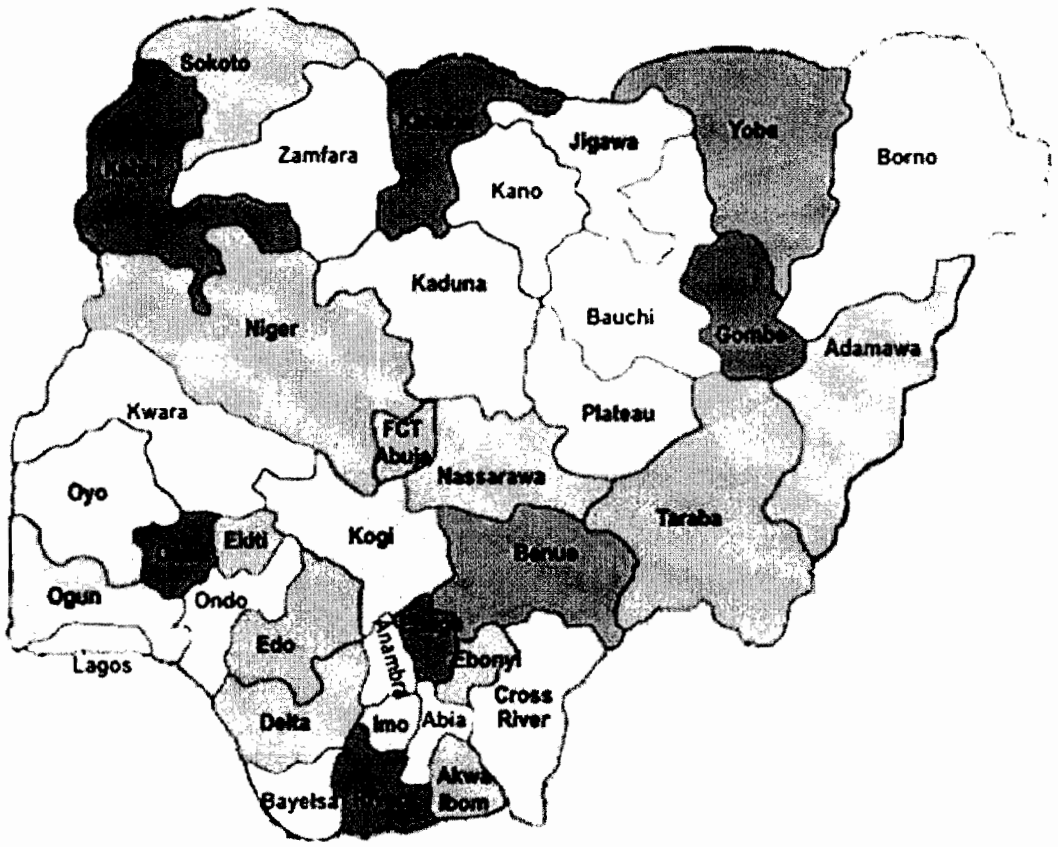

Figure 2.2: Nigeria and its 36 states (NPC, 2006)

2.3 Brief about Kaduna state

Kaduna state was created in 1967 from old Northern part of Nigeria. The state presently has twenty five (25) local government areas, Kaduna remain the capital city of the state while other important cities are; Zaria, Kanfanchan, Saminaka. Figure 2.2 shows the geographical location of Kaduna state with its local government area.

Fig.2.3: Map of Kaduna state with its twenty three (23) local governments. (NPC, 2006)

In Kaduna state, the major economic activities are mainly on agriculture with few administrative office or government services. Example of such crop produced includes yam, cotton, groundnut, tobacco, maize, beans, guinea corn, millet, ginger, rice and cassava.

2.4 Literature reviews on Telecentres

Telecentres have been described as multipurpose centres aimed at providing computers and telecommunication facilities and support for local communities in remote, rural regions and in low income urban settlements' (Qvortrup, 1994). The main motive of creation in the rural communities is to reduce the digital gap between rural and urban communities amongst other objectives. Also provision of ICTs knowledge to all rural residents, occupy a central position in the objectives of telecentre. Finally creation of awareness of the importance of using ICTs among local communities is one of the reasons for telecetres in the rural communities of Nigeria.

Some studies like James (2010) has vehemently contend that telecenters may be expensive for rural communities also there are clear link between access to information and knowledge through ICTs and socio economic growth in developing countries. In his own finding (Parkinson, 2005) opined that ICT services, especially those related to computers, internet and information services, tend to be underutilized in the developing countries, but added that some allied facilities such as photocopying and telephone have a considerable level of utilizations and command high demand. In a related development, several scholars, have demonstrated that ICTs can provide quick access to relevant knowledge and information that may improve productivity, thereby increase the standard of living of the rural settlers and hence reduce poverty and ensure food security in developing countries (Chapman, Slaymaker

and Young, 2005), also (Meera, Jhamtani and Rao, 2004) in their studies on utilization of IT in India and ICT utilization in nine countries of Africa and Latin America (International Institute for Communication and Development, 2006) corroborated this claim by Chapman et.al 2007).

Another research on telecentres in the UK was carried out by the Centre for Applied Social Research (CASR) in the early 1990s focusing on developments in Manchester (Graham, 1992; Ducatel et al. 1993; Ducatel and Halfpenny, 1993; Shenton et al. 1991). Manchester City Council was an early supporter of telematics (i.e. the combination of telecommunications and computing technologies), establishing Manchester Host 18. According to Gibbs and Leach, (1994), indicated that series of telecentres were established across the city in 1992 (known as electronic village halls).

The research undertaken by CASR was the only rigorous evaluation of any telecentre initiative identified in the course of this research. Work carried out since then (Burt, 1995 & Staplehurst, 1994) did not draw any substantively different conclusions. Two reports commissioned by IBM under the banner of their Living in the Information Society project examined community based ICT initiatives in a wider sense (telecentres and community networks), with a focus on social inclusion, and the role that community based ICT initiatives could play in allowing those without access to IT to participate fully in 'the information society' (Harris, 1997).

In common with the in-depth studies outlined above, no information was available about the use of Internet based services, because they had not been introduced to any extent when the research was carried out. The focus of much research on telecentres has been on organizational aspects of telecentres; importance of clear aims and objectives, issues around

sustainability, funding, critical success factors, balancing social and economic objectives, management and control structures, importance of evaluation (Lancaster, 1999).

2.5 Telecentres connectivity.

There is much recognition, on the need to build, a vibrant network and telecentre ecosystems. The rationale or justification for this is that telecentres ecosystem plays a crucial role in the networking system of telecentres. They stand as the point of connection to all other players in the system, in order words they serves as enabler or unifier to all the rural based community telecentres (Goodman, 2005).

Telecentres can connect and collaborate with each other through a network. In addition to this, they can organize ways to access shared services, such as technical support or training services they could afford to create or access on their own. Interested enough, organizations with content and services that could be offered to communities can reach out to numerous users of the Internet in the telecentres, simultaneously. The absence of this telecentres network system will make network access almost impossible, to get any meaningful things out of Telecentres.

2.5.1 Equipment used in the telecentres

The hardware and software contained in the telecentre initiatives studies for this report is wide ranging. The list of potential services can include this but not limited to:

Television with VCR

Computers with software, printer and scanners

Fax machines

Telephone

Photocoping machines

Uninterupted power supply UPS (Sagna, 2000).

2.6 Telecentres in Africa

Evidence has been exist that there is a growing awareness in Africa of the potential for public access facilities in low-income and rural areas to provide a wide range of low-cost communication and information services, ranging from phone calls and email to multimedia distance learning and e-commerce (Manir, 2009). These centres normally take advantage of the convergence of technologies to provide cost effective services where most people find it difficult to afford their own PC, phone line or Internet connection. This is often refers to as Telecentres, some countries like United State ,Canada and Australia have been in the forefront of this noble idea of telecentre nevertheless, in those countries the main focus is on the more advanced services such as Internet access and video conferencing rather than on basic communication services (Jensen, 2004). In the developing countries these telecentres are primarily serve the basic function of providing access to phone and fax, and to a lesser extent of providing for other value-added services such as Internet access.

According to Jensen (2004) telecentres provision in Africa still at the mercy of the small-scale private ownership. As it was mentioned in the previous discussion the few telecentres in most of the countries in Africa nations are scattered over their urban areas while some of the rural areas could not boost of even a single telecentre, notably among these countries are Nigeria, Morocco, Egypt, Ghana, Kenya, Senegal and Zimbabwe (Jensen, 2004). Apart from

the private enterprises telecentres provision in universities and colleges in Africa are also made concerted efforts to establish telecentres, specifically to provide access for students and staff, and also extend to the general public as well in order to settle costs. The concept has also received considerable support from members of the international community, as well as a number of national governments and public telecommunication operators as a means to establish access in rural areas (Jensen, 2004).

One could say that these combined efforts of both the private ownership and educational institutions is important way of realizing a noble objective of transformation of the rural and remote locations., this bring a sort of turnaround in the rural development programmes which many of the Africa countries claimed to be pursuing and has resulted in many national programmes and over international pilot projects scattered through Africa (with majority in Ghana, Mozambique and Uganda, as well as in Benin, South Africa, Tanzania, Zambia and Zimbabwe) to test different models, means of implementation and mechanisms for sustainability. In the recent times, the international community through UN ICT Task Force gave the issue of rural community based telecentres a rapt attention in order to achieve the desire development for the rural settlements. In Africa these are being augmented by regional collaboration amongst African states through the African Union and its New Partnership for African Development (NEPAD). Jensen (2004) submits that many of these activities due to take place in the coming years are likely to be aimed at supporting the emergence of community telecentres, learning centres and other forms of shared public access to ICT facilities.

2.7 Barriers to telecentres in Africa

Of all various obstacles to telecentres in Africa costs of installation maintenance and sustainability have been the major militating factors which make the huge cost of investment in the provision of digital facilities not to be justified (Dahms, 2005). One of the major barriers to telecommunication service provision in Africa has unequal patterns of material access, usage capabilities, benefit and participation concerning ICTs are also due to the asymmetric contribution of economic (money, poverty), political (power, social relationships), and cultural. Also provision of access infrastructure has become more feasible, especially if the costs are spread across many people making use of a variety of services through public access centres. The main aim of a public facility is usually to provide drop-in or scheduled access to the wide range of communication and information services transactions, and generally increase their ability to communicate (Young *et al*, 2007).

2.8 Benefits of telecentre

Generally telecentre have the following benefits to offer the public, they are;

1. It enhances communication within and outside the country

2. It assists the rural dwellers to obtain prompt and necessary useful information as regards their farming activities.

3. It provides information on basic social service for the local administrators (e-government) which will help them in providing the right services to the rural communities.

4. It serves as a good medium for obtaining business information as well as conducting commercial transitions.

It is therefore no gain saying that a telecentre can be seen simply as a phone booth, or as the point of delivery for government information or services, a community library of the future, a point of access to distance learning, a local or regional news service or as a business services centre, depending on the needs of different users (Jesen, 2004).

2.8.1 Selection of site for internet centre.

The study conducted by Holmes (1999) stressed the importance of selecting sites that are well known by the community, this should be one of the preliminary surveys that is required to carried out before locating a telecentre, such a well-known institutions like schools, libraries, tall halls. Also Robinson (1998) emphatically assert the need for such a site to be politically neutral this he noted that lines, data will be better secured in such political neutral places, as unsecured site may pose as a treat to the would be users.

It is on this note that Richardson et al, (2000) suggested that telecentres should be cited in gender neutral environments. Previous studies also corroborated this assertion like Biswas (2001), criticized the sighting of telecentres in the temples which he sees as an estrangement of people along religious and castes. Aside the above mentioned existing facilities/institutions like libraries, schools etc, make citing of telecentres a more cost effective project, this remark is in agreement with Young et al (2000) in the study conducted in Tanzania on the Information Technology in the rural settings of Tanzania.

2.8.2 Factors considered in the requirement gathering for telecentre users.

1. The size of the community

Studies has revealed that the size of the community play a crucial role in the effective usage of Internet services. Young et al (2001) submitted that, communities less than 2,000 people benefited more on average than those that have a bigger size. This could be because that is not uncommon that people in the smaller communities will be able to aware of the availability of telecentre in their domain. In addition to that less number of activities available to smaller communities will make telecentre to be known by the residents than that community with higher population whereby there will be a much more competition thus result in fewer numbers of people utilizing the Internet provided. It's on this background that the research should put into consideration the size of the would-be-potential benefactor communities, as to make the best use of the telecentre.

2. Sensitization of the community

In other to achieve a maximum broader usage of Internet services in the telecentres in the rural communities it's inevitably important that the community member should be made to see the available opportunities awaiting them via the usage of the telecentres. The users requirement gathering should therefore fashioned out the way and manner this should be incorporated.

3. Age and Gender factor

Recognition of these factors will assist to a greater extent the prime aim of telecentres in the rural communities, which is overall development of the people, humanly and economic development It is crystal clear that youth are the largest portion of population

utilizing Internet facilities (Dahms, 1999) and male mostly (64.4%) are found to be using most of the internet services, this was the claims of (Macome & Cumbana, 2001). It is worth noting that the interest of establishing telecentres in the rural settings will be in jeopardy if it is not design as to accommodate all and sundry in term of age categories and gender sensitivity, therefore the users' requirement gathering should be in line with this salient factor if something meaningful is to be archived

4. Community support factor

If there is any factor to be considered in the setting of telecentres in the rural settlements as to provide necessary information for their overall development, integration of the residents of the communities in the schemes of this is very important. If they see themselves as a co traveller in the championing a common cause they will throw their weight for such a project to be successful .In the study of Kyabwe and Kikbombo, (1999) & Fuchs, (1998) the unanimously agreed that the residents of the communities have the sense of belongings to participate in the information society. To actually drive this point home the authors found also that in one of the two Ugandan telecentre communities the peoples lack support for the steering committee participation and involvement therefore resulted to a very low success.

5. Established to meet the need of the community

This is an impressive factor to be considered in establishing a rural community based telecentres, especially where there is diversity in term of religion, culture ethnics etc. Nigeria as a country has this characteristic in its setting. It will therefore be a good step in the telecentres is design to adapt to meet the needs of the communities. According to Scharffenberger (1999), telecentres must be designed as to be able to identify the needs of

their communities and also adapt their programming to those needs. For instance, Robison (2001), in the study on the importance of rural telecommunications in remittance transfers, recommended that in such a community telecentres with an integration of microfinance banks over the Internet will be more useful. It is now clear different community have peculiar need therefore it will be suggested that the information need of the rural residents should be thoroughly survey before sitting the telecentre as this will enhance maximum utility and efficiency of the centers. Location of the telecentre should be located at an independent location. As most of the site appeared to the community as an official or government site, they did not feel it as their own community center, so it's the community that decides where it should be placed, in fact, participating in an important decision related to the telemeter's operation" (Roman and Colle, 2002) the communities should be engaged the active participation of community members.

6. Interaction among Telecentre operators and managers

Study had shown that isolation of one telecentre from another is a serious setback to the operator, some authors in Information Technology includes (Baron, 2002, Delgadilo and Borja,1999) propose sharing information on managing telecentres tools, resources and methodology as well as web-based and online resource site will be of great assistance in the operations of the telecentres.

7. Provision for Information Content Providers

Many of the erudite authors predominantly greed that the best way to meet the yeaning information needs of rural communities settlers is to by utilizing participatory approaches with local organizations and a diverse of community representatives (Baron,2002). This he explain further that the homepage for each of the telecentre is customized to deliver

community specific information to each site. To buttress this point Scharffenberger (1999) cite the example of paid and volunteer telecentre staff as one possibility for the sustainable generation of appropriate, local content.

8. Design for Local Economic Development

The aim of providing rural areas with access to information Communication technologies e.g., telephone is to equip the people with the necessary tools, skill and information to compete on an economic level with others in their environment and by extension all over the world. Young (2001), noted that those that initially utilizing Internet facilities does so as social Internet user which eventually resulted them to be e commerce users and had been proved severally to be beneficial in promoting the economic advancement of rural communities.

9. Monitoring and Evaluation of Progress of Telecentres

Finally the importance of monitory and evaluating the progress of telecentres should be taken seriously in the scheme of arrangement when planning to establish those centers.According to Gomez (1999) stressed the need to evaluate staff as to strengthen the management of the telecentre, this could also be supported by mandating submission of regular reports for updating user registration logs and recording daily usage data.

2.9 Services Provided by the Telecentre

Computing

One of the main functions of a telecentre is to provide and thereby enhance the computing ability to people who are improbable to be able to obtain it through any other means. Ordinarily, the latest models are not really essential as a great deal of useful work can be done by older models. It is likely that the majority of clients will not need sophisticated functionality, but there is a need for a windows interface as an essential minimum. Also in some instances, multimedia capability might be needed but mostly it may not be essential. Minimum software would include; word processing, spreadsheet, e-mail, graphics, database, presentation, programming, and Internet.

Internet

Access to the Internet is the other key important service of a telecentre. E-mail capability would be an essential minimum, but this would be greatly enhanced with web browsing. The speed of the connection as well as the services of the Internet Service Provider will also affect this service (James, 2010).

Fax

Facsimile is an alternative service for communication where Internet access is not feasible or not available.

Telephone

Telephone services would be easy additions to Internet data services provided in that in most cases it may be feasible to provide locally based cellular networks

Training

One of the functions of telecentres is the provision of training personnel this will make diffusion of information to be better and thereby increasing the knowledge and skill of the people.

Information Support

Information support is the actor assistance offer by the telecentres to its client in making them to be aware of where and how they can obtain certain information; this could mean connecting them to other known information providers (Burt, 1995).

Technical Support

When the need arises the telecentres could be of help in the maintainace of the machine to the acceptable levels of services and availability acceptable levels of service and availability.

Institutional Support

Since provision of viable telecentres is a joint effort of government, non government organization and private outfits, many of these telecentres will be associated with one form of institutions or through empowerment to the people having the ability to expand their capabilities and elevating themselves to access to information and resources (Lee, 2005; Chamberlain, 1997; and Wilson, 1996 as cited in Zahurin et Al, 2010). These institutions can provide various forms of assistance for the centre, which would enhance their client services.

Such assistance might include managerial and financial advice, organizational direction, service delivery help, and operational support and co-ordination (Delgadillo *et al.* 1999)

Teleworking

None computer owing individuals could still benefit from the services provided by the telecentres. In this case telecentre operators might take on the role of agent, recruiter and trainer for distant employers who can offer work to local populations (Zeleza, 2005).

Mentoring and Coaching:

Mentoring usually refers to one-one, relationships where as coaching can targeted both individuals and team of users at the telecentres (Oliver, 2009).

Telecentres could be saddle with the responsibility of ongoing coaching and skills development that ensures people running telecentres have opportunities for continuous learning, According to Oliver (2009) coaching and mentoring can be used when ever performance related to developing careers, solving problems, (ideally the final stage of coaching and monitoring cycle with a view to long term learning and development of telecentres excel by doing well on the services offered at the telecentres.

Resource Library:

This could be a collection of curriculum sample business plans, and other materials that telecentres can use in their network (Jens, 2004).

Discounts:

According to Barabas et.al (2009), access to discounted hardware, software, and connectivity are also part of the services telecentres can afford in the communities they are located. Negotiation of bulk deals for telecentres belonging to a network could be taken up by telecntres also.

Graham identified five main development paths (1992), as follows;

1. **Adult education**: aimed primarily at delivering ICT courses to local adults (individuals and community groups)

2. **Community service**: aim to deliver a variety of community services, including communications services (e.g. fax etc.), office services (word processing), training and occasionally information services and advice

3. **Special interest group**: aimed at addressing the needs of a specific group in the community, for example, women, ethnic minorities, disabled people

4. **Local economic development**: primarily concerned with provision of services to local (small) businesses with the aim of regenerating the local economy. They may also provide accommodation for new companies.

