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PROSPECTS FOR THE PROVISION OF INTERNET SERVICES TO MARGINALIZED COMMUNITIES IN ADDIS ABABA

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Abstract

This study investigated whether ICTs can be layered on the existing economic, political, social and cultural setting of marginalized communities so as to bring a change to their living standards. This was in light of varying opinions on the application of ICTs to improve the social and economic conditions of communities. A literature review on this issue was conducted and the various arguments were discussed. Strategies for applying ICTs for benefits of communities were also identified from the literature.

In light of the findings from the literature, the study attempted to investigate the possibility of providing ICT-based services in general and the Internet in particular to marginalized communities in Addis Ababa. The community with the lowest annual average expenditure in the city was selected for the study. A survey was conducted on selected households in this community with the aim of identifying the major activities of the community members. These included identifying problems to be solved in carrying out the activities in which they were engaged, the type of information they used in the problem solving process, the technology employed to carry out tasks and the location of the technology. The questions focused on information needs and use related to health, market, income generation, education and communication.

Once the survey was completed, a field study of a telecenter in the country – the Wolisso Multipurpose Community Telecentre was conducted. This helped to identify the operational issues associated in applying ICTs for use by communities. Data obtained from the survey and the field study was analyzed.

Findings of the study show that it is possible to build a community center that satisfies their needs because members of the community are already sharing ICT resources. Existing pattern in the use of information and communication media indicates this. The main challenge is in drawing an information profile of a given community in order to layer technology on it. This study draws an information need profile for a marginalized community in Addis Ababa.

1. INTRODUCTION

1.1 Background to the study

Information and communication technologies (ICTs), including the Internet, are widely recognized as enabling tools for economic and social development in developing countries. However, the existing information content of the Internet and various tools for processing information need to be adjusted in order to be fully utilized by the computer illiterate and sometimes generally illiterate section of the society. Various efforts for the realization of this are presently taking place around the world at international, regional, national, organizational and community levels. This has come about as a response to research which suggests that already poor communities and societies will be further marginalized due to lack of access to modern ICT tools, including the Internet.

Robin Mansell and Uta Wehn (1998) summarize the issues that were raised during a study by the United Nations Commission on Science and Technology for Development (UNCSTD) working group on information technology (IT) and development into the 'claims and counterclaims about the benefits and risks of ICTs.' They intend their book to serve as a 'source book' for the utilization of ICTs for development efforts. The book addresses policy issues concerning the establishment of an ICT infrastructure, capacity building for using ICTs and services, and lays out the ground for using ICTs in the development efforts of developing countries. The discussions in the book serve as a starting point for this research in terms of detailing the Internet services that can be rendered for the development of communities.

Morales-Gómez and Melesse (1998), in their article concerning the use of ICTs for development efforts, argue that developing countries should not only be concerned about getting access to ICTs. Instead, they emphasize the need for weighing the long-term impact of

ICTs on a 'country's social and cultural system.' They discuss both the prevailing perceptions about the potential benefits of ICTs and issues concerning access to ICTs, cost and wealth distribution, ownership and control, and culture. They also discuss lessons to be learnt from previous attempts to bring about rapid economic growth in developing countries. In their conclusion they suggest the need for developing countries to be able to add their form and content in addition to making meaningful use of technology so as to be participants in the ICT revolution. Generally, they are critical of those who tend to look only at the positive sides of ICT use and skip the negative consequences that may arise.

According to the Pact Institute (1999), ITU, UNESCO, and IDRC (Canada) are implementing "Multipurpose Community Telecenter" (MCT) pilot projects in Africa along with national partners under the UN System-Wide Special Initiative for Africa. The aim of the pilot project is to introduce, diffuse, and assess the impact of the MCT model for rural development. Pact Institute has joined these organizations to develop 'a field methodology to collect baseline data and establish learning systems for the MCT Pilot Project.' The methodology, which was field-tested in Mali at the Timbuktu MCT in December 1998, has been adopted in the design of this research. It provides guidelines for collecting data both on the community and the MCT utilization.

The Acacia Initiative of the International Development Research Centre of Canada is an ongoing effort to address the issues concerning the use of ICTs in the development of African communities. The Acacia web site (IDRC, 1999) provides detailed discussion of the activities of the Initiative and provides links to related efforts. In addition, documentation of research results on how ICTs can be used in the development of communities is available. This

includes the possibility of using Internet by illiterate members of society, mechanisms for employment creation using the Internet, and the potential benefits of community telecenters.

The Sustainable Development web site of the Food and Agricultural Organization of the United Nations (FAO) (1999) communicates the Organization's effort in advancing the use of Internet for the development of rural and agricultural communities. Like the Acacia site, it contains useful information on ongoing efforts to make use of the Internet for the development of communities, especially agricultural and rural ones. It also discusses FAO's strategy and activity in making use of the Internet for the development of communities.

This research has benefited from the materials available in the last two web sites, especially reports concerning similar attempts. These materials have helped the researcher to learn from some already implemented attempts to provide Internet service to communities.

1.2 Statement of the problem

ICTs have been used in various countries to improve the living conditions of the people. However access to these technologies is generally associated with affordability and power. Poor communities have seldom access to them. Marginalization of communities is obvious unless efforts are made to improve access to ICTs. This research aims to analyze how new ICTs could be applied to development goals of poor communities. To do so, the following hypothesis is proposed.

Introduction and layering of new ICTs on existing economic, political, social and cultural setting of marginalized communities would improve their information consumption and communication and would lead to economic development and change in the quality of life.