5. **Private business services**: set up by private sector companies to provide services on a

commercial basis. Since 1992, the position has changed, and these five development paths have broken down to some extent (with the exception of the private business services). This is largely due to funding difficulties; as telecentres set up with EU funding struggled to survive, once initial funding ran out, they diversified into different areas. As funding became

available, for example for regeneration, telecentres altered their priorities to survive. The Telecentre survey carried out by (Murray and Cornford, 1998) listed the following as the top ten services among the 50 telecentres that responded:

1. General computer training

2. Access to equipment

3. Photocopying

3. Internet access

5. Internet training

5. Other training

5. Word processing

8. Desktop publishing

9. Fax facilities

10. Data entry

2.10 Summary

In conclusion, chapter 2 discussed about literature reviews on telecentre, telecentre in Nigeria and socio economic activities of Kaduna state, importance of telecentre as well as past research studies on telecentre. In addition, factors considered in the requirement gathering for telecentre users and services provided by telecentre were discussed.

CHAPTER THREE
METHODOLOGY

3.0 Introduction

Methodology can be defined as frame work and a guideline for a researcher on how to accomplish his task .It is at the center of any research endeavour. It specifically answers the question 'how' (Punch, 2006). Thus, methodology outlines and stipulates how the research objective will be realized.

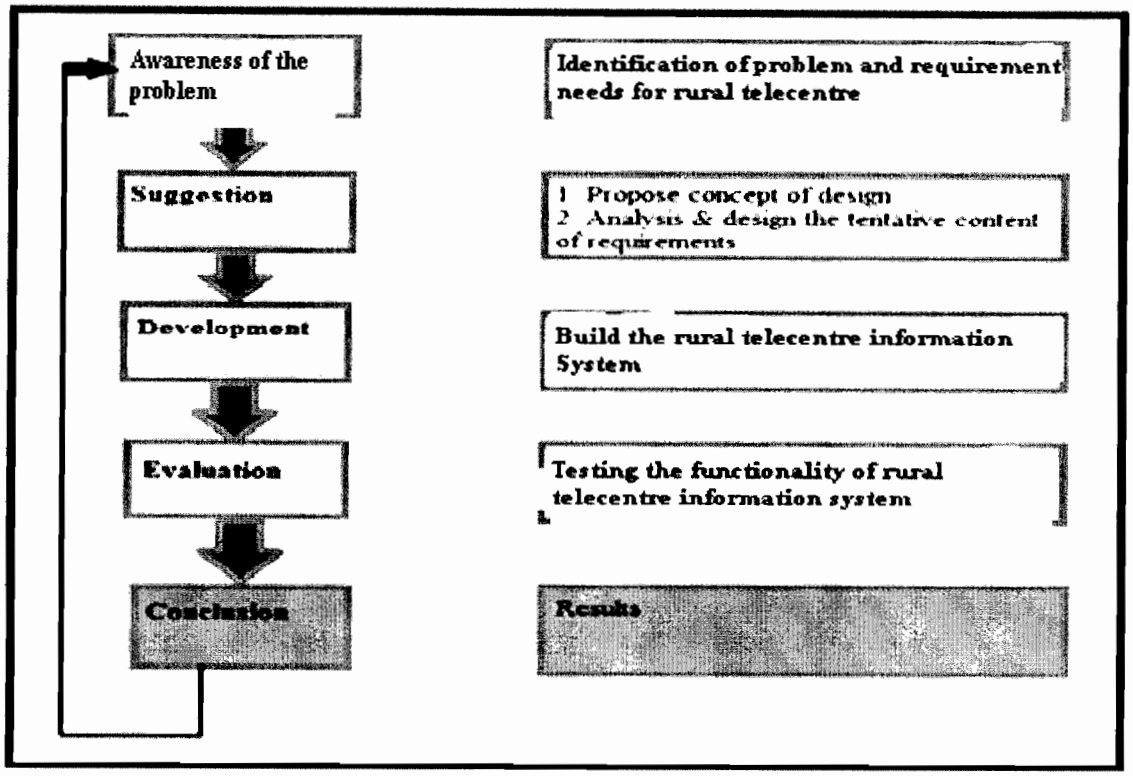

Figure 3.1: General Research Methodology. Adaptation from (Vaishnavi & Kuechler, 2008)

3.1 Awareness of problem

The awareness problems begin by selecting the field of study, and identify the problem, objectives, and the scope of the study. This study illustrates the need for community to study the difficulties in receiving information about telecentre and how the problem could be solved.

Data collection procedure

A Questionnaire was used as an instrument for data collection. The purpose of the questionnaire is to be able to drive various suggestions from the respondent, their views and

needs this could from the questionnaire answered based on the research to be conducted. Several factors are put in to considerations in this process of collection due to their nature of population, and level of privacy and anonymity, and the response rate required. A total 120 questionnaire were distributed and 100 responses were collected out of which 20 were found invalid due to incomplete data. Overall, 80 usable response rate were used (80/120).The questionnaire were sent to the telecentre manager via e-mail who delivered directly to the participants and data was collected over a period of two weeks and send through express posting.

Data Analysis

Data was analyzed after screening with use of SPSS to plot the frequency table, the data collected are quantitative in nature, the analysis of quantitative data entails process of summarizing and distilling data to arrive at a substantive conclusion about the way socio economic characteristic of the rural farmers. The analysis was done and interpreted the data on the basis of frequency percentage.

Suggestion

Data was collected from the questionnaire result and analysis, it was suggested that rural people opined the design of content telecentre information system for the rural people.

Development

Rural information telecentre system was designed and developed with the use of UML diagrammer for the conceptual part of the system while micromedia were used in developing the system home page; Photoshop was used for picture display, HHP and java for programming while Xamp was used for database connectivity.

Evaluation

The prototype functionality is tested at this stage in order to ensure that the system achieve its objective as well as achieving the requirement of the user. Therefore, the evaluation made after the design stage to ensure if the system is friendly use.

Conclusion

This is the last stage in system methodology design. This was concluded base on the result from testing the performance of the system. It has observed that the web base rural telecentre information system serve its purpose and replace the traditional way of getting information.

3.2 Summary

To round up, general research methodology was used for the model and it involves five (5) stages which are; awareness of problem, suggestion, development, evaluation and conclusion. Also, primary data were used in collecting the information. It noted that out of 120 distributed questionnaires; only eighty (80) were valid for data analysis in the study.

CHAPTER 4
DATA ANALYSIS AND FINDINGS

4.0 Introduction

This chapter deals with discussion of data collected. Data interpretation and discussion of findings are presented in line with stated objectives; this was discussed under the following sub-headings

1. Socio-economic information.

2. Accessibility of information

3. Requirement needs in telecentre

4. Opinion of respondent concerning telecentre

4.1 Socio-economic information

One hundred and twenty (120) questionnaires were distributed to the respondents. Out of total distributed questionnaires, 100 of them were returned in which 20 were found no useful therefore, eighty (80) were found useful for this study.

Table 4.1 shows the distribution of respondent according to their age. About 31.25% of the rural people were under 20 years, 50.00% of the respondent were within age of 20-40 years while 18.75% were age above 40 years. It implies that majority of the respondent were age between 20-40 years meaning that those involve in economic activities were in active age of their time.

Table4.1: Respondents' age

Age	Frequency	Percent	Cumulative percent
Under 20 year	25	31.25	31.25
20-40 years	40	50.00	81.25
Above 40 years	15	18.75	100.00
Total	80	100.00	

In Table 4.2, respondent were asked on their occupation. 52.50% of respondents were farmer, 3.75% were engaged in hunting. About 18.75% were into cattle rearer while 25.00% were engaging in marketing of agricultural produce. Other occupation was not engage. This has shown that respondent that engages in farming has highest number of populate meaning that agriculture is most important occupation.

Table 4.2: Occupation

Occupation	Frequency	Percent	Cumulative percent
Farming	42	52.50	52.50
Hunting	3	3.75	56.25
Fishing	-	-	56.25
Cattle rearer	15	18.75	75.00
Agricultural marketers	20	25.00	100.00
Others	-	-	100.00
Total	80	100.00	

In Table 4.3, respondent were asked base on their gender. 62.50% of respondents were male while 37.50% were female. This has shown that the number of male is not proportionally to number of female meaning that male are more dominant than female.

Table 4.3: Gender

Gender	Frequency	Percent	Cumulative percent
Male	50	62.50	54.55
Female	30	37.50	100.00
Total	80	100.00	

In Table 4.4, respondent were asked about their educational level. About 50.00% of the rural populace had primary school education, 25.00 of respondent had junior school education while 18.75% had senior school as well as 6.25% of respondent had Diploma certificate. This revealed that half of the respondent had primary education and others educational level were few.

Table4.4: Educational level

Occupation	Frequency	Percent	Cumulative percent
Primary school	40	50.00	50.00
Junior school	20	25.00	75.00
Senior school	15	18.75	93.75
Diploma	5	6.25	100.00
Others	-	-	100.00
Total	80	100.00	

Respondent were asked about their occupational experience, Table 4.5 revealed that about 25.00% of the respondent had experience of 1-5 years and 10-15 years respectively. Also, 37.50% of the respondent had experience of 5-10 years while 12.25% had above 15 years in occupational experience.

Table4.5: Occupational experience

Occupation	Frequency	Percent	Cumulative percent
1-5 years	20	25.00	25.00
5-10 years	30	37.50	62.50
10-15 years	20	25.00	87.50
Above 15 years	10	12.50	100.00

Total	80	100.00	

4.2 Information on users' accessibility

This section shows the opinion of respondent on medium source of accessing information in rural community. In Table 4.6 below, it revealed that all the respondents receive most of information through the medium of radio, TV, market and religion places respectively. From the table below, most information received often includes; health, education, agriculture and market information.

INFORMATION MEDIUM SOURCES

Table4.6: Information medium source

TYPE	News paper	Internet / Phone with Percent (%)	T/V with Percent (%)	Radio with Percent. (%)	Market Day with Percent (%)	Religion Places with Percent (%)
Health	-	-	60 75.00	60 75.00	50 40.00	70 87.50
Education	-	-	80 100.00	80 100.00	20 25.00	60 75.00
Agriculture		40 50.00	60 75.00	70 87.50	60 75.00	80 100.00
Community Security	-	-	-	-	-	-
Rural Electrification	-	-	50 62.50	60 75.00	70 87.50	10 12.50
Disaster Management	-	-	60 75.00	50 40.00	-	70 87.50
Market Information on goods		-	30 37.50	40 50.00	80 100.00	70 87.50
Farm Implement		-	35 43.75	40 50.00	20 25.00	60 75.00
Weather Condition	-	-	-	-	-	-
Job Opportunities	-	-	20 25.00	20 25.00	10 12.50	-

4.3 Requirement needs in telecentre

In Table 4.7, respondents were asked about the requirements to be included in telecentre content information system. All the respondents (100%) agreed that farming season, market information, health, education, religion, cultural heritage and tourism as well as technological application should be included in the design of a typical content rural telecentre system. About half (50.00%) of the interviewees are in support of rural electrification, disaster management as well as rural water supply while few of them (12.50%) support community security and livelihood. This revealed that the first ten requirements are essentially important for designing telecentre content development.

Table4.7: Telecentre content requirement

Contents	Frequency	Percent	Cumulative percent
Farming season	80	100.00	25.00
Market information	80	100.00	62.50
Technological application	80	100.00	87.50
Education	80	100.00	100.00
Livelihood	10	12.50	
Health	80	100.00	
Religion	80	100.00	
Rural electrification	40	50.00	
Rural water supply	40	50.00	
Community security	10	12.50	
Disaster management	40	50.00	
Cultural heritage & tourism	80	100.00	
Total			

4.4 Respondent opinion concerning telecentre

All question in section 4 were asked base on 5 point of 5-Likert scale from 1 (strongly disagree) to 5 (strongly agree). SPSS versions 16 were used as a tool to analyze the data.

In Table 4.8, About 47.50% of respondent were strongly agree on the need for literacy of ICT training across Kaduna for proper awareness of telecentre while 51.20% agreed on training and 1.20% of the respondent claimed to be neutral.

Table8.8: ICT Literacy Training

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	1	1.2	1.2	1.2
	4	41	51.2	51.2	52.5
	5	38	47.5	47.5	100.0
	Total	80	100.0	100.0	

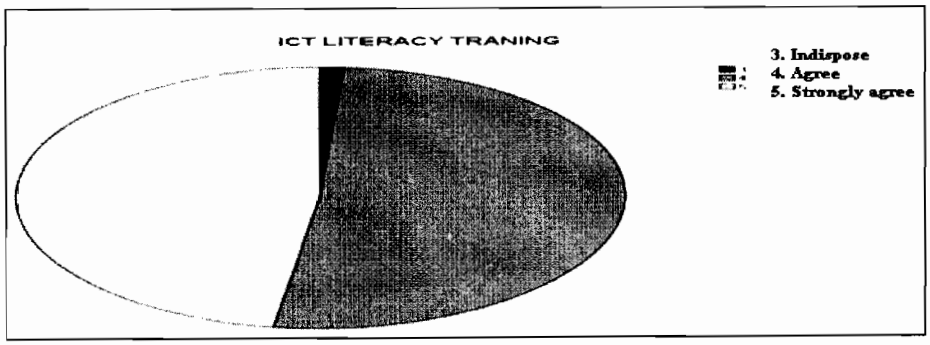

Figure 5.1 Question 1

Table 4.9 shows that about 58.80% of the respondents strongly agree on need to improve internet services in Kaduna so as to support ICT implementation while 41.20% agreed on

Table 9.9: Internet Service

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4	33	41.2	41.2	41.2
	5	47	58.8	58.8	100.0
	Total	80	100.0	100.0	

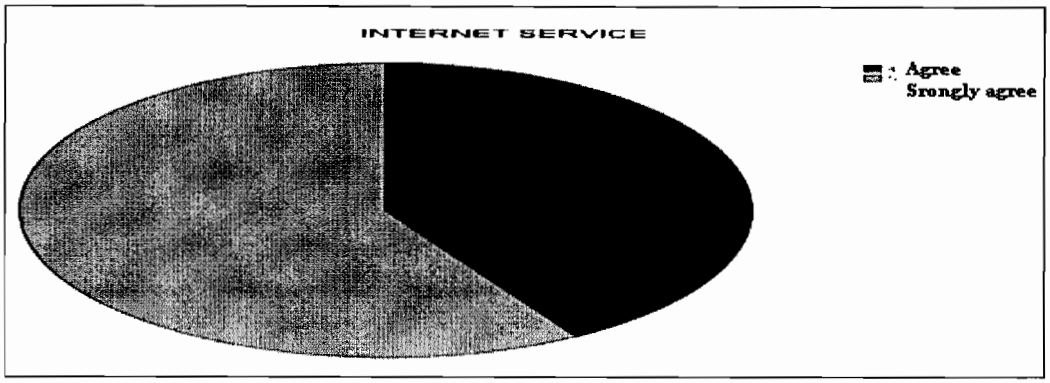

Figure 5.2 Question 2

In Table 4.10, 62.50% of the respondent strongly agrees on e-government services should be extended to rural community while 36.20% agreed on that and 1.2% claimed to be neutral

Table 4.10: ICT Implementation (E-government services)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	1	1.2	1.2	1.2
	4	29	36.2	36.2	37.5
	5	50	62.5	62.5	100.0
	Total	80	100.0	100.0	

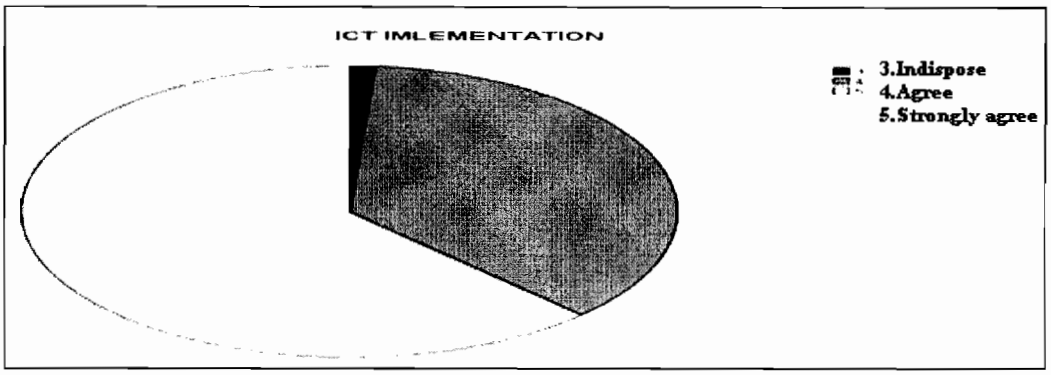

Figure 5.3 Question 3

In Table 4.11, about 67.50% of the respondent strongly agrees that telecentre is most promising way of developing ICT while 32.50% agreed on that

Table 4.11: Developing Economy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4	26	32.5	32.5	32.5
	5	54	67.5	67.5	100.0
	Total	80	100.0	100.0	

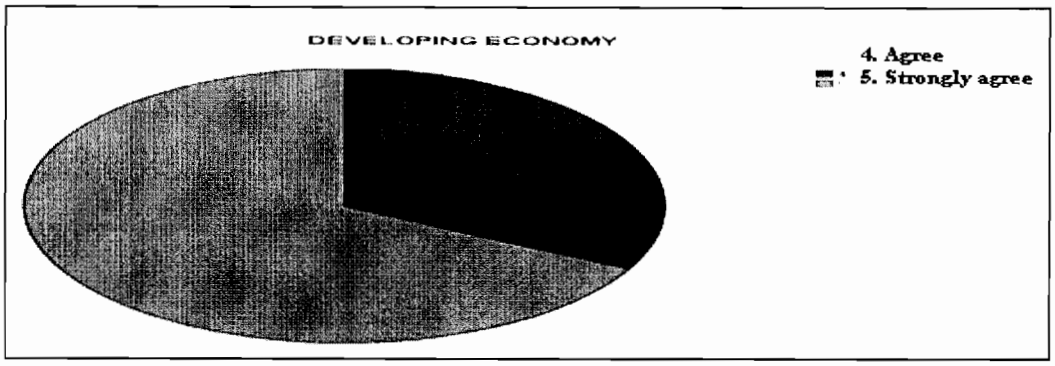

Figure 5.4 Question 4

About 66.20% of the respondent strongly agree that telecentre in rural area will reduce poverty while 33.80% agreed on same question which shows in Table 4.12 below.

Table 4.12: Tele Reduce Poverty

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4	27	33.8	33.8	33.8
	5	53	66.2	66.2	100.0
	Total	80	100.0	100.0	

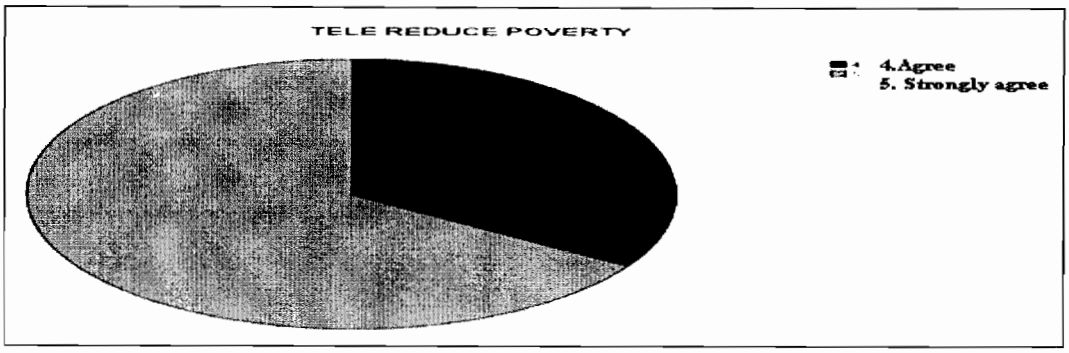

Figure 5.5 Question 5

In Table 4.13, 78.80% of the rural people strongly agreed that telecentre could improve communication between friends and family while 21.20% agreed on that.