1.3 Objectives

1.3.1 GENERAL OBJECTIVE :

The main objective of this research is to identify the information needs or problems of marginalized communities in Addis Ababa and to check the feasibility of satisfying this with locally developed content drawn from the Internet and other relevant locally available resources.

1.3.2 SPECIFIC OBJECTIVES:

- to identify the information needs of a marginalized community and build up an information profile
- to analyze how new ICTs, the Internet in particular, can be applied in addressing information needs to the development goals of marginalized communities.
- to identify information intermediaries and techniques used to transfer information to the marginalized communities
- to determine if Internet and other ICT services can meet the information need of marginalized communities
- to explore the possibility of information service provision for marginalized communities that bases its source on the Internet and other locally available sources
- to propose a system that may be used for rendering Internet services across similar communities

1.4 Methodology

1.4.1 Research Method:

The research uses descriptive and applied approaches in its aim to identify the information needs of communities and analyze whether they can be addressed by employing ICTs. To achieve this, the research has been conducted as follows:

1.4.2 Population/ Sampling

A Kebele (the lowest administrative unit in Ethiopia) in Addis Ababa with a high proportion of low-income population has been selected. A sample of households from the selected Kebele has been taken for inclusion in the research. External entities (intermediaries) who are involved with the day-to-day activities of the population such as local authorities have also been surveyed. Stratified random sampling technique was used in the sampling process to make a selection from the inhabitants of the selected Kebele.

1.4.3 Treatment

- A user survey of the selected households was conducted using questionnaires/interviews administered by enumerators to identify the information needs of the community. This survey identified the vertical and horizontal flow of information.
- A survey of the tools and technologies for information transfer was carried out with special focus on Internet services.
- An analysis of how the existing information flows can be addressed by employing ICTs was conducted.

1.4.4 Procedure

The following procedure was followed in the research:

- Identification of a Kebele in Addis Ababa.

- Sampling of the households in the Kebele.
- Design of, pre-testing and conducting of a user survey.
- Analysis of results of the user survey.
- Identification of information needs and building up of an information profile of communities in the Kebele.
- Observation of how an existing ICT based community information center is meeting the needs of its clients
- Exploring the possibility of using ICTs to meet the information needs of marginalized communities
- Concluding remarks on how the Internet and other ICTs can best be utilized for serving communities.

1.4.5 Tools/Techniques

The research employed statistical tools and techniques for undertaking the identification of the population, selection of sample, and analysis of the data from user surveys. Literature review and observation techniques were also employed to determine the possibility of fitting ICTs into the existing information use patterns of the identified marginalized community.

1.5 Application of results

Beyond being a study that serves fulfillment of the requirement of the program the researcher is enrolled, the study could be of value for the following purposes:

- The output of this research may be used as a model for rendering Internet / ICT based services across similar communities by institutions involved in the improvement of the living conditions of marginalized communities

- The research is a pioneer work in Ethiopia as regards to adapting the Internet to the use of marginalized communities
- This study would contribute to the present community telecenter movement taking place in the world as a whole, and particularly in Africa.

1.6 Organization of the thesis

The thesis is divided into five parts. The first part, this chapter, provides an overview of the study. It provides a background to the study, states the problem topic, proposes a hypothesis based on the stated problem, lists both the general and specific objectives, the methodology employed in conducting the study, and possible application of the results.

A detailed literature review on ICTs and services to marginalized communities is provided in the second chapter of the study. Key concepts in the study – marginalized communities, ICTs and development are explained. The issues discussed in this chapter are ICTs and development, benefits communities can gain through the employment of ICTs, whether Internet can make a difference in the life of communities, possible strategies in applying ICTs to development efforts, challenges faced in applying ICTs to development efforts, experiences in the application of ICTs to development efforts, and the scene in Africa and Ethiopia regarding ICTs.

The third chapter deals with the survey conducted to identify the information need and use of marginalized communities in Addis Ababa. It begins by detailing the process of identifying a representative marginalized community in the city. The assessment of the information use and need of the identified community as well as the characteristics of the questionnaire employed to conduct this is explained. The outcomes of the survey are discussed. Further observation

and interviews are done at the Wolisso telecenter, 116 kms. outside Addis Ababa to analyze the outcomes of the survey against an existing telecenter serving the population of the town.

The next chapter contains the interpretation of the data collected. Based on the available data, a search and identification of the link between ICTs and their potential in the development of marginalized communities is done. This is by analyzing the existing information use techniques and methods, and questioning whether ICTs will be able to support these. A conclusion and recommendations are given in the final chapter of this study.

2. ICTs and information services to marginalized communities

2.1 Key concepts

2.1.1 Information and Communication Technologies (ICTs)

ICTs are electronic means of capturing, processing, storing, and communicating information. They comprise computer hardware, software and networks (Heeks, 1999). ICT services can be basic such as voice telephony or advanced digital telecommunication systems and the Internet (TDG, 2000). The Internet, a global network of computer networks, has emerged as a great communication medium of our time. The development of the World Wide Web (WWW), a multimedia and graphical interface to the Internet, has greatly enhanced the potential applications of the ICTs. The Internet is touching all aspects of our daily life. It has altered the way commerce, entertainment, education, and health related tasks take place. Special emphasis is given to the Internet from the existing range of ICTs for the purpose of this research.

2.1.2 Marginalized Communities

The term "marginalized communities" throughout this paper refers to low-income communities which forces them from having access/wide-access to ICTs. For the purpose of this research, marginalized communities are identified from the available income and expenditure survey statistics in the country. The surveys were conducted by the Central Statistics Office of the Federal Democratic Republic of Ethiopia (1996) and the Economics Department of the Faculty of Business and Economics of the Addis Ababa University (1994). Using the data from these surveys, the community (Kebele) in Addis Ababa with the lowest expenditure was selected. This is due to the advice given to the researcher by those who were involved in both surveys of the ability of expenditure as an indicator to determine income. To

deal with the fact that it is very difficult to document income in Ethiopia, economists use expenditure data as a reasonable indicator of income.

2.1.3 Development

Bezanson and Sagasti's definition of development and scientific and technological progress, as quoted by Mansell and Wehn (1998) is used in the course of this research. Development is a process that leads to an 'evolution of shared perceptions of what humanity is and should be, and of devising the means of advancing, both individually and collectively, towards putting those values in practice.'

2.2 ICTs and development

Many researchers and organizations have argued the significant implications for development of ICTs. Richardson (1997), Mchombu (1996), Stern (1999), and Mansell and Wehn (1998) argue that ICTs in general and the Internet in particular can be used to advance the development goals of developing countries based on the important applications being witnessed. Mansell and Wehn (1998), in their report of the findings of an extensive research carried out by the United Nations Commission on Science and Technology for Development (UNCSTD) on the benefits and risks posed by ICTs to developing countries, tie the potential benefits of ICTs to the ability of integrating them with existing knowledge base so as to exploit them to development efforts. Quoting Drucker, they reinforce this idea by advising developing countries to rely on applying knowledge to achieve development rather than relying on cheap, abundant labor.

However, learning tools on the Internet are mainly produced for the developed world rather than for developing countries. Due to less access to alternative materials, developing countries

need them more. But this does not limit the potential of Internet to disseminate learning materials at a low cost even to marginalized communities. Web content which can be used by marginalized communities include electronically available health information (to the health professional and to the public at large), information to those with special needs (the disabled and elderly), educational, environmental (improving environmental protection and effective management of emergencies), and agricultural information, public information, government-wide directories of government services and contact details facilitating citizens' access to an organization (Mansell and Wehn, 1998). There is a need for devising innovative ways of utilizing information available on the Internet as well as using it as a tool for information transfer to marginalized communities.

If the Internet is to make a difference in the life of communities, its content should be given equal attention to that of its infrastructure. Unless there is Web content available which matches the needs of users, putting in place the infrastructure, which is usually done by diverting resources from other sectors, is not enough. Both innovative ways of using the existing Web content as well as generation of local content is important. It is also important to monitor the impacts from the use of the Internet.

Mchombu (1996) considers the role of information in solving society's economic and social developmental needs vital, that he brands it as one factor of production. Richardson (1997) also states that there is a direct relation between improved communication and information access, and social and economic development. He argues the increasing availability of Internet services in developing countries led by the needs of commercial organizations, academics, non-governmental organizations and young professionals as a potential aid to achieve social and economic development. Stern (1999) writes about the use of Internet

technologies for capacity building purposes by the process of human resource development. Capacity for using ICTs in communities, according to his research, can be built by "train-the-trainer" programs. Quadir (2000) links connectivity to economic development by referring to it as productivity which adds value to its users, be it in modern offices or remote villages.

To sum up, the literature ties the benefits of ICTs to their application along with the existing knowledge base of communities, considers ICTs as a factor in the process of production, acknowledges the existing application of ICT tools in developing counties, and stresses their potential in human capacity building of those countries. This research, as stated in the hypothesis, tries to evaluate the feasibility of including this potential of ICTs in the development efforts of marginalized communities in developing countries, with particular reference to marginalized communities in Addis Ababa.

2.3 Can communities gain by employing ICTs?

Employing ICTs, as discussed above has the potential of carrying developing countries into the mainstream information and communication infrastructure of the world. It is also expected to help developing countries cope with the globalization phenomenon. As a result, it is argued that communities in the developing countries which are increasingly being marginalized due to their low economic status will be able to catch up with the developments in the rest of the world and improve their living conditions. The question is how ICTs can be employed in line with the prevalent conditions of communities so that they can be beneficial to development efforts and how to measure the gains. McConnell (1999:1) argues that there is not yet enough research around us to show the potential of ICTs in narrowing the gap between the information haves and have-nots.

Mansell and Wehn (1998) assert that ICTs can be employed to facilitate 'the provision of public services,' achieve 'productivity gains,' improve 'the quality of life for citizens,' enhance 'access to information' and facilitate 'knowledge sharing.' Mchombu (1996) conducted a study to assess how information can be provided to rural communities for their development efforts and its impact. He suggests that measuring the prevailing developmental progress in a given community before introducing information support and measuring the speed of developmental process thereafter could be one alternative to see how ICT could make a difference to communities. This is because of the fact that information needs of communities can be both universal (similar across communities) and particular to a given community. Providing information by employing ICTs should take this into consideration, if benefits are to be reaped in the process. As part of his research Mchombu (1996) tried to assess the information needs of rural communities and how they were being addressed by organizations involved in developmental activities, with the aim of identifying the development value of information provision in this.

Richardson (1997) argues that the notion of the Internet being an inappropriate tool for development arises from development planners who are unaware of the Internet coverage in developing countries as well as different modes of access such as public or community with the involvement of intermediaries. Instead of disregarding the potential of the Internet in development, efforts should be made to investigate its possible application in the development of communities. Heeks (1999) indicates the availability of other mechanisms besides ICTs which can assist the poor and stresses the fact that technology affects only part of a given community. He contends that the use of Internet and other ICTs as communication tools rather than as information sources. The use of ICTs by the poor is mainly to get 'voice' rather

than 'hands', 'brains' or 'ears.' Clearly there is a benefit to be gained in information and communication through new technologies.