Table 4.12: Tele Improve Friends

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4	17	21.2	21.2	21.2
	5	63	78.8	78.8	100.0
	Total	80	100.0	100.0	

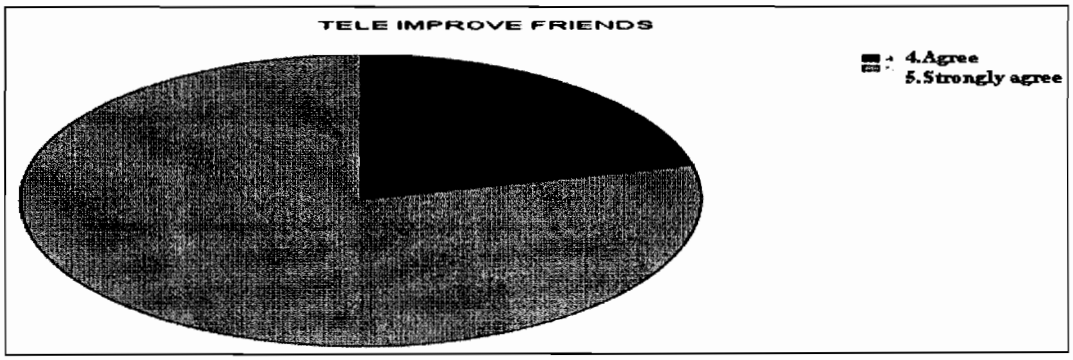

Figure 5.6 Question 6

Table 4.14 shows the response of rural people concerning using telecentre in improving relationship among citizens. 73.80% of the respondent strongly agreed on that while 26.20% agreed.

Table 4.13: Tele Improve Citizens

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4	21	26.2	26.2	26.2
	5	59	73.8	73.8	100.0
	Total	80	100.0	100.0	

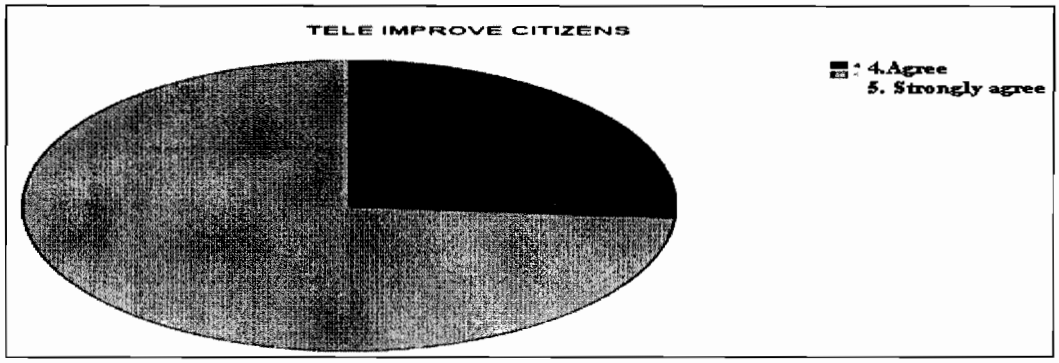

Figure 5.7 Question 7

In Table 4.15, 1.20% is indisposed to the fact that uninterrupted power supply is a factor for the success of telecentere. 33.00% respondent agrees while 65.00% of the respondents' stongly agreed on that.

Table 4.14: Uninterrupted Power Supply

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	1	1.2	1.2	1.2
	4	27	33.8	33.8	35.0
	5	52	65.0	65.0	100.0
	Total	80	100.0	100.0	

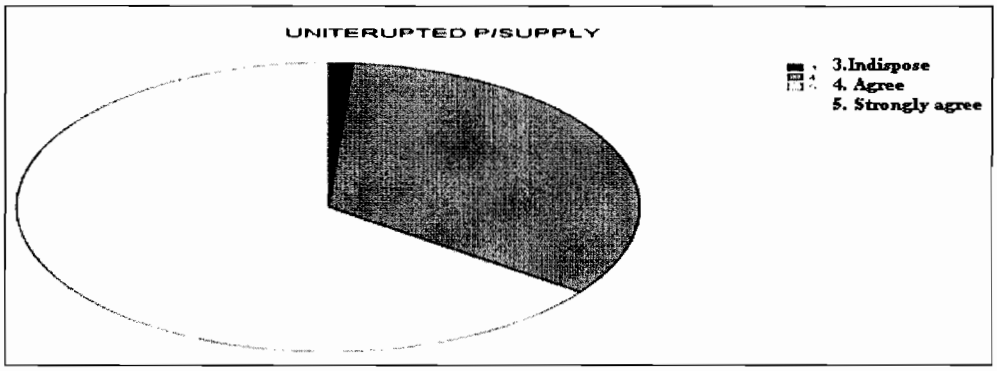

Figure 5.8 Question 8

About 40.00% of respondent agree that telecentere needed an adequate broadband while 60.00% strongly agree to it (Table 4.16).

Table 4.15: Adequate Broadband

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4	32	40.0	40.0	40.0
	5	48	60.0	60.0	100.0
	Total	80	100.0	100.0	

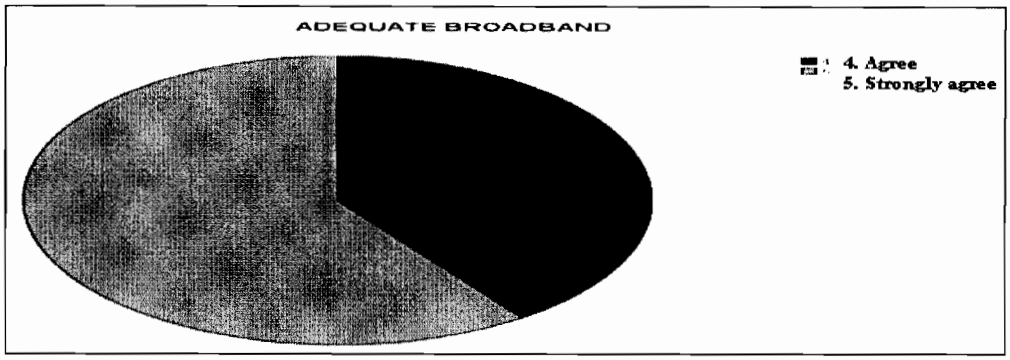

Figure 5.9 Question 9

Table 4.16: Tele Cultural Awareness

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	1	1.2	1.2	1.2
	4	33	41.2	41.2	42.5
	5	46	57.5	57.5	100.0
	Total	80	100.0	100.0	

In Table 4.17, 57.50% of the respondent strongly agrees that the provision of Awareness of telecultural in rural community will enhance implementation of ICT while 41.20% claimed to be neutral.

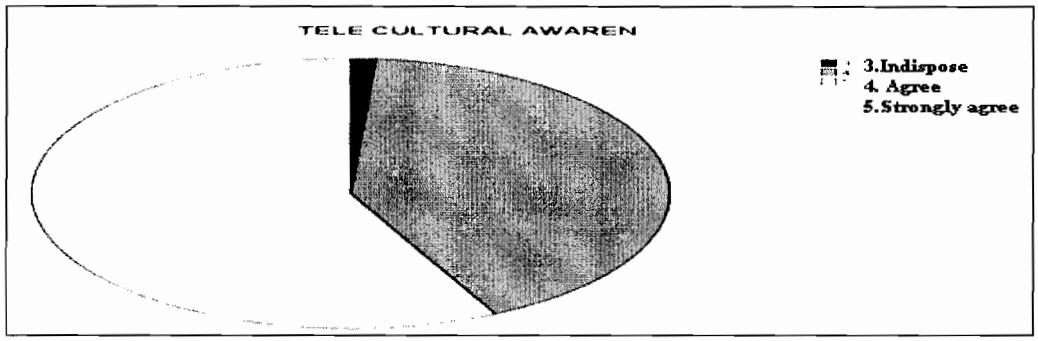

Figure 5.10 Question 10

3.80% respondent are indispose to that fact that telecentere produce job opportunities. 46.20% agree to the statement while 50.00% of the respondents strongly agree to the statement as shown in Table 4.18 below.

Table 4.17: Job Opportunities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	3	3.8	3.8	3.8
	4	37	46.2	46.2	50.0
	5	40	50.0	50.0	100.0
	Total	80	100.0	100.0	

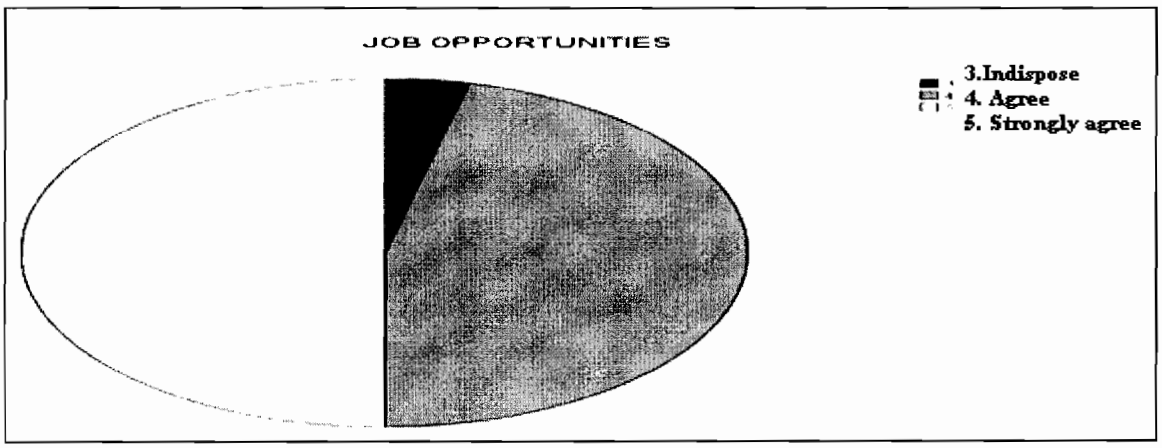

Figure 5.11 Question 11

2.5.00% respondents are indisposed to scale number. A total of 57.50% respondents agreed that telecentre are informative for agricultures, while 40.00% strongly agree in that.

Table 4.18: Access Tele Help Agric

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	2	2.5	2.5	2.5
	4	46	57.5	57.5	60.0
	5	32	40.0	40.0	100.0
	Total	80	100.0	100.0	

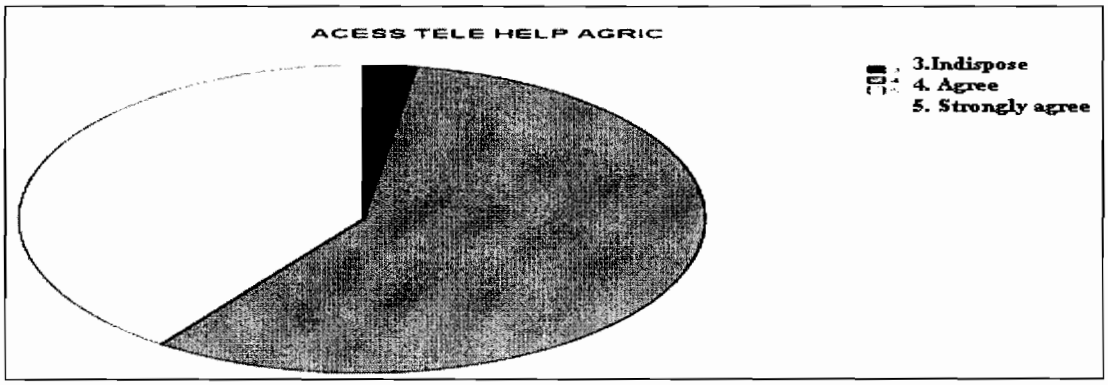

Figure 5.12 Question 12

2.50 % respondent answered indisposed and 40.00% respondents answered agreed, while 57.50% of the respondent answered strongly agree to the statement that telecentre help rural dwellers to improve their education opportunities (Table 4.20).

Table 4.19: Tele Help Rural

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	2	2.5	2.5	2.5
	4	32	40.0	40.0	42.5
	5	46	57.5	57.5	100.0
	Total	80	100.0	100.0	

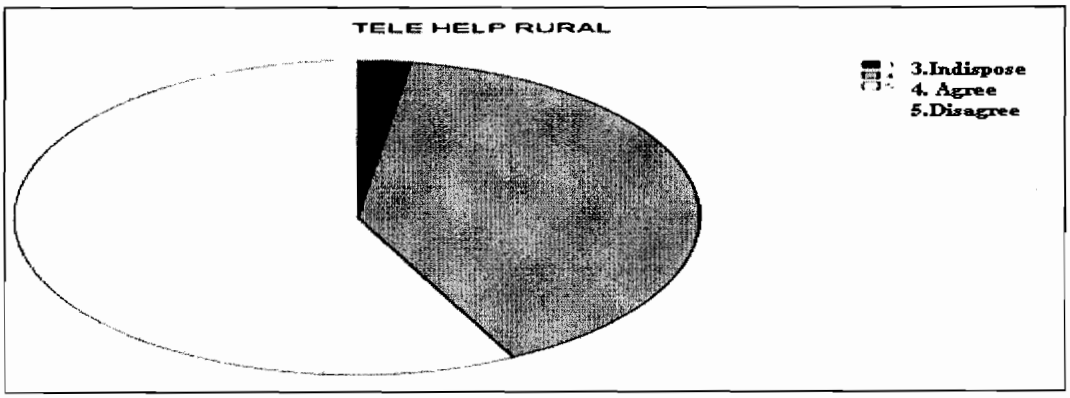

Figure 5.13 Question 13

Table 4.21 shows that 1.20%of the respondent answers indisposed and 48.80% respondents answer agree to the statement while 50.00% of the respondents strongly agree on that as shown in Table 4.21.

Table 4.20: ICT help Weather Condition Q15

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	1	1.2	1.2	1.2
	4	39	48.8	48.8	50.0
	5	40	50.0	50.0	100.0
	Total	80	100.0	100.0	

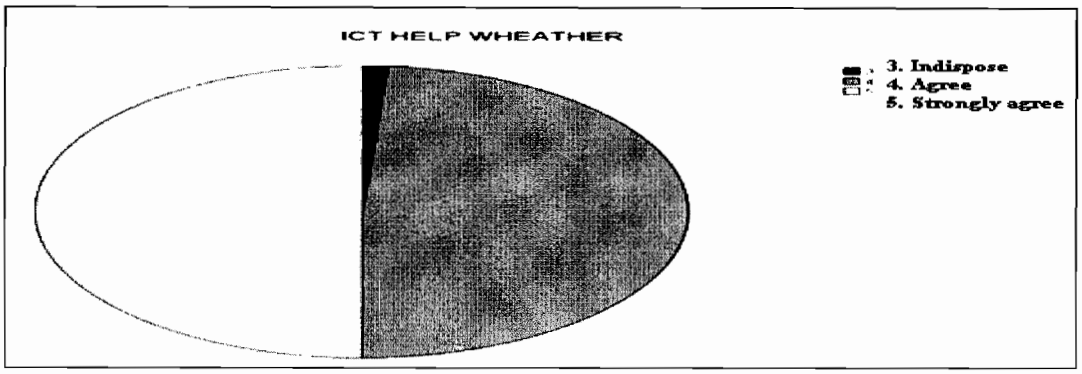

Figure 5.14 Question 14

Table 4.22 presents that 42.50% of the respondents ordinarily agree and 57.50% strongly agree on that access to ICT facilities should be made universal to all citizen irrespective of their locations (urban or rural). These findings supportably interpret that "access to ICT facilities should be made universal to all citizens' realization of its goal in rural area". These findings stimulate this study objective in a dimension

Table 4.21: Access to ICT facilities should be made universal to all citizens' realization of its goal in rural area

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4	34	42.5	42.5	42.5
	5	46	57.5	57.5	100.0
	Total	80	100.0	100.0	

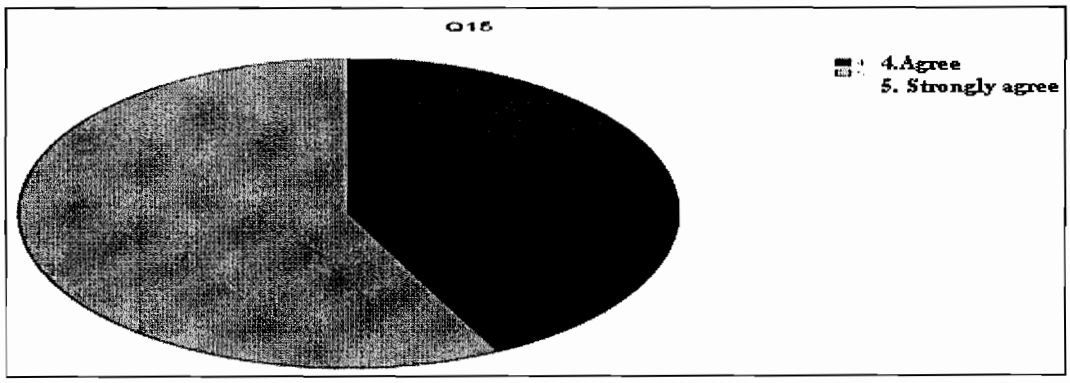

Figure 5.15 Question 15

	Mean	Std. Deviation	N
ICT LITERACY TRANING	4.46	.526	80
INTERNET SERVICE	4.59	.495	80
ICT IMLEMENTATION	4.61	.515	80
DEVELOPING ECONOMY	4.68	.471	80
TELE REDUCE POVERTY	4.66	.476	80
TELE IMPROVE FRIENDS	4.79	.412	80
TELE IMPROVE CITIZENS	4.74	.443	80
UNITERUPTED P/SUPPLY	4.64	.509	80
ADEQUATE BROADBAND	4.60	.493	80
TELE CULTURAL AWAREN	4.56	.524	80
JOB OPPORTUNITIES	4.46	.572	80
ACESS TELE HELP AGRIC	4.38	.537	80
TELE HELP RURAL	4.55	.549	80
ICT HELP WHEATHER	4.49	.528	80
Q15	4.58	.497	80

Table 4.22: Descriptive statistics of the contents

Looking at the table above, it shows that job opportunities (0.572) has highest standard deviation while telecentre improve friends has lowest in standard deviation (0.412). These indicate the contribution of each question to the respondent.

4.5 Summary

This chapter discussed about how telecentre content requirement was gathered. It shows that job opportunities (0.572) has highest standard deviation while telecentre improve friends has lowest in standard deviation (0.412). It has also observed that out of 120 distributed questionnaire, only 80 of them were found used. The result indicated that almost all the respondents support the use of telecentre information system in order for them to have adequate information about their daily and socio economic activities.

CHAPTER FIVE: REQUIREMENT MODEL AND DESIGN

5.0 Introduction

This chapter covers the analysis, design and implementation of the model and its prototype of Kaduna North and South telecentre information system. The study used UML tools (*UML diagrammer*) to analyze the requirement and specification.

5.1 Use Case Model

The use case model specifies the functionality of system which has to offer users. It also helps to define what should take place inside the system. This model uses actors to represent roles that users plays, and use cases represent what the users should be able to do with the system. Each use case is a complete course of events in the system, seen from a user perspective (Simon et al, 2005).

5.1.1 Use-Case

Use case is a methodology used in system analysis to identify, clarify and organize system requirement (Quality.com, 2009). Use cases are a way to capture system functionality and requirements in UML.

Figure 5.1 shows the use case of information system for Kaduna north and south telecentre system. The use case contains two users (administration i.e. the officer that manages the system). The use cases comprise of login, health information, agricultural information, education, market information, manage information, and manage users and the rest. In this diagram, users can login with his/her username and password; users can also view health information, agriculture information and so on.

At administrator side, officer can login, manage information, manage users by add, edit or delete any information about users.