2.3.1 Implication of Internet to the life of communities?

Web/Internet content refers to the information being made available on the Internet. As an information and communication media, the Internet contains all sorts of information. Countries and organizations, which have access to the facilities of the Internet, are using it to communicate information about their activities and their interest to the rest of the world. Web content at the present, due to the large percentage originating in few parts of the world, lacks cultural diversity. On the other hand, there are countries and organizations with little or no access to the facilities of the Internet, which continue to rely on information provided by others. Disparities have been created as a result of failure to utilize the Internet to advance their causes. The main cause of these disparities is generally attributed to the content.

One of the causes of this imbalance is due to inadequate attention to content for the poor. Support given to the "Information poor" in accessing the Internet is generally weak and misdirected. Adam (1999) argues that more emphasis in improving the access to information poor in Africa has been placed on technology rather than on the content transferred using the technology. "Africa's production of Web content is insignificant; but at the same time improving." However, economic, technical, infrastructural, political and regulatory factors will continue to limit its production in Africa. He contends that 'real needs of local users' should be given focus in the process of developing content.

According to McConnell (1999:1), efforts to develop information resources in communities should address both the infrastructure needs of the area and the information needs of the

poorest members of the community. He goes on to state that the poorest members of the community are usually served indirectly by intermediaries. Thus content issued for poor communities should address the needs of the intermediaries.

Richardson (1997) argues for the expansion of Internet services to serve rural and agricultural development by raising the benefits of new information sources and communication channels. Providing Internet service that addresses the identified needs of the communities helps its success and sustainability. The introduction of Internet services could vary from one region, organization and community to the other based on the available application, capacity building and technical needs (Richardson, 1997). Accordingly the services can target the people in the communities, intermediary organizations working in the communities, or the establishment and promotion of information centers in the communities. The Internet can also be used as an information source for capturing information from external sources for dissemination through other existing channels. He lists examples and applications on the ground, has identified Internet applications assisting rural and agricultural development. These include:

- Economic development applications for agricultural producers
- Community development applications
- Research/education applications
- Small and medium scale enterprise development
- News media networks

2.3.2 Impact assessment of Internet use

ICTs are observed variously to have brought 'widespread social and economic benefits', 'no difference to the lives of people' and 'harmful effects' to the population of developing countries. We need to be able to distinguish between instances where each one of the above

All these technologies answer different sets of needs of communities. It is important to understand community needs first to suggest one or a combination of these strategies.

2.4.1 Conducting user needs assessment

Information services provided without a thorough need assessment will stop short of fulfilling their purpose. Wilson and Walsh (1996) state that need is an experience occurring only in the mind of an individual and is not a simple observable behavior. It emerges from physiological, unlearned and social motives. Users have selected and preferred information sources such as printed media, television, informal networks, radio and organizations. Assessment of information needs is thus important to determine preferred sources of information in order to deliver information in a way beneficial to communities.

In addition there is a need to study 'local knowledge', 'user requirements' and 'value chains' in a community before introducing ICTs (Mansell and Wehn, 1998.) Mansell and Wehn (1998) also stress the need for introducing the requisite institutional changes before applying ICTs to assist developmental goals. If this is not done, ICTs will not contribute to the alleviation of the problems of marginalized communities. Instead it will lead to the assumption that ICTs have failed in carrying out their assumed gains. The use of locally customizable ICT-based learning tools rather than becoming dependent fully on learning tools produced elsewhere is emphasized. Mansell and Wehn (1998) conclude that it is possible to 'design and implement' ICT strategies with the aim of assisting developmental efforts by employing new approaches which focus on 'linking ICT applications to development needs.' The following section discusses these different approaches to satisfy community based information needs.

ICTs can be made available to communities in telecenters, phone shops and computer training centers (TDG, 2000). The TeleCommons Development Group (TDG) (TDG, 2000) proposes the following points to be considered for making ICTs usable by communities:

- Building ICT access programs on user needs and appropriate technologies
- Employing both new and earlier media to disseminate and share information
- Creating an environment which supports creative, multi-stakeholder partnerships
- Building the capacities of the people who operate and use ICTs in rural areas
- Creating the means for exchanging information on the success and failures of rural ICT projects

These proposals provide an innovative approach for availing ICTs for use by marginalized communities. Any ICT application based on the needs of users that addresses the prevailing situation in the target community is expected to be successful. Applications which fail to do these will fail to improve the conditions of the localities they were meant to serve.

2.4.3 The integrated approach

An integrated approach is another technique that has been developed to reach rural communities and intermediaries that support them. This approach aims at providing ICT access not only to the people in communities under consideration, but also to other stakeholders involved in the day to day life of the communities. Richardson (1997) recommends an integrated approach to provide Internet based services to benefit communities in rural areas and organizations involved in agriculture. He first identifies the needs of rural communities and the agricultural organizations directly involved in providing service to them. He then attempts to set up a vertical and horizontal channel of communication amongst them. The vertical communication addresses the one between communities and agricultural

2.4.5 Pilot projects

Employing pilot projects to assess the benefits of deploying ICT based services to marginalized communities is one option. Rural and remote areas have been identified as areas badly in need of improved communication and information services. One can add the marginalized communities in cities to this category. The benefits of "pilot projects," according to Richardson (1997) lie in the fact that they help in identifying the best usage of resources, sharing of lessons learned, broadening the coverage of areas where Internet initiatives are having their impacts and improving the coordination of efforts. Pilot telecenters are considered as a demonstration and test of sustainability.