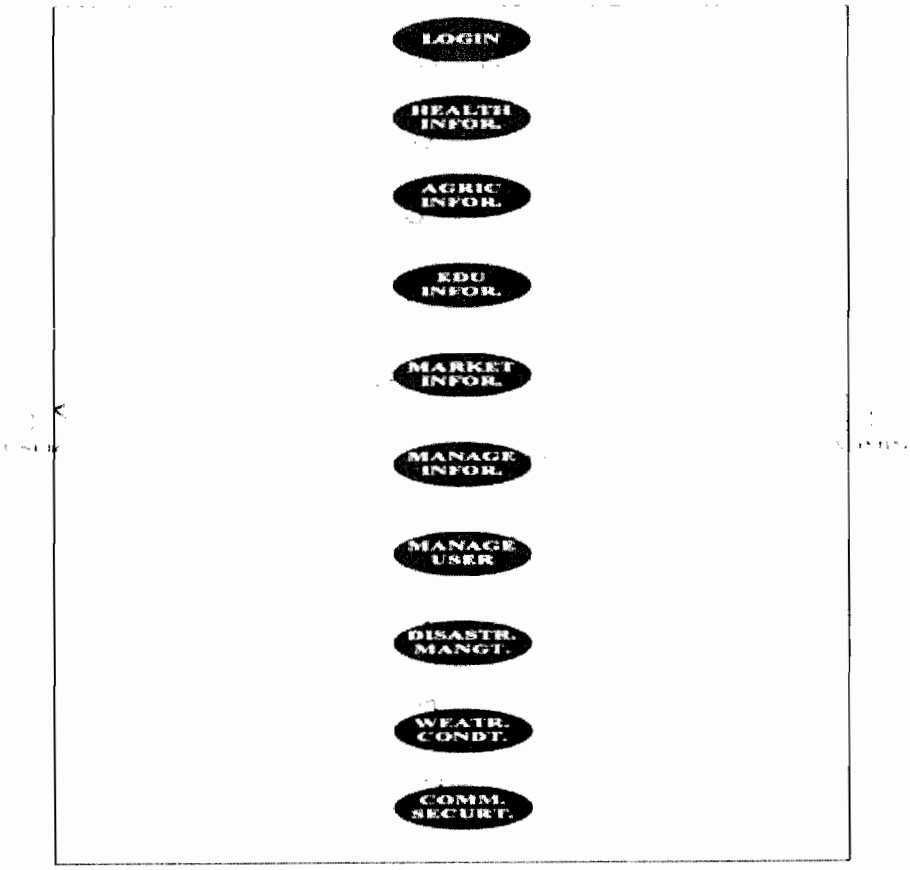

Figure 5.1: Use Case Diagram of information system for Kaduna north and south telecentre system (KNSTS)

5.2 System requirement

Requirement is a statement of what information system must do or what characteristics, qualities and properties it must do. Listed below are the functional requirements and non-functional requirement of telecentre information system. In the priority column, the following short hands are used:

M: Mandatory requirements (something the system must do)

D: Desirable requirements (something the system preferably should do)

O: Optional requirements (something the system may do)

5.2.1 Functional requirement

Functional requirement specify about what the information system must do, the process that involves with the core function of the system. Table 5.1 shows functional requirements, description and priority of Kaduna north and south telecentre information system

Table 5.1: Functional requirement

No	Requirement ID	Requirement Description	Priority
	KNSTS _01	**Admin and users/login**	
1	KNSTS_01_01	Administration and user member login into the system by using his/her username & password.	M
2	KNSTS_01_02	Verification (reflex) shall be detected by the system so as to validate username and password.	D
	KNSTS_02	**User view health information**	

3	KNSTS_02_01	The users can view all about health information on the system.	M
	KNSTS_03	**User view agricultural information**	
4	KNSTS_03_01	Users can view any information on agricultural such as planting time, irrigation period e.tc.	M
	KNSTS_04	**User view education information**	
5	KNSTS_04_01	User can view information on education such include number of pupils intake, number of school in the community, admission and examination period.	M
	KNSTS_05	**User view market information**	
6	KNSTS_05_01	User can view information prices of agricultural produce and agricultural inputs.	M
	KNSTS_06	**User view weather condition**	
7	KNSTS_06_01	Users can view the weather condition of environment so as to prepare for farming season	M
	KNSTS_07	**Admin Manage information**	
8	KNSTS_07_01	Administrator can update information into users page, it also delete, edit and add.	M
9	KNSTS_07_02	System will automatically be back to home page of the information sharing portal	D

	KNSTS_08	**Admin manage users**	
10	KNSTS_08_01	The administrator update information about users by press adds, edit and delete.	M
11	KNSTS_08_02	The system shall update the database after each operation done by the administrator	D
	KNSTS_09	**User view community security**	
12	KNSTS_09_01	Users can view community about the safety and their property	M
	KNSTS_10	**User view disaster management**	
13	KNSTS_10_01	User view any disaster and aware about any outbreak that might happen in order to prevent it	M

5.2.2 Non functional Requirements

Non functional requirement is a requirement specification about the system itself, its behavior, properties and qualities. Table 5.2 shows various non functional requirements for KNSTS.

Table 5.2: Non functional requirement

No	Requirement ID	Requirement Description	Priority
	KNSTS_11	**Reliability issues**	
14	KNSTS _11_01	If the system has been disconnected, it should behave perfectly normal when reloaded again.	M

	KNSTS_12	**Usability issues**	
15	KNSTS _12_01	The system must be available all the time.	M
	KNSTS_13	**Security issues**	
16	KNSTS _13_01	Only administrator will have access to the system maintenance	M
17	KNSTS _13_02	Both administrator and users have access to use the system	M
	KNSTS_14	**System Performance**	
18	KNSTS _14_01	The system must have a realistic speed base on technology used to access many users at same time.	M

5.2.3 Hardware requirement

The system needs high quality hardware in (CPU, RAMS and Hard Disk) to execute it.

5.2.4 Software requirements

Operating system: Microsoft Windows XP Professional or Microsoft Windows 7.

Database: Xamp

5.3 Use case specifications

The use case specification provides the details of the functionality that the system will support and describes how the actors will use the system in order to obtain a specific result of value.

Use case login

5.3.1 Brief description

In Figure 5.2 shows the description of login process. It ensures users and administration to gain access to the system databases. An authorized actor is a user who has an account on the system. The user must type a valid username and password to gain access. Logging into the system provides security and confidentiality to the telecentre system.

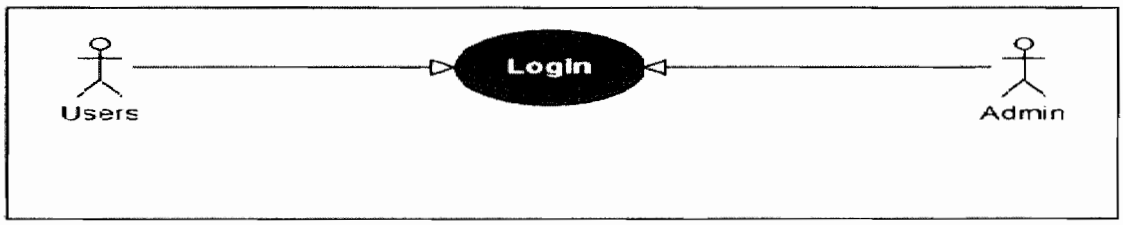

Figure 5.2: Login use case

5.3.2 Pre-conditions

User must be a member of the system because it purposely designed for them (authorized users)

5.3.3 Characteristic of activation

Click on extension service button and enter user ID and password for extension workers and administration, an extension page will open for the users.

5.3.4 Basic Flow

The actor will enter his user name and (password not more than 4 char).

The actor will press the login button to access to the telecentre system.

The login will be checked by the system and verify the username and the password.

5.3.5 Post-conditions

In case of invalid or wrong user name / password, an error will indicate

5.3.6 Rule(s)

Have account to the telecentre system i.e. he or she must be member of the user

5.3.7 Constrain

No

5.4.1 Brief description

In Figure 5.3 shows the description in information. It ensures users to view information about health from databases system.

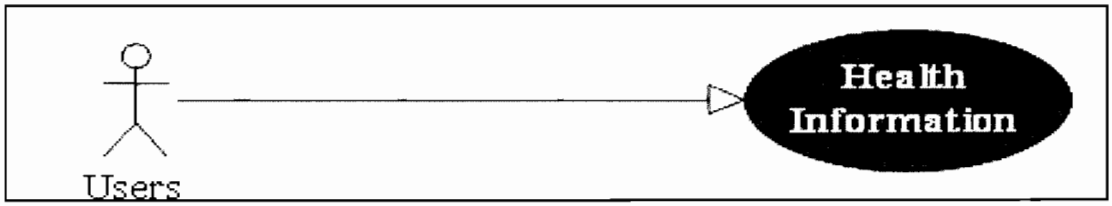

Figure 5.3: Health information use case

Pre-conditions

User must be a member of the system in order to view the information

5.4.2 Characteristic of activation

User click on health information in which the page open to view.

5.4.3 Basic Flow

The user will view all information about community health in the displayed page.

5.4.4 Post-conditions

The user will view the information

5.4.5 Rule(s)

Must be in sequence order.

5.4.6 Constrain

No

5.4.7 Brief description

Figure 5.4 shows the description in agricultural information. It ensures users to view information about agriculture on season to cultivate in their databases system.

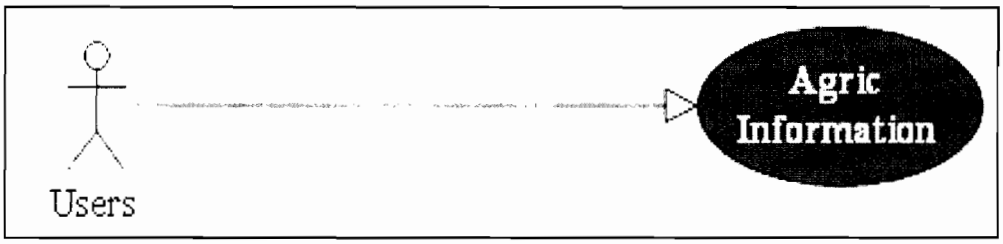

Figure 5.4: Agricultural information use case

5.4.8 Pre-conditions

User must be a member of the system in order to view the information on agricultural.

5.4.9 Characteristic of activation

User click on agricultural information in which the page open to view.

5.4.10 Basic Flow

The user will view all information about agricultural in the displayed page.

5.4.11 Post-conditions

The user will view the information

5.4.12 Rule(s)

Must be in sequence order

5.4.13 Constrain

No

5.5.1 Brief description

Figure 5.5 shows the description in market information. It ensures users to view information about education on season to cultivate in their databases system.

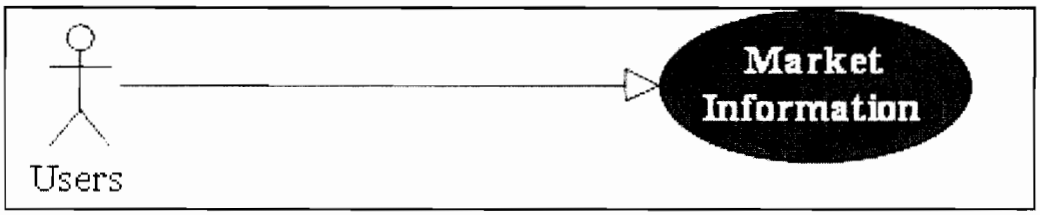

Figure 5.5: Market information use case

5.5.2 Pre-conditions

User must be a member of the system in order to view the information on market.

5.5.3 Characteristic of activation

User click on market information in which the page open to view.

5.5.4 Basic Flow

The user will view all information about market in the displayed page.

5.5.5 Post-conditions

The user will view the information

5.5.6 Rule(s)

Must be in sequence order

5.5.7 Constrain

No

5.8.1 Brief description

Figure 5.6 shows the description in education information. It ensures users to view information about education on season to cultivate in their databases system.

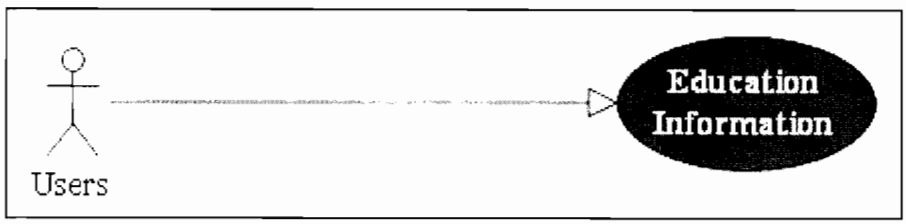

Figure 5.6: Education information use case

5.8.2 Pre-conditions

User must be a member of the system in order to view the information on education.

5.8.3 Characteristic of activation

User click on education information in which the page open to view.

5.8.4 Basic Flow

The user will view all information about education in the displayed page.

5.8.5 Post-conditions

The user will view the information

5.8.6 Rule(s)

Must be in sequence order

5.8.7 Constrain

No

Use case Manage information

5.8.8 Brief description

Figure 5.7 shows the description of manage information, use case allows administration to have access to manage information. Administrator can manage any information been displayed on the screen by edit, add and delete.

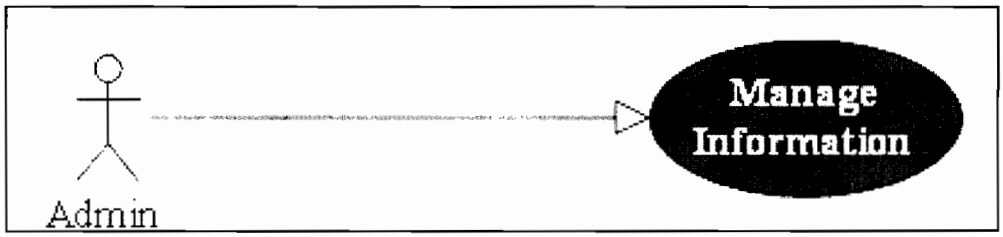

Figure 5.7: Manage information use case

5.8.9 Pre-conditions

The use case begins when administrator start to send any information regarding telecentre to the users. Such information are; health information, education information and so on. Only administrator has access to the manage information been displayed on computer screen for the users.

5.8.10 Characteristic of activation

Administration can write, add, edit, delete any information been posted on system page

5.8.11 Basic Flow

Administration press manage information menu to update any information for the users concerning their agricultural activities and the rest.

5.9.1 Brief description

Figure 5.8 shows the description of manage users, use case allows administration to have access to manage users. Administrator can manage any information about users by edit, add and delete.

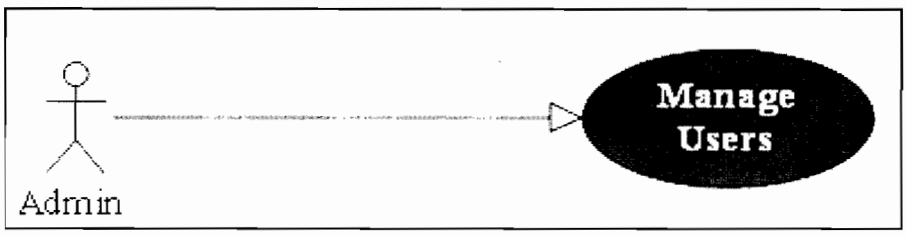

Figure 5.8: Manage users use case

5.9.2 Pre-conditions

The use case begins when administrator start to view and edit any information about users. Only administrator has access to the manage users

5.9.3 Characteristic of activation

Administration can add, edit, and delete any information about the users

5.9.4 Basic Flow

Administration press manage users menu to update any information about the users that used the telecentre system

5.10.1 Brief description

Figure 5.9 shows the description in disaster management. It ensures users to view information about any disaster that might happen in the community and way of controlling it.

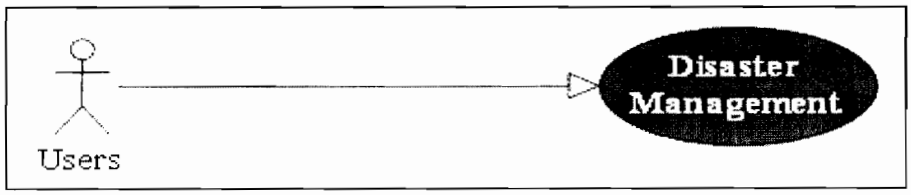

Figure 5.9: Disaster management use case

5.10.2 Pre-conditions

User must be a member of the system in order to view information on disaster.

5.10.3 Characteristic of activation

User click on disaster management in which the page open to view.

5.10.4 Basic Flow

The user will view all information about disaster happen around through the displayed page.

5.10.5 Post-conditions

The user will view the information about disaster.

5.11.1 Brief description

Figure 5.10 shows the description in weather condition. It ensures users to view information about any weather that might currently reflect in the community.

Figure 5.10: Weather condition use case

5.11.2 Pre-conditions

User must be a member of the system in order to view information about weather condition for the community farmers and so on.

5.11.3 Characteristic of activation

User click on weather condition and it opens a new page.

5.11.4 Basic Flow

The user will view all information about weather conditions around the community through the displayed page.

5.11.5 Post-conditions

The user will view the information about weather condition.

5.12.1 Brief description

Figure 5.11 shows the description of community security. This ensures the users to view information about community security.

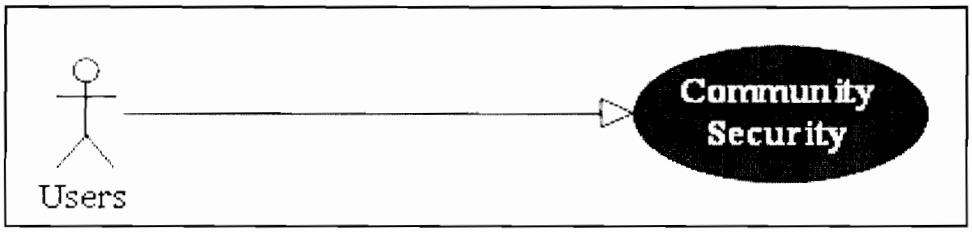

Figure 5.11: Community security use case

5.13.1 Pre-conditions

User must enter the system in order to view information about community security in terms of their wealth.

5.13.2 Characteristic of activation

User click on community security and it opens a new page.

5.13.3 Basic Flow

The user will view all information about community security in the community through the displayed page.

5.13.4 Post-conditions

The user will view the information about community security

5.14 Sequence Diagram for the flow of Use-Cases

A sequence diagram in Unified Modeling Language (UML) is a type of interaction diagram that shows how processes operate with one another and in order.

Figure 5.12 shows the sequence process of administrator and users when login into the telecentre information system. The process consists of interface, control and login page. Both actors uses his/her username and password to login, the process involve verification of username and password to confirm if he/she has an authorization.

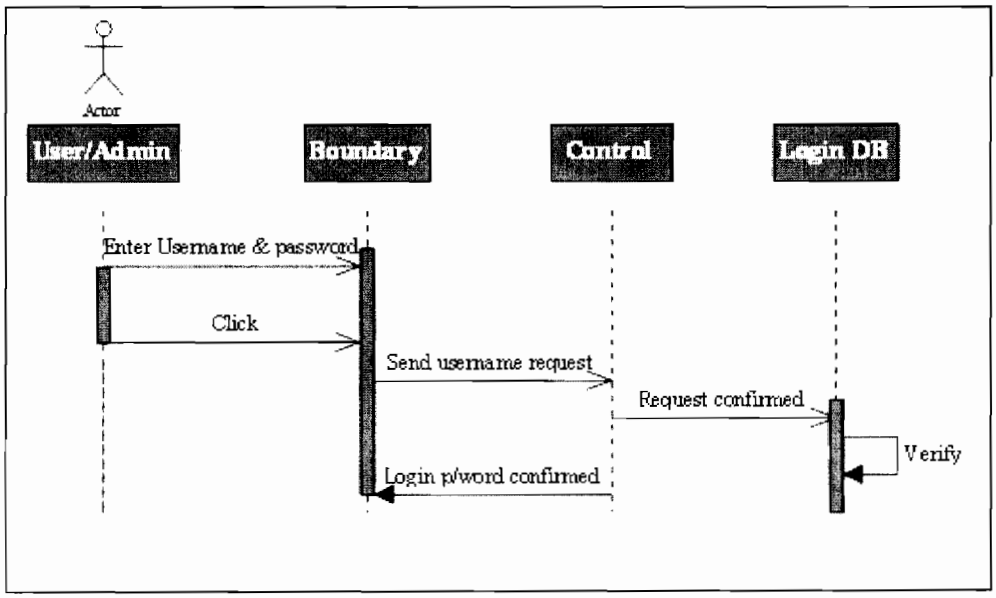

Figure 5.12: Sequence diagram for use cases login KNSTS page

Figure 5.13 shows how the users press health information menu to view all announcements about health and vaccinations in health page.