2.4.6 Universal Access

Universal access is another model promoted by telecommunications agencies. According to former President of South Africa Nelson Mandela (as quoted in Stern, 1999) universal access could promote economic growth and development, consolidate democracy and human rights, and increase the capacity of ordinary people to participate in governance.

Instead of trying to engage all members of a given community to use the Internet while they have to go on their daily routines, it would be wise to put initial emphasis in the training of people from the community in communication and computer environment applications. The members of the community would then view ICTs in MCTs as things that are not "alien" but rather easily accessible for use (Stern, 1999).

"Universal access can be improved by private investment (market liberalization), tariff reform and fair interconnection agreements, the right to resell services and rural telecom funds" (TDG, 2000). It can also be hampered by unfair interconnection and anti-competitive

practices." All the strategies discussed in this section attempt to implement the idea of universal access to ICTs.

2.4.7 Technology mix

Technology mix is another technique that is being hailed as beneficial for community access to ICTs. The success of ICT initiatives and their coverage of a large proportion of the target population extend beyond the reliance on one particular technology (TDG, 2000). ICTs power lies in their ability to cover a wider rural audience compared to what a particular technology alone could achieve. Information obtained from ICTs can be disseminated to a community by the direct interaction of the target community members with the ICT under consideration, through the use of rural radio or traditional folk media (TDG, 2000). Cisler (1998) argues the need for involving libraries in telecenter activities since they already utilize multiple media.

2.4.8 Use of Intermediaries

Another group advocates involving intermediary agencies in rural communities in ICT initiatives, rather than making the rural people direct users of technologies, so as to have impacts from employing the technologies (Richardson, 1996). The level of complexity of a technology as compared to local standards is one of the factors contributing to successful introduction of ICTs in rural areas of the developing countries. Van Koert (1998) suggests that technology should be used for provision of the means and materials for learning while the actual learning process should be handled by people a community is familiar with. He questions the necessity for introducing communities in developing countries to the global village. He brings the alternative of first using ICTs to improve the utilization of information already available. The introduction of "the basics" of ICTs so as to enable such communities to utilize them for communicating and exchanging information, at least in the beginning.

Along with selecting the best strategy that suits the local conditions of the community under consideration, there is a need to identify the challenges involved and tackle them.

2.5 Challenges to applying ICTs to development efforts

Applying ICTs to development of communities pose substantial challenges (Mansell and Wehn, 1998). Mansell and Wehn (1998) raise the issues of 'threats' to society from content which is not in line with a society's 'social and cultural traditions,' and 'factors' which add to the further marginalization of already marginalized sectors of society. They also raise concerns for new 'dualisms' or 'access gaps' among the sectors of societies in developing countries which may be created as a result of 'market-led development.' Further marginalization of poor communities in a society by 'virtue of gender, religion, ethnicity, language or illiteracy' are also possible unless concerted actions are made in analyzing technology introduction. One way of addressing this is conducting studies into ways the Internet can be used by marginalized communities. Problems faced in developing countries of using content produced elsewhere include difference in established teaching methods and legal problems concerning the use of copyrighted material.

The challenges identified in the literature of applying ICTs to development efforts are access, education and training and changing attitudes. The following section describes these challenges in detail.

2.5.1 Access

Access to ICTs is the key factor in using new technologies to solve problems. Access refers to telecommunication and electrical infrastructure, usage and literacy skills, and financial

resources (Heeks, 1999). Poor people lack all these elements. Obviously intermediary institutions, such as telecenters and all techniques cited above, could be a solution.

Access is often proportional to cost. Thus benefits from the use of ICTs should outweigh the cost of using them. The use of MCTs for various purposes, including capacity building, lies on having affordable access to telecommunications.

In the event that there is lack of resource, it has been observed that much attention is given to improving the information infrastructure rather than the information provision.

2.5.2 Education and Training

If not all members of a community, at least a few should be trained on how to use ICTs. The fact that the community members are involved in the use of ICTs facilitates their actual utilization by the community at large. There is also the need to develop 'capabilities to assemble, maintain and operate the underlying technological infrastructure' (Mansell and Wehn, 1998). Communities, intermediaries or others should also be trained in new competencies to enable creative applications of ICTs. The reliance on external expertise is not feasible due to the scarcity of financial resources. It creates dependence thereby lowering the empowerment potential of ICTs for marginalized communities.

The literature points out that education and training necessary for using the Internet and other ICTs requires developing participatory, facilitating and control skills. Development agencies do not usually involve targeted Internet users in communities in the design and implementation of Internet based information provision services. Participatory skills are those necessary to use the Internet content available at present with less or no local content.

Facilitating skills refer to skills needed for installing, using and maintaining networks. Control skills address the financial resources required for acquiring ICT equipment.

2.5.3 Changing attitudes

Members of a community have to accept ICTs by avoiding any biases they may have. Several methods can be employed to achieve this. The involvement of community members rather than strangers in service provision is one method of facilitating acceptance. Heeks (1999) calls 'trust' of information source and its channel by users a key element in the provision of information services from sources outside a given community. Another element that necessitates a change of attitude is 'confidence and security.'

Treating ICTs as magical instruments on their own is another attitude which needs to change. ICTs should be coupled with existing human and other resources of a community to assist developmental efforts. It is important to have an understanding of the community to achieve change in attitudes, provide the requisite education and training, and access to ICTs. This understanding includes the way members of the community carry out their tasks and how best ICTs can fit into these.