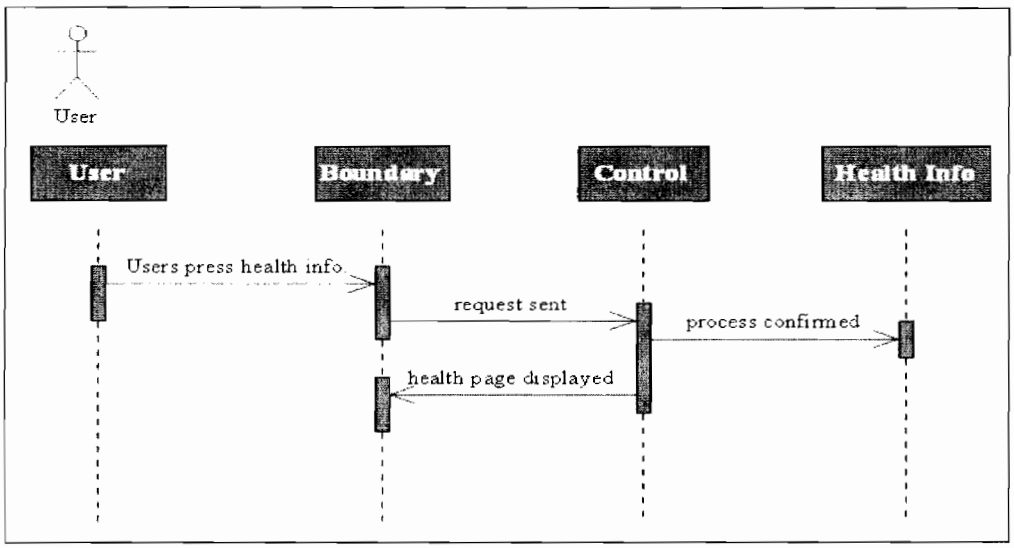

Figure 5.13: Sequence diagram for use cases health information page

Figure 5.14 shows the sequential process by which users (rural people) click on agricultural information to view all about agriculture such as farm inputs, time of planting.

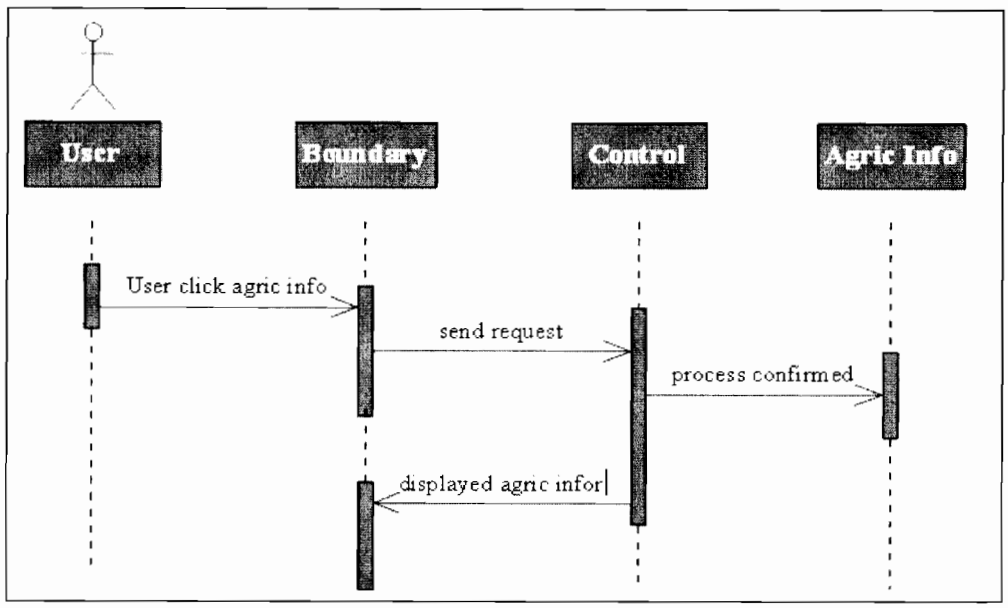

Figure 5.14: Sequence diagram for use cases agricultural information page

Figure 5.15 shows the sequence process of market information in which users press on market menu and display the page.

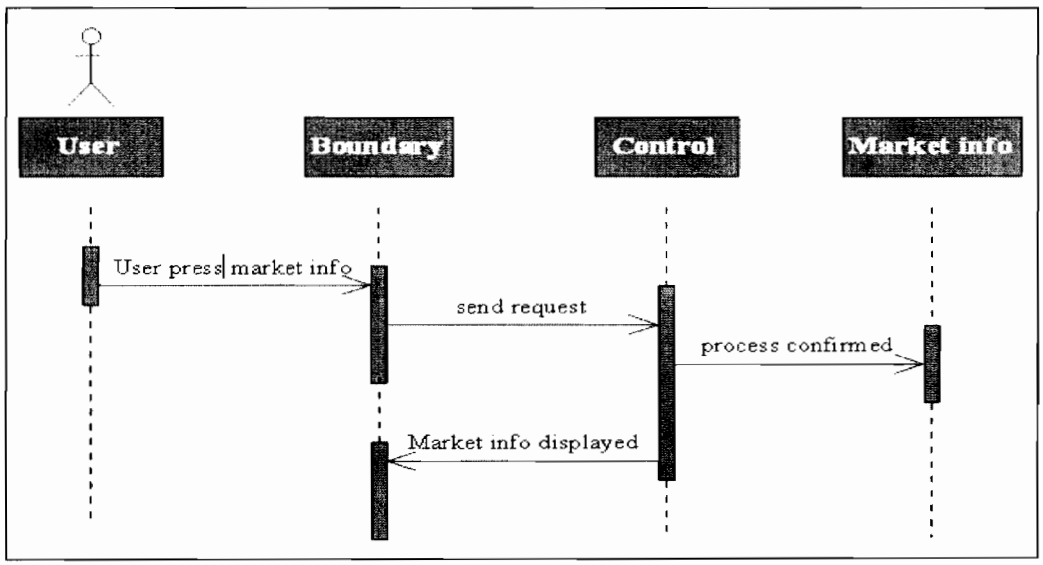

Figure 5.15: Sequence diagram for use cases health market page

Figure 5.16 shows the process in which education information is flowing in the process control. Users select on education and view information about education system in the community.

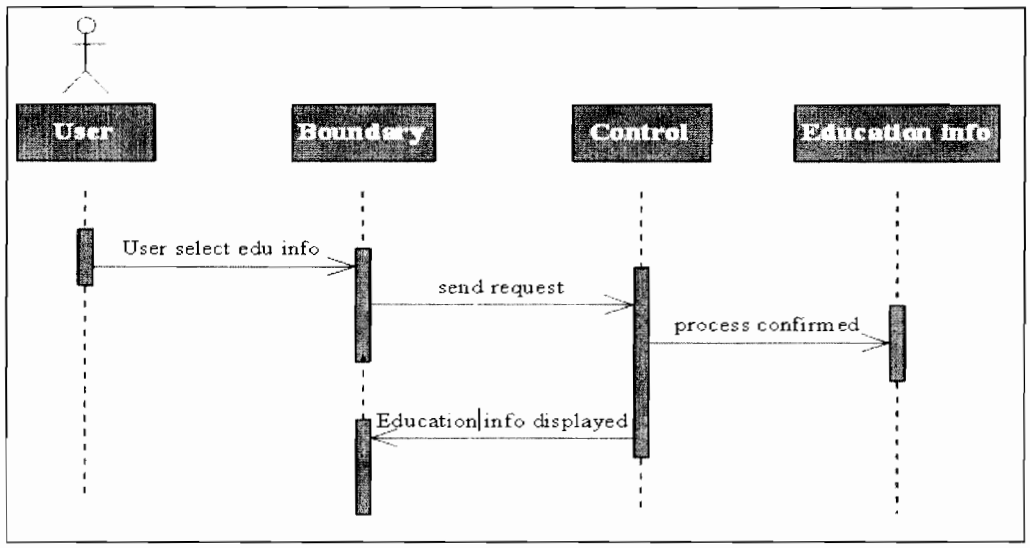

Figure 5.16: Sequence diagram for use cases health education page

In Table 5.17, the process shows the sequence flow of users when click on weather condition in order to view about climatic factors that might favor their farming activities.

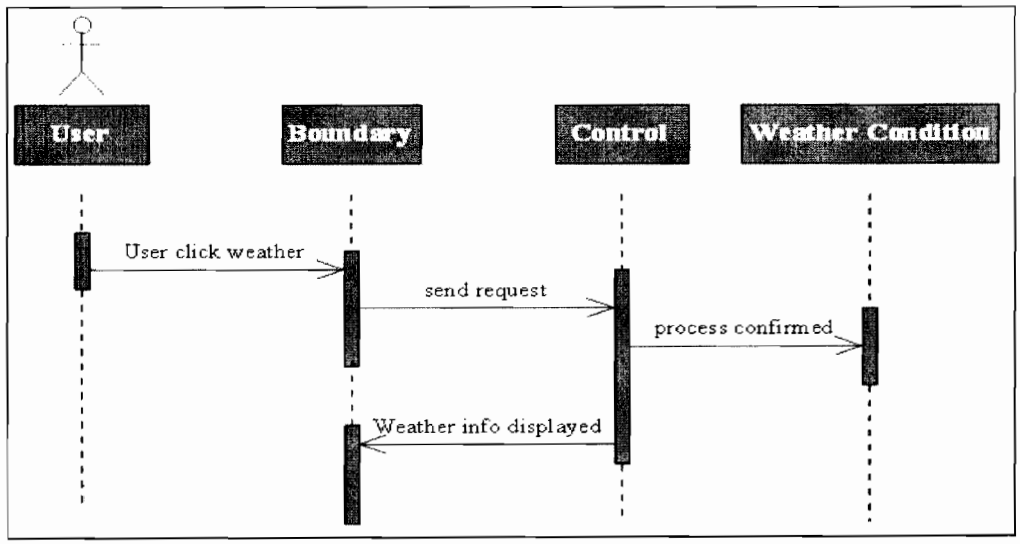

Figure 5.17: Sequence diagram for use cases weather condition page

Table 5.18 displays the sequential process of community security when uses press on it. The process shows all information about community and safety of the environment and their properties.

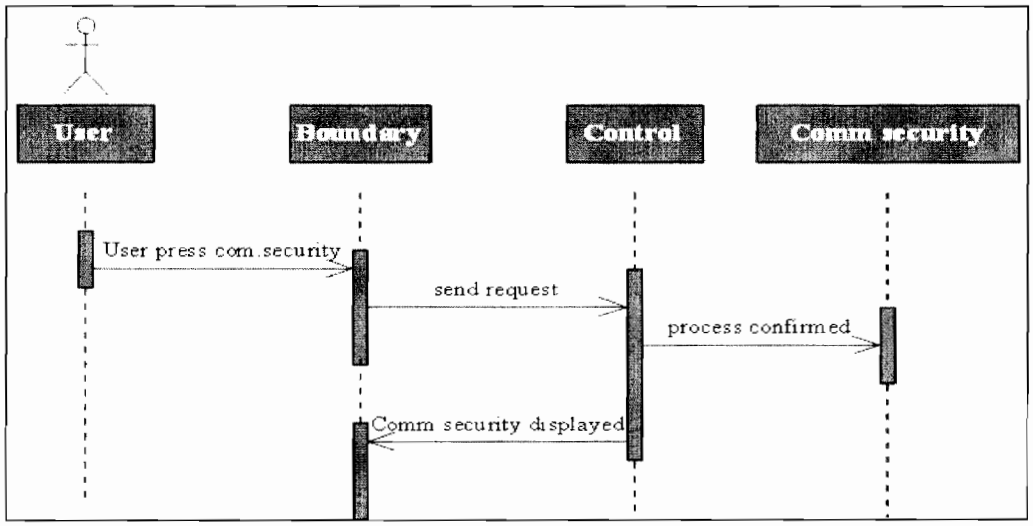

Figure 5.18: Sequence diagram for use cases community security page

Table 5.19 shows the process flow of disaster management page when the users click on the page in order to view about disaster and control of it.

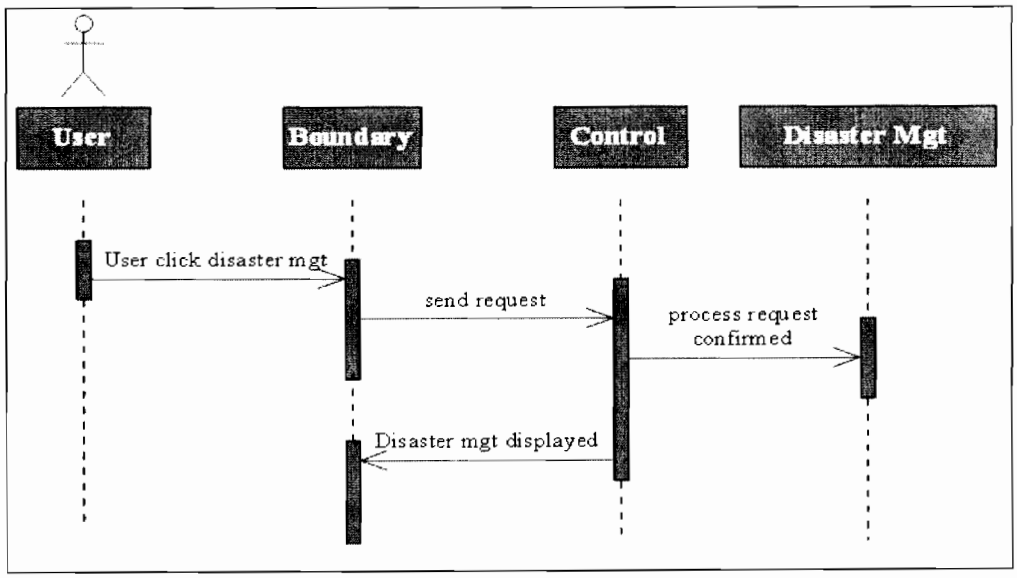

Figure 5.19: Sequence diagram for use cases disaster management page

Figure 5.20 shows the process by which administrator (telecentre officer) press manage user to add information about new users. Administrator can edit, add or delete user incase if he/she is no more active. After the process, all the information will be save. Only administrator can manage users.

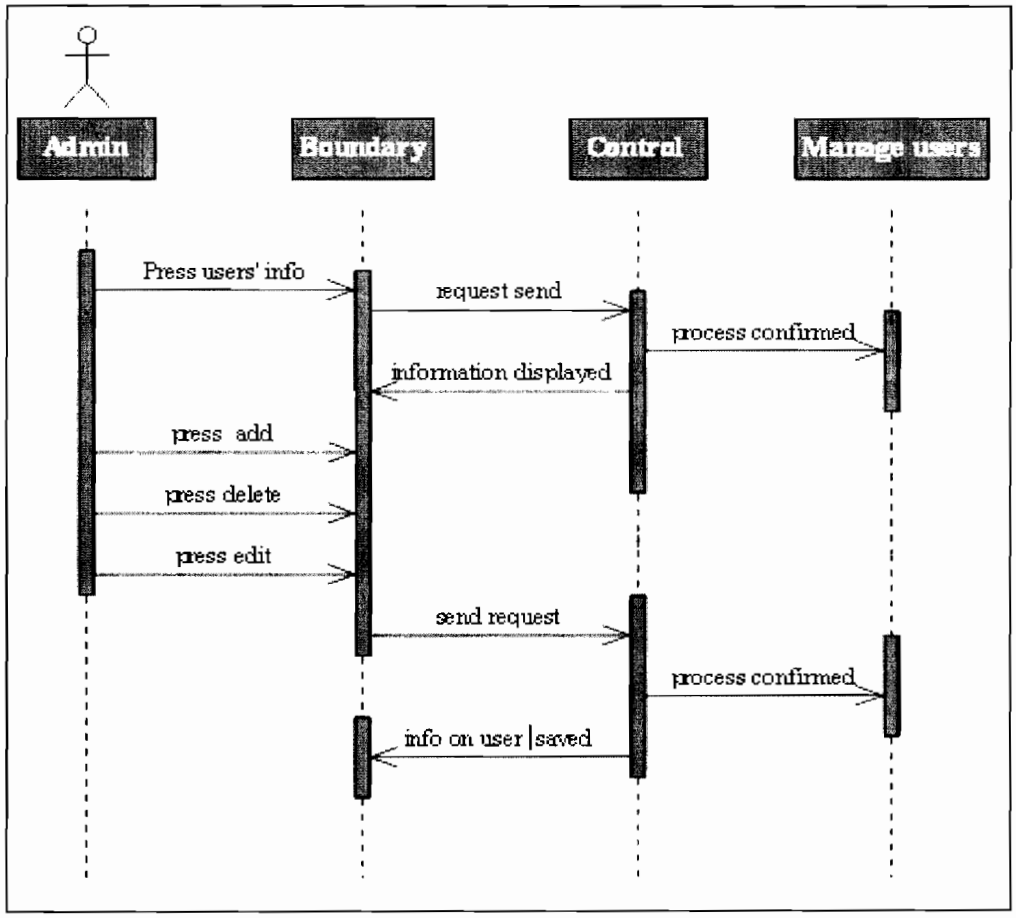

Figure 5.20: Sequence diagram for use cases manage users page

Figure 5.21 shows the process by which administrator (telecentre officer) press manages information so as to update about telecentre content. Administrator can edit, add or delete information that been displayed on system in order for the users to see. After the process, all the information will save. Only administrator can manage users.

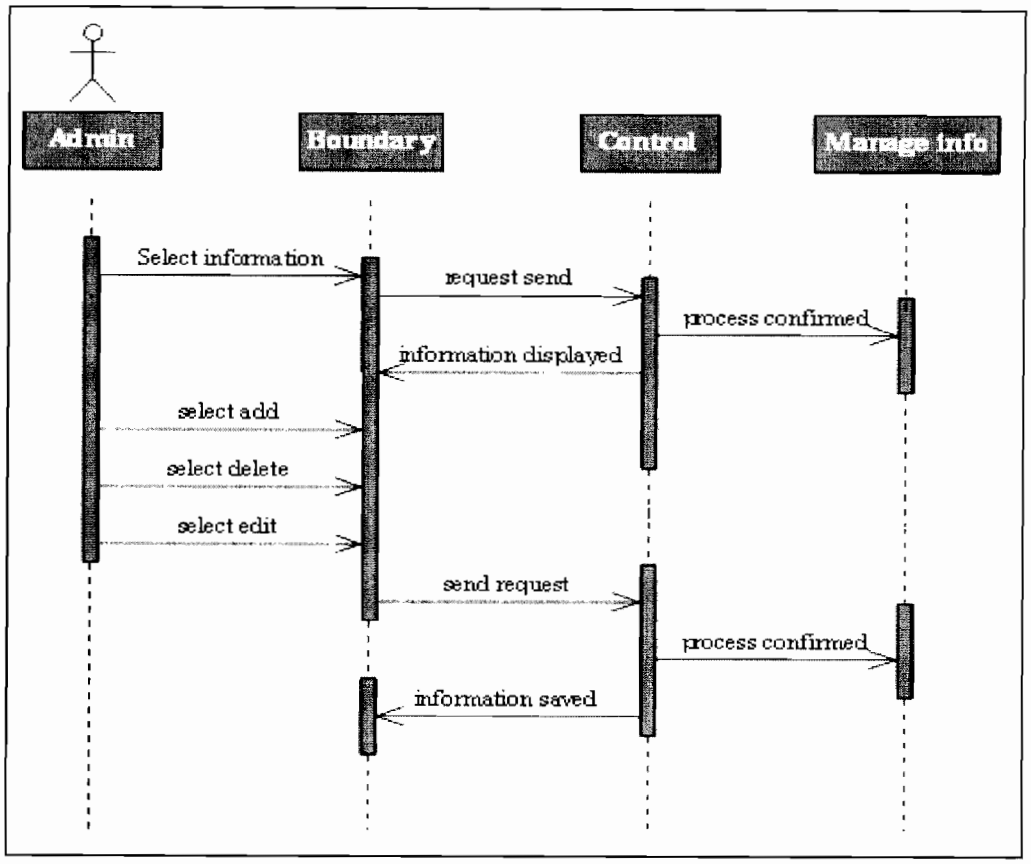

Figure 5.21: Sequence diagram for use cases manage information page

5.15 System development

Micro media directory was used to build home page of telecentre system, *Adobe* Photoshop used for picture display and PHP, Java script, HTML was used for the programming language as well as xamp used to develop the database and web page display of KNSTS system.

5.16 Finding and design Interfaces

Kaduna north and south telecentre system has different pages which were arranged according to its content requirement. The following interfaces were discussed below:

5.16.1 Home page

Figure 5.22 shows the home page of Kaduna north and south information telecentre system. Both actors (administrator and rural people) can login with his /her username and password. These main have two version of language i.e. English and Hausa. Users enter with correct id

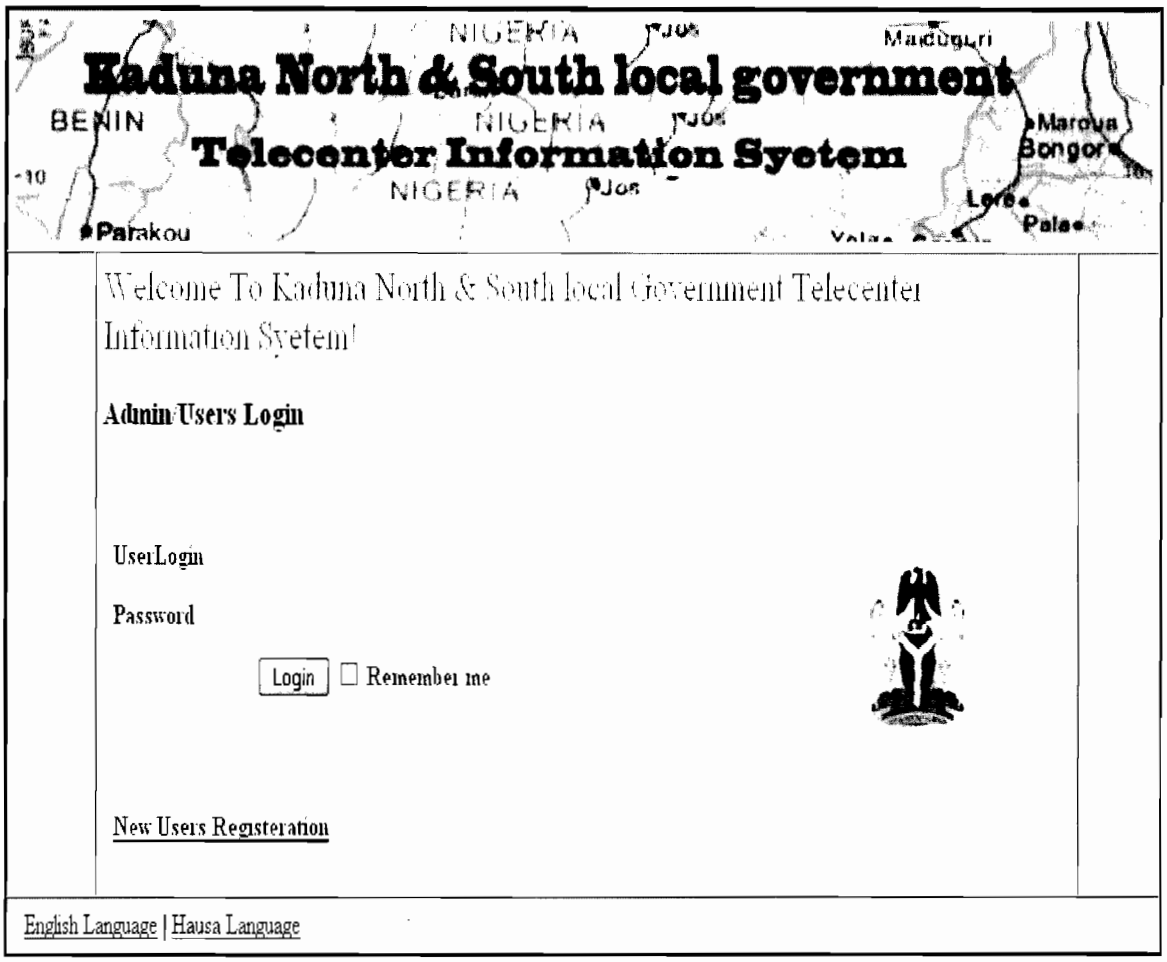

Figure 5.22: Administrator and users home / login page

5.16.2 User information page

Figure 5.23 shows the users English version information page. Users can click on any of the contents listed to view.

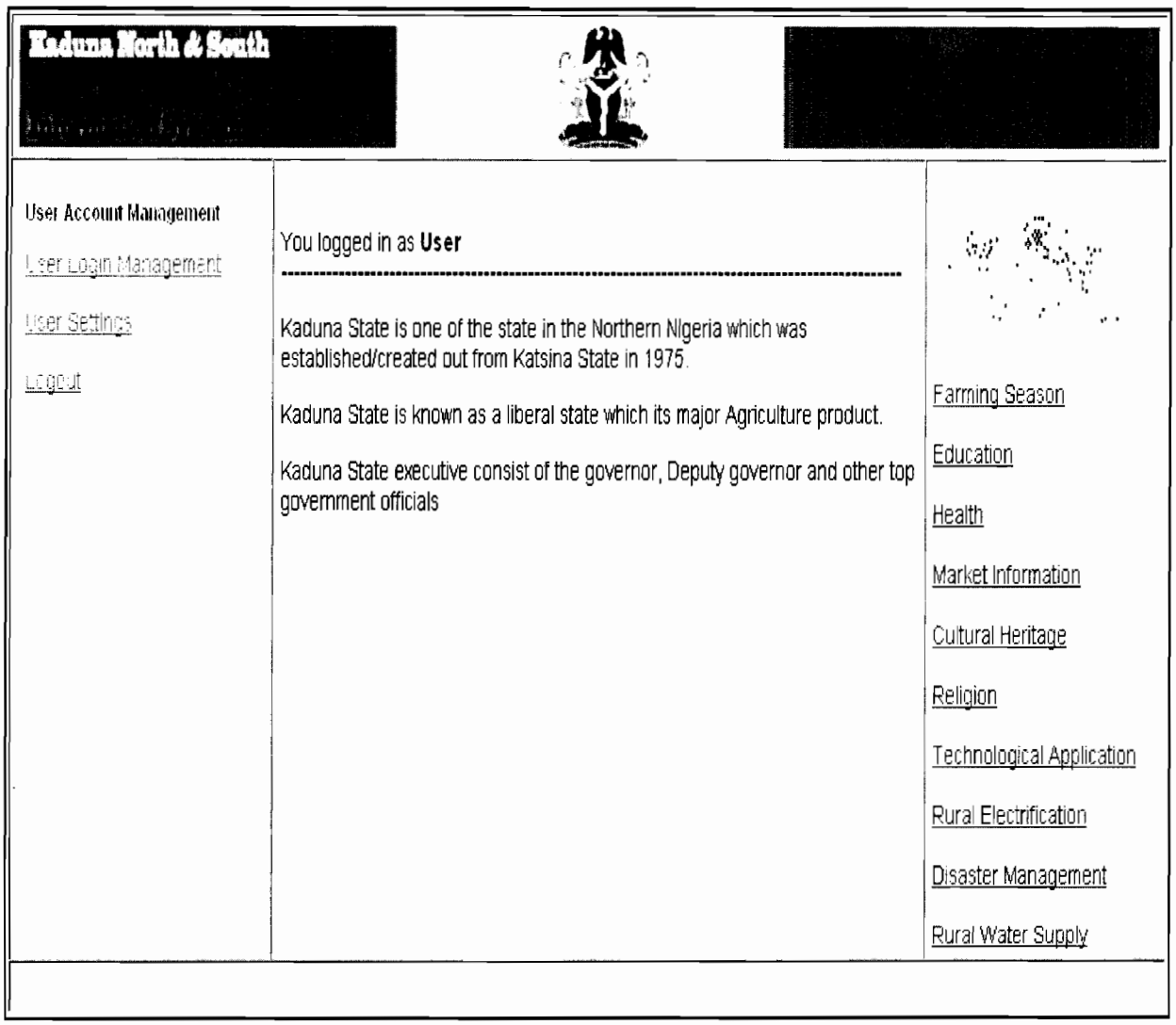

Figure 5.23: English version user information page

5.16.3 Agriculture and farm implement page

In this page, Figure 5.24 shows the users click on farm implement to view the information about farming season and know the right thing to do with the farming activities.

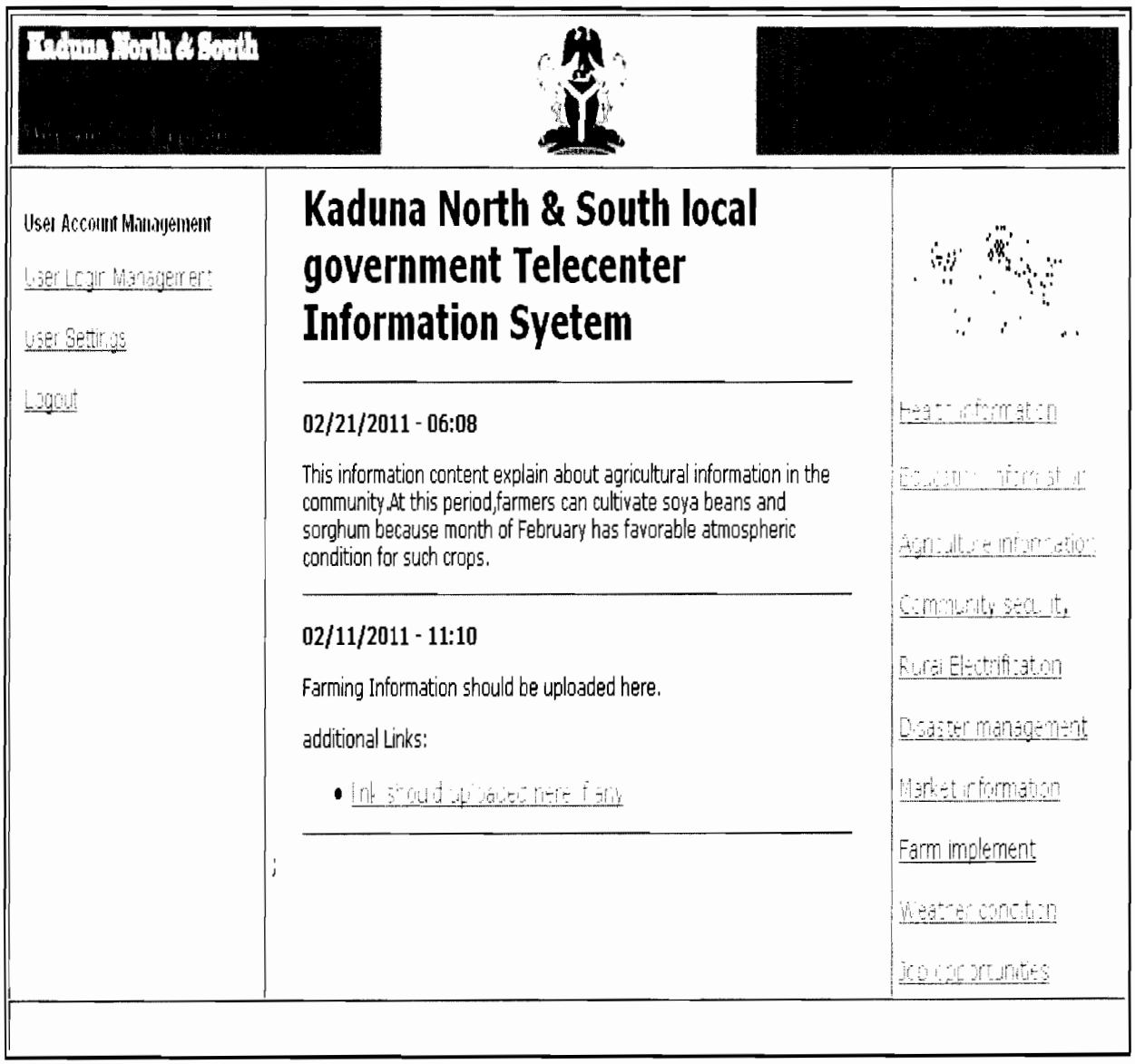

Figure 5.24: Users agric farm implement page

5.16.4 Education page

Figure 5.25 shows the information about education in Kaduna north and south. The users click on the link and information about education displayed.

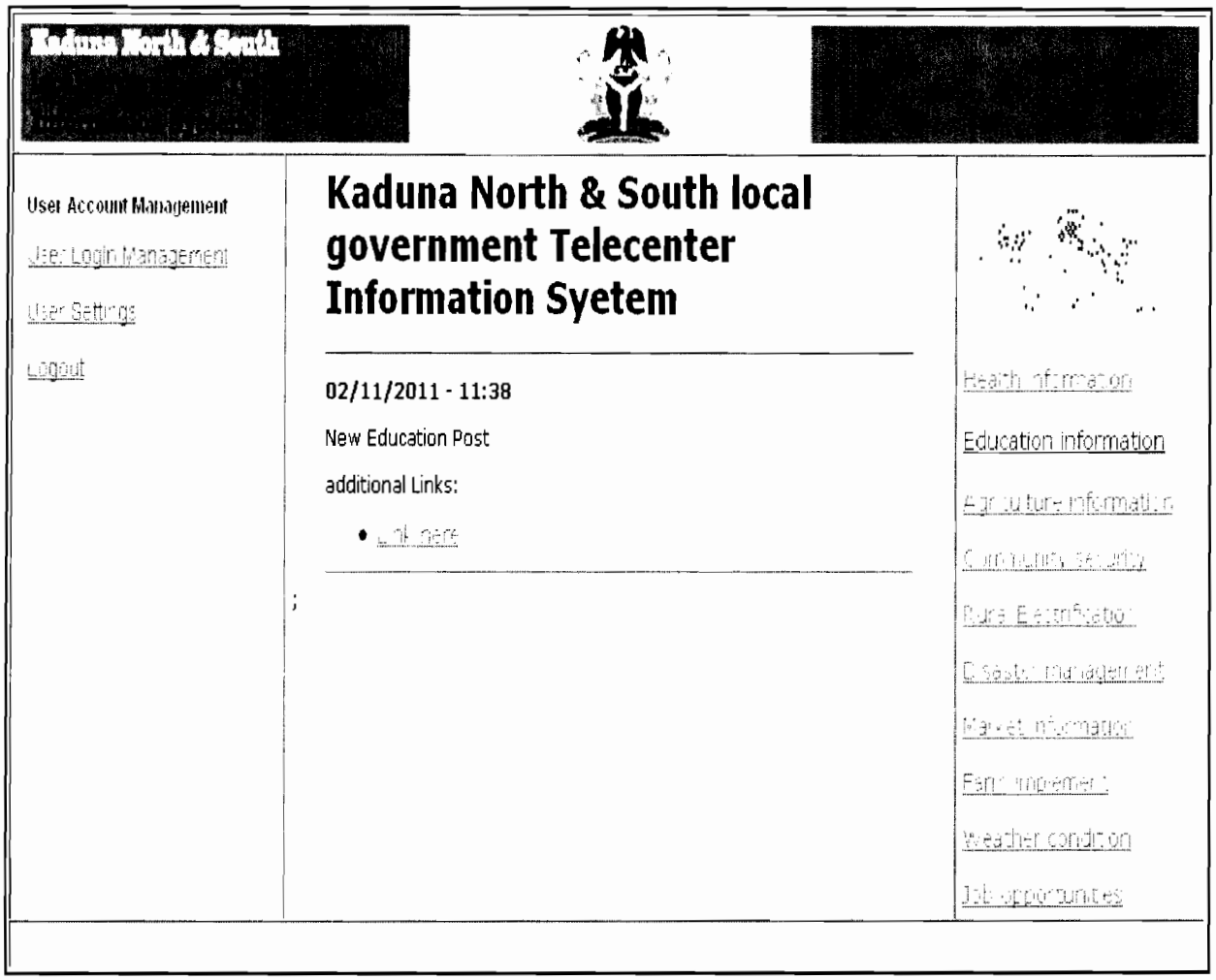

Figure 5.25: users' education information home page

5.16.5 Health page

Figure 5.26 shows users information on health. The page was displayed in context of English and Hausa. Users can view all the information.

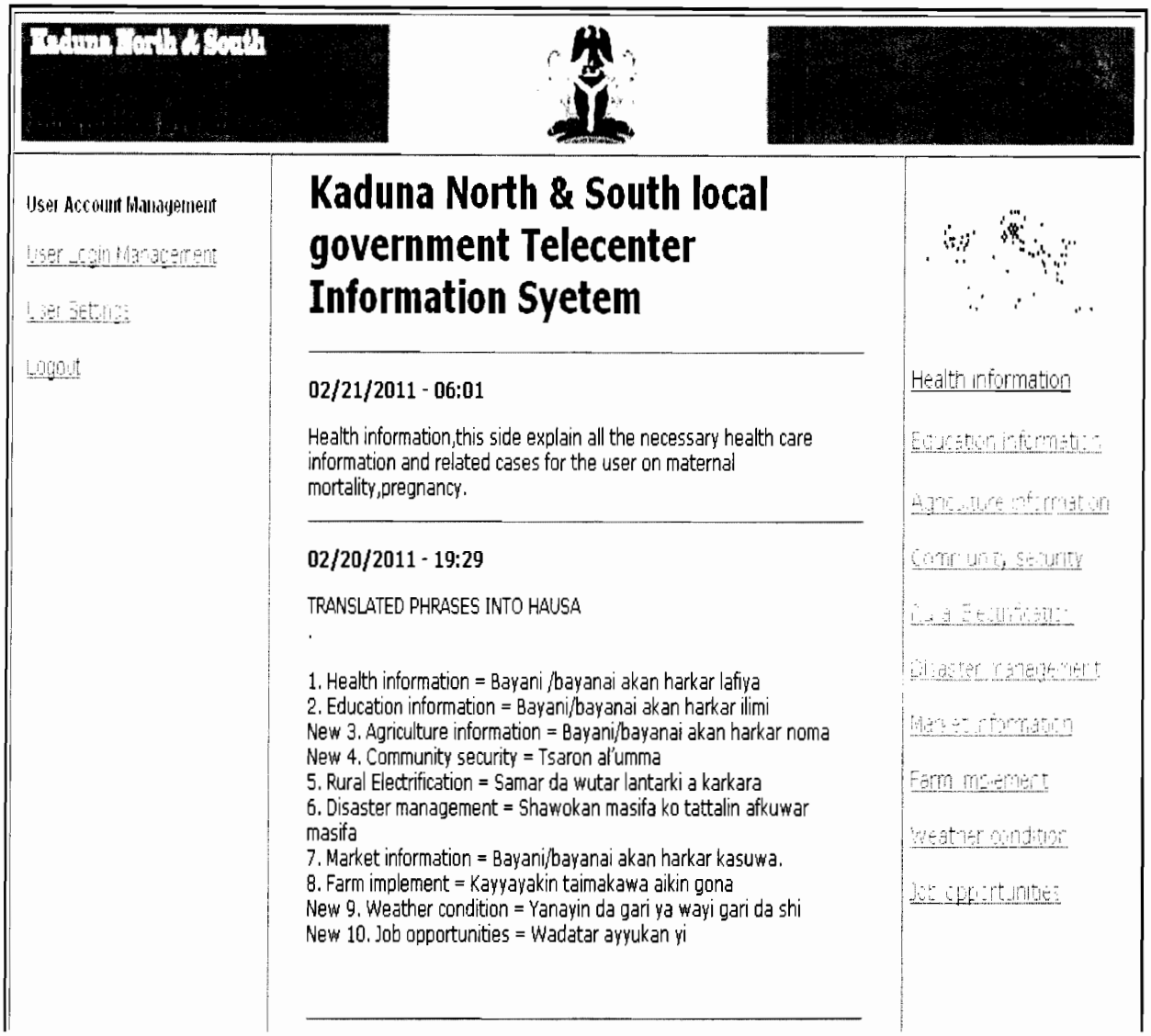

Figure 5.26: Users' information health page

5.16.6 Market information page

Figure 5.27 show the users market information. Users press on the button, the system display market information for the users to view