> If the specific social, cultural, and economic conditions, the expertise and commitment of users, and components of the infrastructure are not assembled together, ICT applications will fail to yield benefits (Mansell and Wehn, 1998).

There are several efforts worldwide that take the above factors in consideration in the deployment of ICTs for communities. The final section lists some of these examples.

2.6 Experiences of ICT application in development

This section tries to capture a few examples of ICT application on the ground. Although there are more applications, these help to show the possibilities and ways of employing ICTs. The Grameen Bank is often cited as a best practice of ICT application. The Grameen Bank is an organization working in Bangladesh providing financial, social, and communication services. Its success in reaching out to the poor in Bangladesh, mainly in rural areas, is highlighted (Camp, 1999). The Grameen Bank employs a wireless GSM network to provide communication services throughout Bangladesh because the network fits the physical conditions of the country by its ability to be protected from frequent natural disasters.

The Grameen Communications program through village Internet services aims to alleviate poverty by minimizing the need for villagers to migrate to cities, introducing IT based employment opportunities and developing computer literacy among the rural population of Bangladesh. Alam (1998) refers to these as the benefits a rural society can have from Internet usage. The ideal Cyber Kiosk includes email facilities, word processing services, printing services, publishing services, Internet phone usage, computer classes, data entry, online information services, voice mail information line/bulletin board system, Web shopping mall and translation/software development. The services are based on the benefits that can be accrued by employing Internet services in rural communities.

Another example is the FAO's Electronic Information Systems Working Group. It is an integrated rural Internet approach that uses HF/VHF/UHF data networks to provide Internet services in rural areas and spread spectrum microwave radio networks in urban areas of Uganda.

Senegal's use of the principle of "keeping the services simple" and expanding the services in answer to people's demands is highlighted. In Senegal families run local telephone shops and upgrade them to new technologies.

The above examples show that by devising working strategies to meet the challenges it is possible to use ICTs for development efforts. To achieve this, according to TDG (2000) there is a need for:

- Participatory approaches in applying ICTs
- Partnerships
- Involvement of local politicians
- Identification of local champions
- Training of users
- Use of appropriate technology
- Production/identification of information content

Failure to integrate ICTs into society will contribute to the current trend of utilization only by few elite and result in the marginalization of the rest of the community. This study attempts to investigate closely whether ICTs could be deployed to marginalized communities in order to alleviate poverty.

3. Marginalized communities in Addis Ababa: survey of information need and use

3.1 Identifying a representative marginalized community

As described earlier, a representative marginalized community in Addis Ababa was identified based on the available data on the average income of different communities in Addis Ababa. A community in the case of Addis Ababa refers to a Kebele, the lowest unit of administration in Ethiopia. Data for income and other purposes is available on the Kebele level.

In the case of this research, the data used to identify a representative marginalized community was obtained from two sources. One was the Central Statistical Office of the Federal Democratic Republic of Ethiopia's '1995-1996 Household Income, Consumption and Expenditure Survey' conducted in 1996. The other was the 'Ethiopian Urban Socio-Economic Survey – September 1994' of the Department of Economics, Addis Ababa University and the Department of Economics, University of Göteborg, Sweden. Both surveys covered cities throughout Ethiopia and the data for Addis Ababa was used for this research.

The data obtained from the Central Statistical Office was already summarized into average income and average expenditure group, while that of the Departments of Economics of Addis Ababa University and University of Göteborg needed such summarization. Once the latter one was summarized, the next step was to aggregate the data so as to fit the need of this research. Accordingly, the data was aggregated into Kebeles (See Appendices 1 and 2).

After discussions with the people involved in conducting both surveys, it was decided to take average expenditure as an indicator of average income. This was because of the fact that people have the inclination to understate their income. Based on the average expenditure data

available for the Kebeles included in both surveys, **Kebele 01[1] of Wereda[2] 22**, with the lowest yearly average expenditure of Birr 1924.71 and yearly income of Birr 1266.39 (See Appendix 1) was selected as a representative marginalized community in Addis Ababa.

3.2 Assessing information use and need of a marginalized community

The assessment of information use and needs of a marginalized community was conducted by employing a questionnaire which enumerators administered. The assessment involved preparation of a questionnaire, identification of a representative sample population and conducting of the survey. An interview was also conducted with the elected officials of the Kebele to gather more detailed information on the Kebele.

3.2.1 The Questionnaire

The information needs survey of the selected marginalized community aimed at identifying the major activities of the people in the community. These included identifying the problems to be solved in carrying out the activities in which they were engaged and the type of information used in the problem solving process. The survey also aimed at identifying the technology (if any) members of the community used in carrying out their tasks. It also tried to identify the location of these technologies. In line with this, the availability/use of community-based technologies was queried.

The survey mainly focused on information needs and use related to health, market, income generation, education and communication. The location of the communication facilities used was also identified. Opinion on new technologies and their potential use in the community was also gathered. This question was only addressed to members of the community who have

[1] From this point onwards and in some earlier discussion 'the selected community' or 'Kebele' refers to

a college and above level of education. (The questionnaire is attached to this document as Appendix 3.)

3.2.2 Identification of a representative sample of the selected community

Further information on the selected community was obtained from interviews with the Kebele officials and by personal observation. The community consists of a total of 1719 households with an estimated population of 15,000. Using the mean average annual income of 1924.71 Birr and the income of each household in the sampled households of the Central Statistical Authority Survey, it was possible to determine a sample household of 114. This sample size decreased the standard error of the annual average expenditure data for the selected Kebele in the survey carried out by the Central Statistical Office from 781.65 to 267.022 (a 66% reduction). Although the aim was to measure other qualitative variables rather than household expenditure, it nevertheless increased the probability of capturing data that may be unique for certain groups in the community.