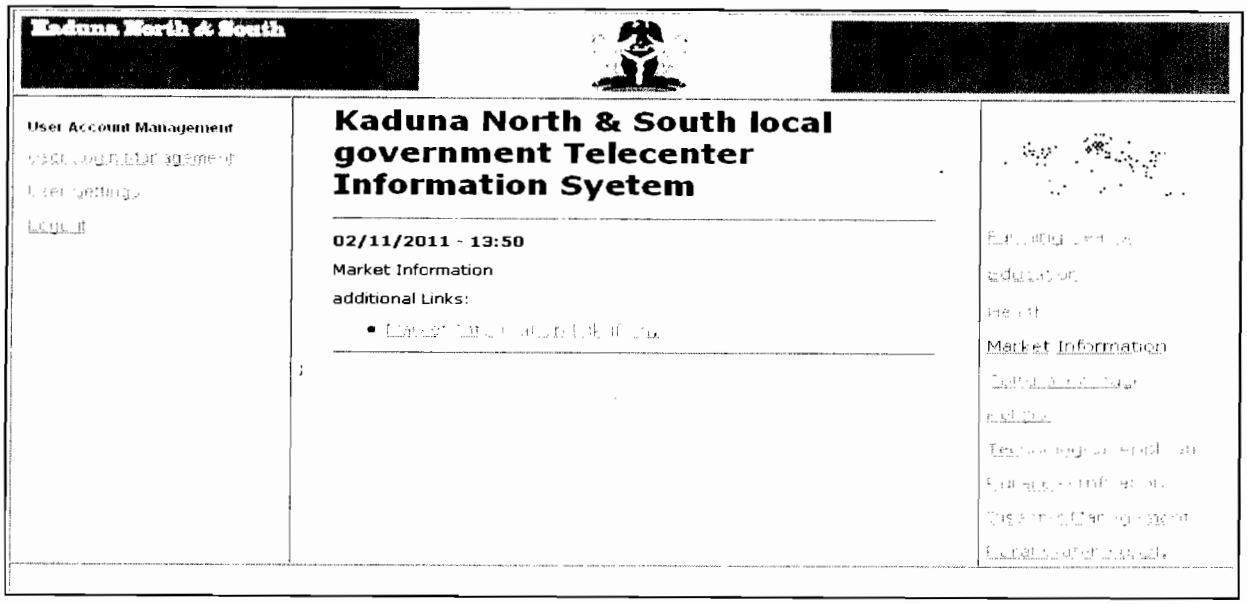

Figure 5.27: Users market information

5.16.7 Disaster management page

Figure 5.28 shows the page for management disaster, users press on the system content to view information about disaster and its control in the community.

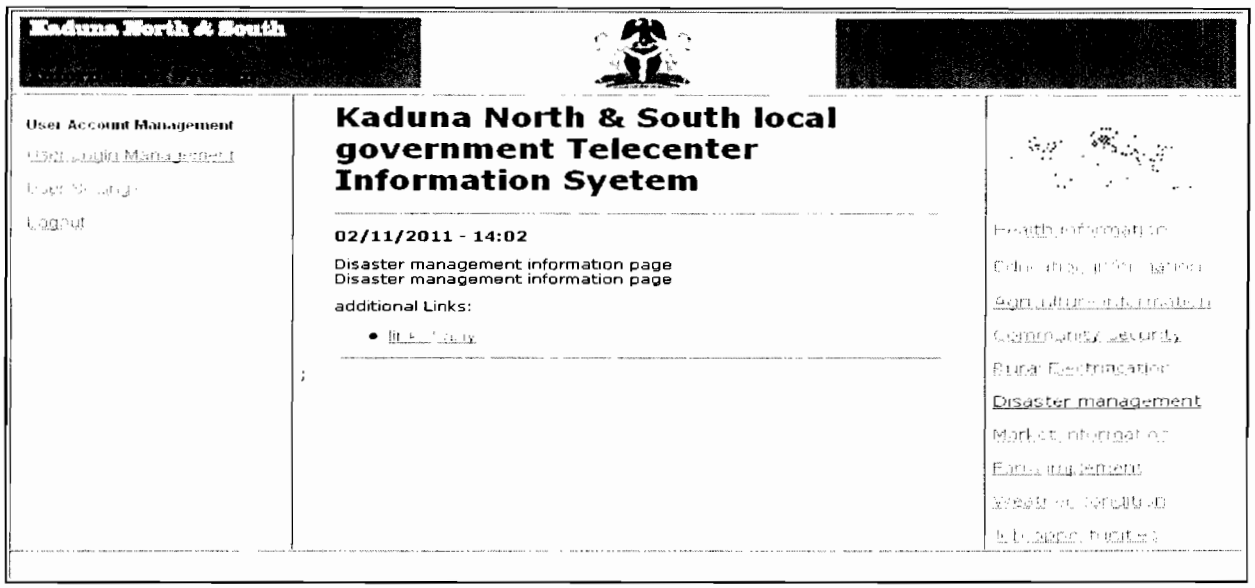

Figure 5.28: Users' disaster management page

5.16.8 Weather condition page

Figure 5.29 shows weather condition page of Kaduna north and south. Users view all the information about weather in order to know the right time to cultivate for their planting period. It also tells on what kind of dress to wear.

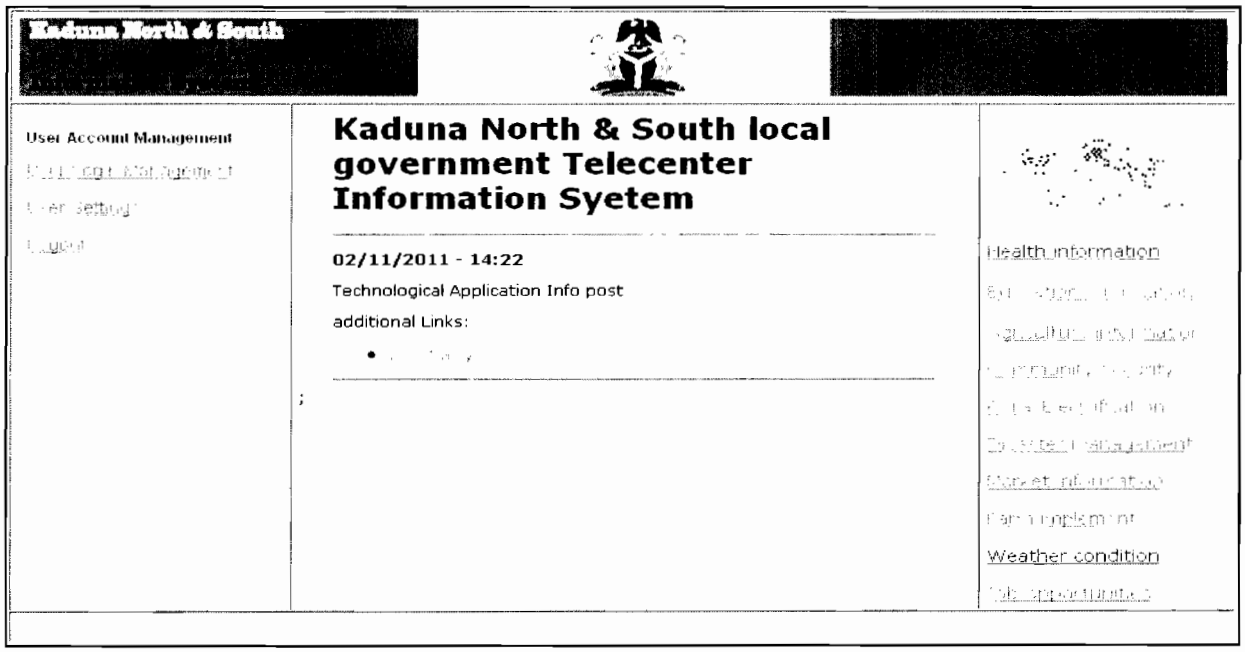

Figure 5.29: Weather condition page

5.16.9 Community security

Figure 5.30 display information about community security. Rural people can view information about the security of their belongings such as cattle, poultry and so on.

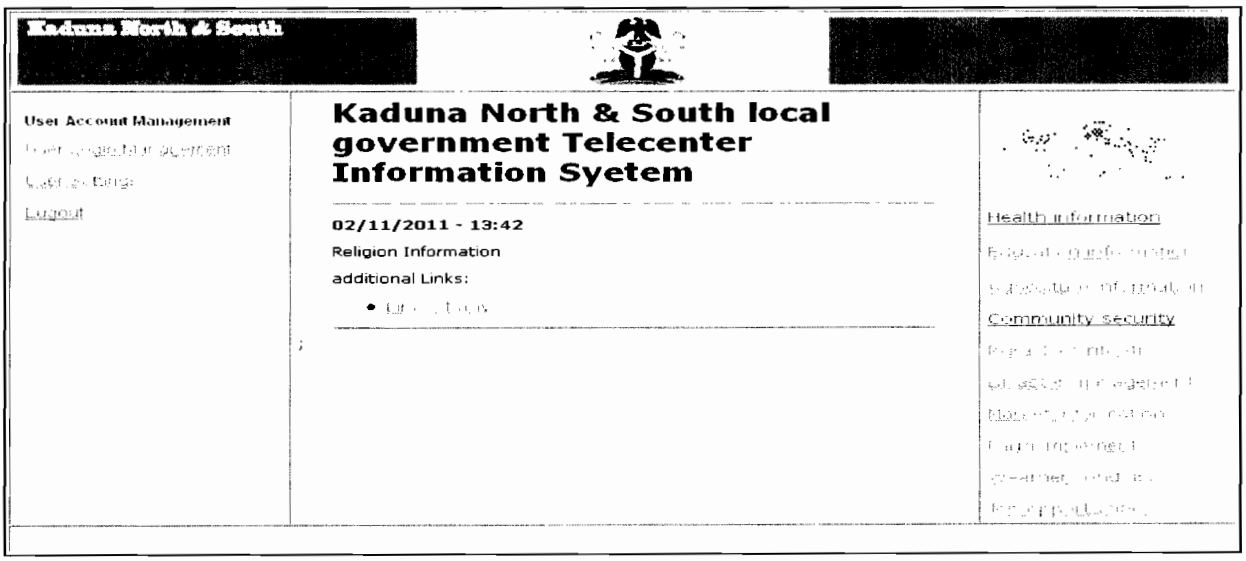

Figure 5.30: Community security page

5.16.10 Job opportunities

Figure 5.31 shows the information about job opportunities. Users open the page to view if there any job advertises on telecentre page.

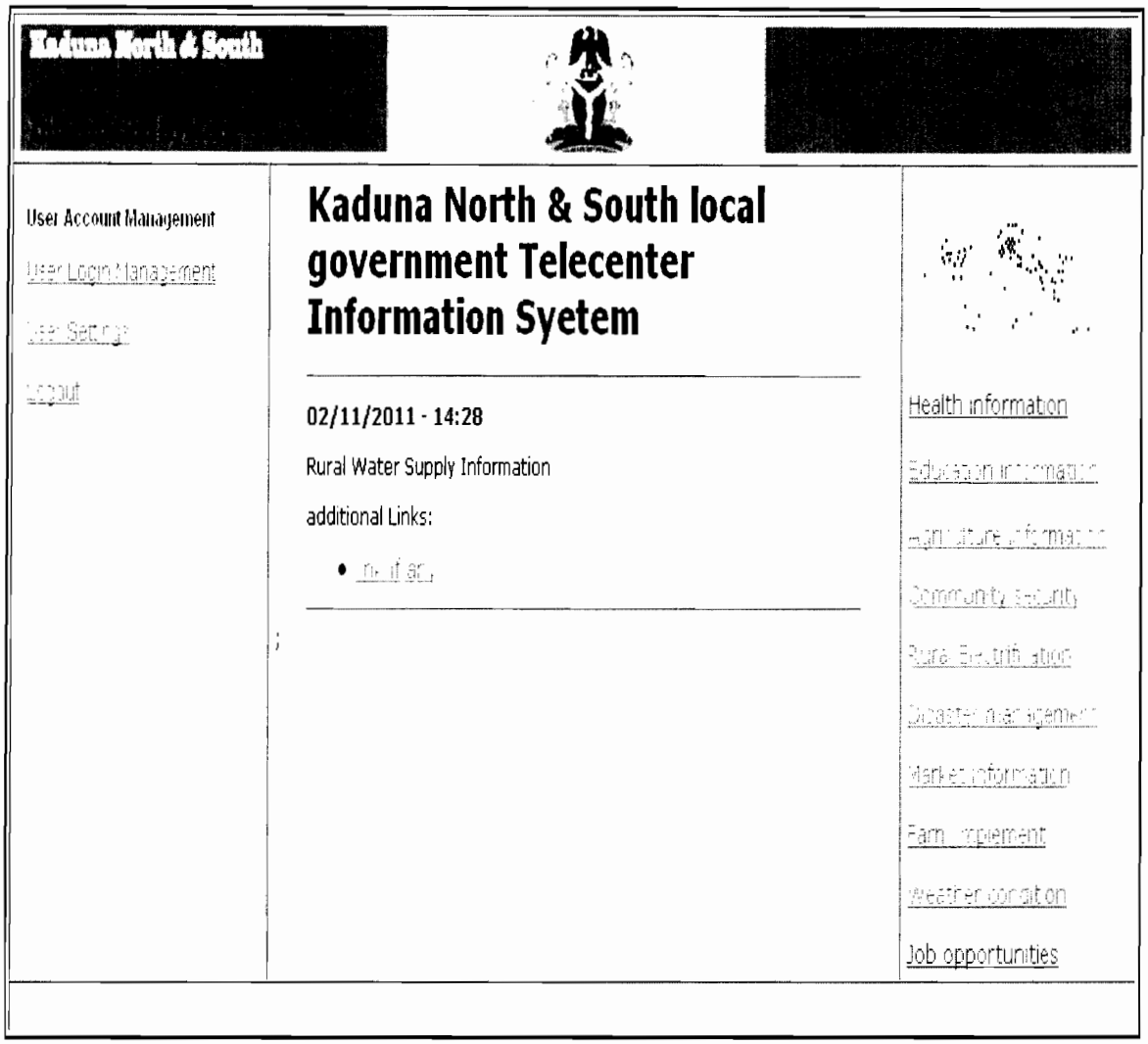

Figure 5.31: Job opportunities page

5.16.11 Hausa language version page

Figure 5.32 displayed the web page telecentre information system in Hausa language.

Users that are not educated can view and understand all the details.

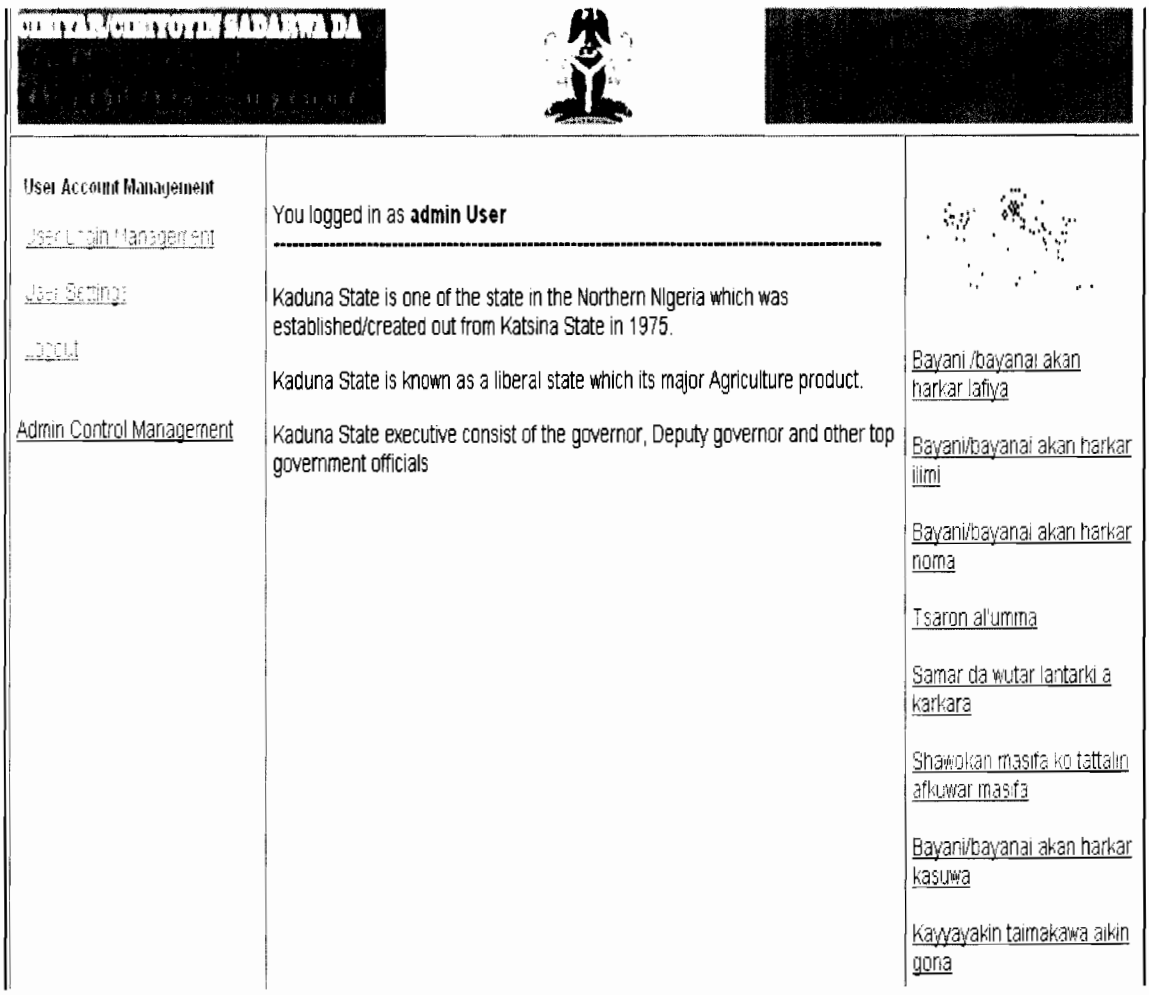

Figure 5.32: Disaster management page in Hausa language

Figure 5.33 describe about health information page. Users click on this content to view all about information in health and care.