Following the determination of the sample size, stratification was done, taking samples from each 100 consecutive households. This was based on the fact that neighborhoods inside the community were observed to contain different categories. Along with a large number of low-income community members, there were also neighborhoods in the community with relatively higher income. Accordingly, area stratification was done. Again, this increased the probability of capturing data that may be unique to certain group of households. Then sample households were selected using the table of random numbers (two digits) and adding prefixes (one or two digits) to achieve the required stratification. There were households that didn't exist because of various factors such as being demolished by floods. There were also households that were

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Wereda 22 Kebele 01 in Addis Ababa.

not willing to provide information for the survey. In such cases, a replacement was taken. The replacements were the next household on the list (See Appendix 4 for selected households and reason for replacements).

3.2.3 Conducting the survey

Five enumerators and the author of this paper carried out the survey. One respondent was interviewed from each household. An attempt was made to maintain a gender and age balance of respondents as far as possible. An initial survey of 10 households was conducted to test the effectiveness of the questionnaire. Following the results from these 10 questionnaires, minor adjustments were introduced to the questioning and response recording process.

The survey was conducted over a one-week period (March 30, 2000 – April 6, 2000), including weekends. The average daily survey per respondent was 2-3 households during weekdays and 4-5 households during weekends.

3.3 Presentation of the outcomes from the survey

3.3.1 The Community

Information obtained from the Kebele officials indicates that there were a total of 1719 households with a population of approximately 15,000. The Kebele was said to be one of the largest Kebeles in the city.[3] Of the total 1719 houses, 830 houses belonged to the Government, and the renting was administered by the Kebele. Information on the total area covered by the Kebele, distribution of population by age, sex and educational level was not available. There is one public school, charging fees, which provides education at elementary and junior secondary levels. There is one health post located in the adjacent Kebele (Kebele

[2] Wereda is a higher level administrative entity encompassing several Kebeles.

06), which is commonly referred to as Lideta Clinic. There are 5 'Edirs' (community welfare institutions run by contributions from the members). There are a total of 69 kiosks and 2 grain mills (publicly and privately owned.) NGOs are active in the area – the main ones being Redd Barna, Good Neighbors Ethiopia and Handicap Ethiopia. The coverage of these NGOs is not restricted to the Kebele but also includes other Kebeles in the Wereda. The Ethiopian Telecommunication Corporation facility available in the area is the Old Airport Telecommunications Branch Office (located out of the Kebele). Subscription to telecommunications services and other on the spot services is available there. There are no libraries or reading rooms in the Kebele. However, there is a public Library in the Wereda, located about 2 kms from the Kebele. The significant non-residential compounds in the Kebele are the Ground Forces Headquarters (lying Southeast of the Kebele and technically part of the Kebele, also referred to as Old Airport) and the International Evangelical Church and Academy (lying Northeast of the Kebele). The Kebele doesn't have relations with either of these establishments.

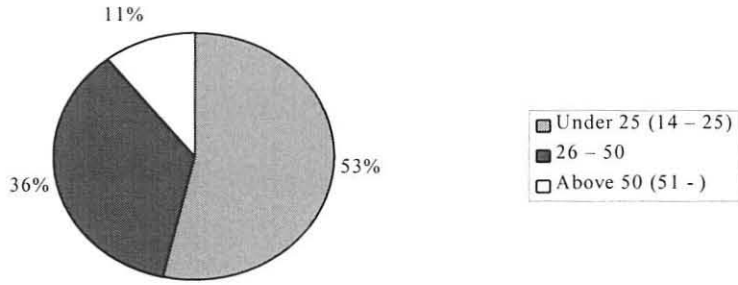
3.3.2 Demographics of respondents

3.3.2.1 Distribution by age

Of the total respondents the majority were young people (54%). Figure 3.1 shows the distribution.

[3] The Kebele officials indicated that the average Kebele in Addis Ababa has about 800 households

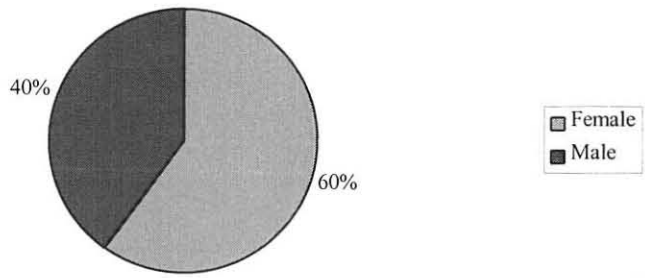
Figure 3.1 Age distribution of respondents



3.3.2.2 Distribution by sex

The majority of the respondents (60%) were women. It was always easier to find housewives and women who were responsible for running the families; despite conducting the survey at different hours of the day so as to get hold of different possible respondents.

Figure 3.2: Sex distribution of respondents



3.3.2.3 Distribution by language

Respondents were asked about their language ability. Table 3.1 shows language distribution.

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and a population of 6000.