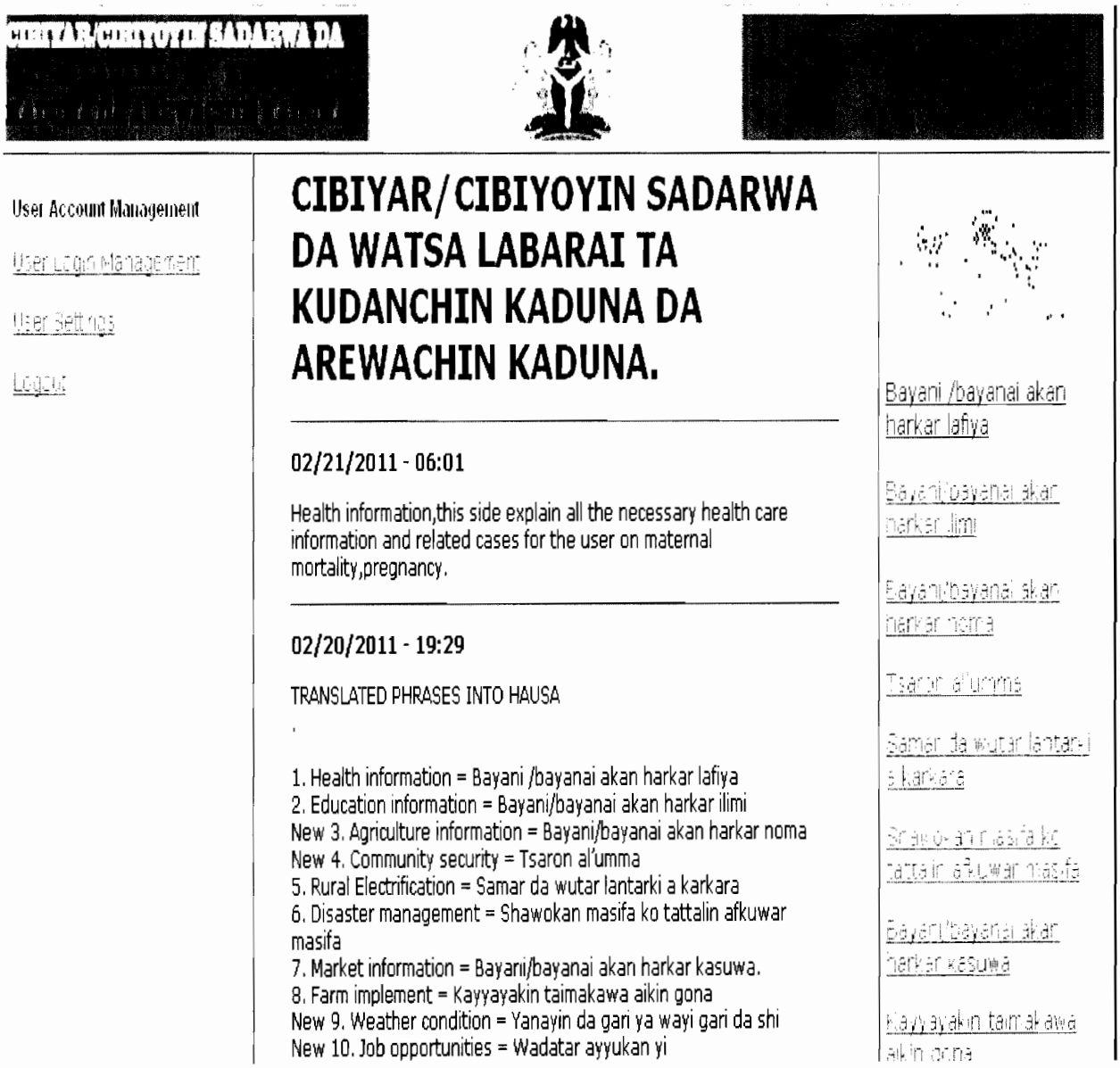

Figure 5.33: Health information page in Hausa language

Figure 5.34 shows the information on agriculture. Users click on this page to view latest information on farming season, time to plant, and number of seeds available for farmers in warehouse as well as farm input supply.

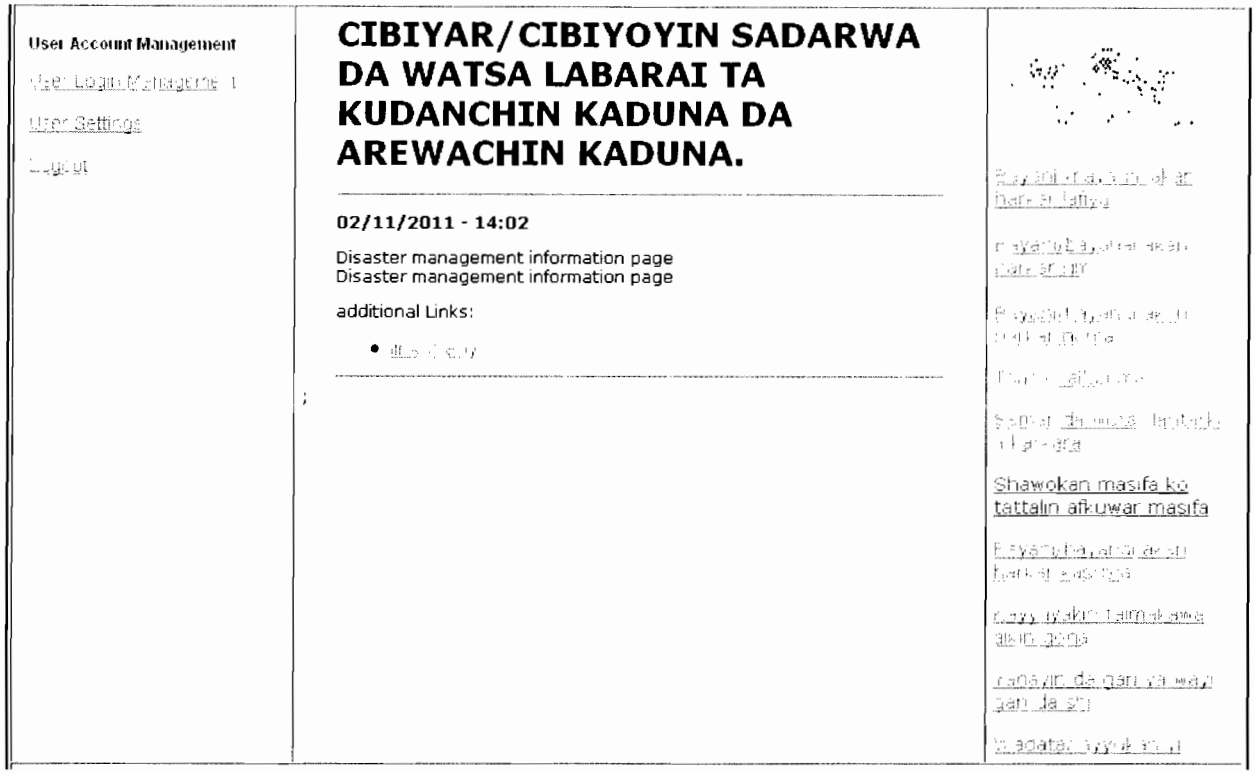

Figure 5.34: Agriculture information page in Hausa

5.17 Administrator manage information page

This is administrator user manage information, in this figure 5.35, administrator manage all the information in telecentre content system. Administrator can edit, add and delete any information that been post on users page. Administrator can login with valid username and

password to maintain the system functionality.

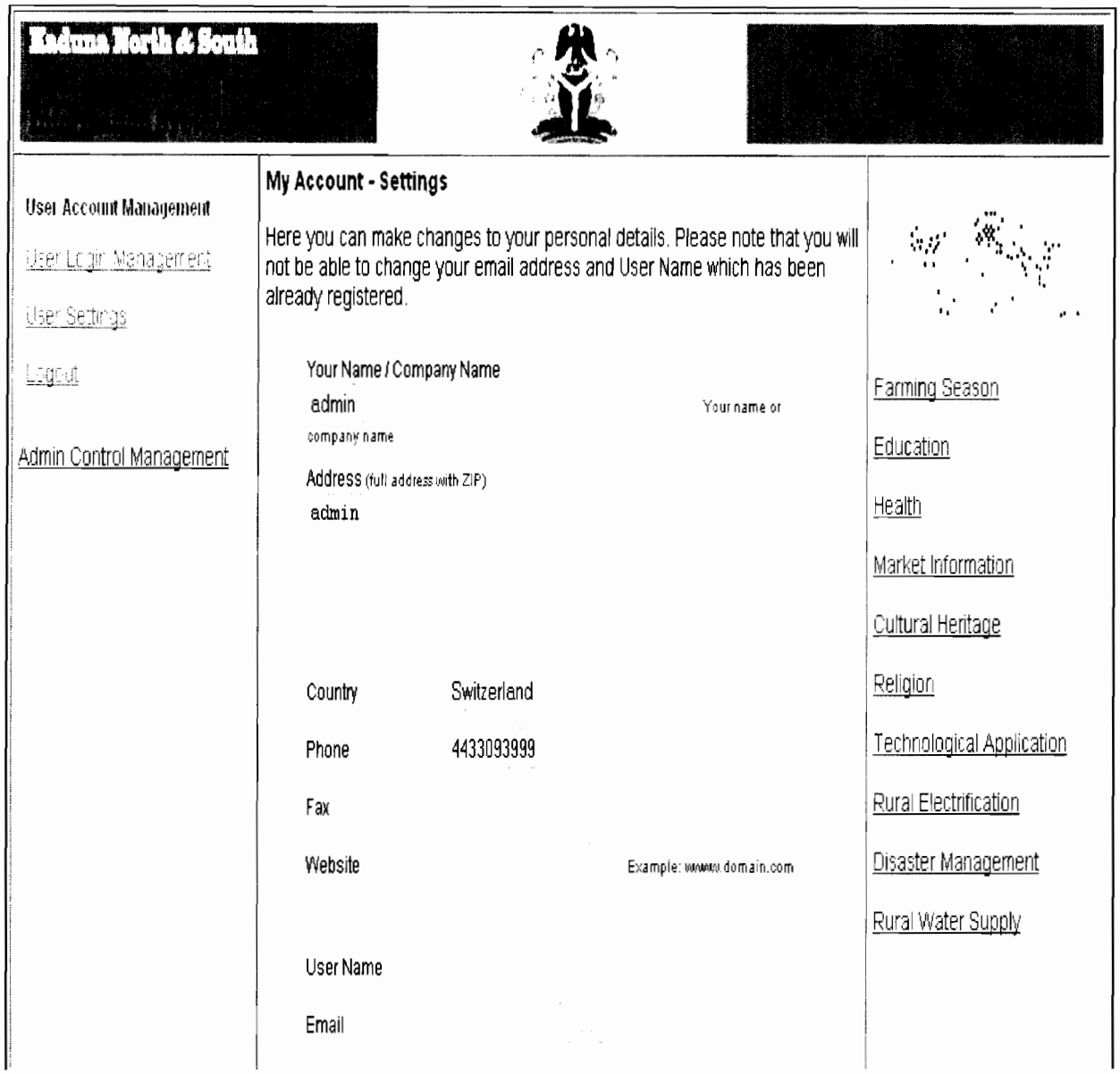

Figure 5.35: Administrator manage information page

5.17.1 Administrator manage user page

This page figure (5.36) display administrator on how he/she manage users. Administrator manage new member by adding their information telecentre system database. Users without a

member cannot have access into the system. Administrator can delete, add and edit users' information.

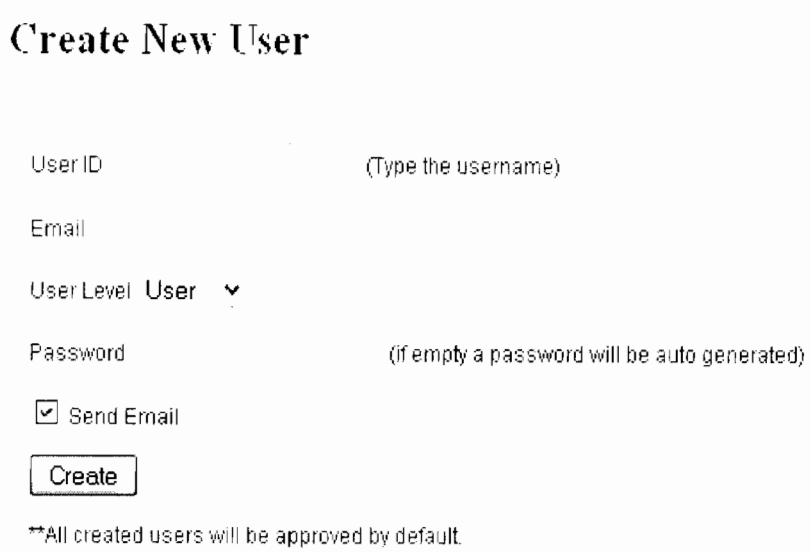

Figure 5.36: Administrator manage users page

5.18 Testing

Testing was done by inserting users or administrator username and password to see the functionality and effectiveness of the system. Few people were asked to test telecentre content information system.

5.19 Conclusion

This chapter highlighted the development of telecentre content information as well as it designed. This section explained requirements, use cases diagram, use case specification of the system. Furthermore, micro media directory was used to build home page of telecentre system, *Adobe* Photoshop used for picture display and PHP, Java script, HTML was used for the

programming language as well as Xamp used to develop the database and web page display of KNSTS system. Testing was done by insert username and password to verify the originality of the system. In conclusion, it indicates that the output and functioning of telecentre content system were able to address the purpose of its development.

CHAPTER 6: CONCLUSION AND RECOMMENDATION

6.0 Introduction

This chapter summarizes and reviewed the findings in line with the objectives of the study and also presents its contribution to knowledge. It also suggest future studies by improving on the local host system into internet connection where it can be accessed anywhere at any location all over the world.

6.1 Findings

As it has been described in Introduction chapter, the aim of this study is to develop telecentre content information system for the rural people which in turns help them to access and get adequate information about farming season, health care, weather situation and the rest. North and south Kaduna telecentre content information system was developed with micro media directory, *Adobe* Photoshop, PHP, Java script, HTML and Xamp. The specific objectives were:

6.2.1 Research Objective 1

To determine the information need for rural communities of Kaduna north and south. In order to have good content for telecentre, questionnaires were used to gather the information needs. Questionnaires comprises of four section which include; Socio-

economic information, accessibility of information, requirement needs in telecentre and opinion of respondent concerning telecentre.

This was analyzed and discussed by frequency table and chart, with the use of statistical package for social sciences (SPSS). Objective was able to achieve the mind of rural people according to their needs from the questionnaire.

6.2.2 Research Objective 2

To design a rural telecentre information system in Kaduna South & North local government areas. UML Diagrammer was used to draw the notation part as well as use case and sequence diagram. Also, completed telecentre content information system will serve the purpose whereby the users see its positive contribution

6.2.3 Research Objective 3

To develop and test the functionality of prototype web base telecentre rural information system. After telecentre content was designed and developed, the system prototype was tested and evaluated base on the functioning and content requirements for the system to see its usefulness to the community in terms of designed objective.

6.2 Problem and Limitations

One of the limitations of this study is that the content telecentre prototype was tested by using local host server, namely micro media directory, *Adobe* Photoshop, PHP, Java script, HTML and Xamp. Moreover, with the limited time frame coupled with and financial constraint, no web server employed in testing the system.

6.4 Contribution of the Study

Upon the usage of newly developed north and south Kaduna telecentre content system, this will brings about adequate information to the rural people on any information they need about their livelihood. The completed of telecentre content prototype allows the rural communities to receive information on their basic and daily need which in turn enlighten them to know what is happening around them without any public announcement as their previous way of receiving information.

Adequate training on usage of telecentre content information system by the rural people will improve their knowledge in computer and expose them to have basic experience in computer usage when compare to their previous local life.

6.5 Future Work

Rural telecentre content information system helps the users (rural farmers) to make good use of the system and its operation. This study recommends future studies on functionality of other content requirement that has not functions. This will bring about more information about livelihood of the rural communities. In addition, this study will serve as future guide for students or researchers who want to work on similar or related topic in telecentre content requirement needs and development of the system.

6.6 Conclusion

Conclusively, the prototype model analyze the need of the rural community with the design of the information system requirement, after identifying there need which consist agricultural, health, education, market opportunities and the model design to the format understood by the local language of the rural population. Micro media directory was used to build home page of telecentre system which was also in their local language of the people to make it simpler in reading the content on various information that could assist the communities' awareness in the area of e-government, job opportunities, and political awareness regards training of the communities to improved knowledge flow and more rapid learning in the rural communities. Through empowerment to the people having the ability to expand their capabilities and elevating to access to information and resources as cited in Zahurin et Al, (2010).

Adobe Photoshop was used for picture display which makes attractive for the users and bring out home page. PHP, Java script, HTML was used for the programming language for the system function effectively as well as Xamp used to develop the database which stores all the data. Questionnaire was designed base on the objectives of the study which assisted developing the model through their requirement for the information system to effectively properly serve the purpose of which is designed to serve the rural communities.

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APPENDIX A

QUESTIONNAIRE

INFORMATION REQUIREMENT FOR RURAL ICT DEVELOPMENT IN COMMUNITY DEVELOPMENT CENTER THROUGH TELECENTRE IN KADUNA STATE OF NIGERIA

GENERAL INFORMATION

INSTRUCTION

Please tick (√) the appropriate box provided in questionnaire. Please, do not write your name on any part of this questionnaire.

Thank for your honest, positive and objective responses.

SECTION A

SOCIO-ECONOMIC INFORMATION

1. Age (i) under 20 years ☐
   (ii) 20-40 years ☐
   (iii) Above 40 years ☐

2. Occupation (i) Farming ☐
   (ii) Hunting ☐
   (iii) Fishing ☐
   (iv) Cattle Rearing ☐
   (v) Agricultural Marketers ☐
   (vi) Others ☐

3. Gender (i) Male ☐
   (ii) Female ☐

4. Educational Level (I) Primary ☐
   (ii) Junior School ☐
   (iii) Senior School ☐
   (iv) Diploma ☐
   (v) Others ☐

5. Occupational Experience (i) 1-5years ☐
   (ii) 5-10 years ☐
   (iii) 10-15 years ☐
   (iv) Above 15years ☐

SECTION B

ACCESSIBILITY OF INFORMATION

This section is design in tabular form, respondent tick at the appropriate table provided.

INFORMATION MEDIUM SOURCES

TYPE	News paper	Internet Phone/ Desktop	T/V	Radio	Market Day	Religion Places
Health						
Education						
Agriculture						
Community Security						
Rural Electrification						
Disaster Management						
Marketing Information						
Farm Implement						
Weather Condition						
Job Opportunities						

2. If you have access to internet, do you have problem in receiving information regarding health, Education through internet?

3. Do you think establishment of telecentre will improve in receiving information?

SECTION C

REQUIREMENT NEEDS IN TELECENTRE

1. What is the information you need for designing the telecentre content?

(a) Farming Season / Cultivation ☐

(b) Market Information ☐

(c) Technological/Farm Implement ☐

(d) Education ☐

(e) Livelihood ☐

(f) Health (Vaccination, Child mortality, HIV/Aids ☐

(g) Religion ☐

(h) Rural Electrification ☐

(i) Rural Water Supply & Supplication ☐

(j) Community Security ☐

(k) Disaster Management (Flood, Fire outbreak) ☐

(l) Cultural heritage and tourism ☐

SECTION D

The table below shows a guide to your responses, kindly choose the option that suite your opinion

Strongly Disagree	Disagree	Indisposed	Agree	Strongly Agree
1	2	3	4	5

1	There should be a rigorous ICT literacy training across Kaduna State to a level for proper awareness	1	2	3	4	5
2	There is the need to improve the internet services of Kaduna State that can support ICT implementation	1	2	3	4	5
3	The E-government services should be extended to rural areas to enable successful implementation of ICT in such areas.	1	2	3	4	5
4	Telecentre is the most promising way of developing the economy	1	2	3	4	5
5	Telecentre in rural areas can be used to reduce poverty	1	2	3	4	5
6	Telecentre can improve communication between friends and family	1	2	3	4	5
7	Telecentre can improve relationships among citizens	1	2	3	4	5
8	Uninterrupted power supply is a must for a successful ICT implementation.	1	2	3	4	5
9	There is need for provision of adequate broadband services to support the ICT implementation	1	2	3	4	5

10	Access to ICT facilitates should be made universal to all citizens realization of its goal in rural area	1	2	3	4	5
11	Telecentre is best used to develop cultural awareness in rural community	1	2	3	4	5
12	Job opportunities	1	2	3	4	5
13	Access to telecentre help to know information in agriculture	1	2	3	4	5
14	Application of telecentre help rural people to improve and increase education opportunities	1	2	3	4	5
15	ICT development in rural area help to know weather condition	1	2	3	4	5