Table 3.1: Language ability of respondents

Language	Mother Tongue	%	Second Lang.	%	Third Lang.	%	Fourth Lang.	%	TOTAL Number of speakers	%
Amharic	98	86%	16	22%					114	100%
English			40	55%	9	50%			49	43%
Oromiffa	8	7%	10	14%	3	17%			21	18%
Tigrigna	4	4%	4	5%	1	6%			9	8%
Guragigna	3	3%	1	1%	1	6%			5	4%
Italian					1	6%	1	50%	2	2%
Somali			1	1%	1	6%			2	2%
Arabic			1	1%					1	1%
Dorze	1	1%							1	1%
French					1	6%			1	1%
Kambatta					1	6%			1	1%
Spanish							1	50%	1	1%
Total	114	100%	73	64%	18	16%	2	2%	114	100%

Of the total number of respondents, 64% can at least speak a second language while 19% of these can read or write the second language. Sixteen percent of the respondents can at least speak a third language while 67% of them can read or write in the third language. It was noted that at least 43% of the respondents can speak English.

3.3.2.4 Literacy

Nineteen percent of the respondents were found to be illiterate from the answer to the question on ability to speak and write in the mother tongue. Twenty-seven percent of these also stated that they had no schooling. One respondent who stated that he had attended school declared ability to write and answered yes to the question of currently being a student. Twenty-seven percent of the respondents are currently students while sixty-eight percent are not students at the present. Five respondents (4%) haven't attended school.

The following table provides a detailed report on the educational level of the respondents.

Other groups regarding to employment and income are nine pensioners (8%) and nine (8%) self-employed. Thirty-nine percent of the respondents were unemployed. Out of these 67% are looking for work but unable to find any; while the rest 33% were neither at paid work nor looking for work.

3.3.3.2 Household of respondents

The respondents represented households with a total population of six hundred and four. Forty-four (39%) of the respondents were head of the household while the remaining seventy (61%) were members of the household. Of the total population of the sampled households, two hundred and eighty two were males while three hundred and twenty two were females. Age wise, one hundred forty seven were under fifteen years old, thirty five were over fifty five years and the rest four hundred twenty two were between the ages of sixteen and fifty four.

3.3.3.3 Income of the respondents household

The following table summarizes the principal source of family income for the selected households.

Table 3.7: Principal source of family income

Source of income	Number of households	%
Salary	40	35%
Pension	22	19%
Self employed	11	10%
Daily labor	9	8%
Trading	8	7%
Pension and Salary	5	4%
No income specified	3	3%
Help from relatives	2	2%
House rent, trading	2	2%
Salary and trading	2	2%
Everyone has his own income	1	1%
House rent	1	1%
House rent, daily labor	1	1%

Source of income	Number of households	%
House rent, salary and pension	1	1%
Pension and self employed	1	1%
Pension, daily labor, trading	1	1%
Remittance	1	1%
Remittance, house rent	1	1%
Remittance, self employed, pension	1	1%
Trading and pension	1	1%
TOTAL	**114**	**100%**

Inquiry was also made on remittances being part of the family income. Thirty-one respondents (27%) indicated that their household receives remittances. Six (19%) of these were from within the city, ten (32%) from elsewhere in the country and fifteen (48%) outside the country. Regarding the importance of the remittances, nine (29%) indicated that the remittances were important, fourteen (45%) moderately important and one (4%) unimportant. The following table shows the ranking of remittances emanating from different areas.

Table 3.8: Remittances received by households

Origin of remittance	Importance							
	Important	%	Moderately Important	%	Unimportant	%	Not specified	%
Within the city	2	7%	4	14%				
Elsewhere in the country	4	14%	5	18%		4%	1	4%
Outside the country	6	21%	5	18%	1			

Cross checking the data obtained here against data on principal source of family income revealed that only two respondents (7%) had indicated remittance as a principal source of income. Another two indicated it as an important source of family income along with other sources.

3.3.4 Health

Respondents were requested to indicate their use of health institutions. Eighty-five respondents (75%) responded to the positive to the question requesting them if they saw

physician immediately when they were sick; while twenty eight (25%) responded negatively. Out of the twenty-eight who had responded in the negative, twenty-five (89%) also reported visiting a clinic/hospital in the past three years.

Identification of the clinics/hospitals visited by respondents in the past three years was done. The results of this identification are presented in the following table.

Table 3.9: Health institutions visited by respondents

Clinic/Hospital visited	Number of respondents	%
Lideta Clinic	71	65%
Private Clinic	9	8%
Black Lion Hospital	5	5%
Zewditu Hospital	4	4%
Armed Forces General Hospital	2	2%
Police Hospital	2	2%
Yekatit 12 Hospital	2	2%
Abinet Clinic	1	1%
Africa Clinic	1	1%
Amanuel Hospital	1	1%
Commercial College Clinic	1	1%
Different clinics	1	1%
Ghandi hospital	1	1%
Kendil Clinic	1	1%
National Clinic (Private)	1	1%
Paulos Hospital	1	1%
Rediet Clinic	1	1%
Selam Clinic	1	1%
St. Gabriel Pvt. Hospital	1	1%
Teklehaimanot Health Center	1	1%
Tele Clinic (Organization where mother works)	1	1%
Tesfa Kokeb Junior Clinic	1	1%
TOTAL	**110**	**100%**

Respondents who indicated that they didn't see a physician immediately when falling sick were requested to report the entity they consulted other than a physician. The following table presents the entities.

Table 3.13: Information needed to carry out day-to-day tasks

Type of information	Number of respondents	%	Associated weight
Education/New Skills	65	57%	2.8
Religion	41	36%	1.44
Health Care	39	34%	1.92
Available jobs	38	33%	3.02
News/Sports	32	28%	1.78
Social and cultural events	19	17%	1.89
Source of inputs	18	16%	1.44
Weather	17	15%	2.23
Other	14	12%	4.5
About Peace	6	5%	7
Country's situation	6	5%	6
Economic development	2	2%	6
No information is necessary	1	1%	0
Latest information on field of interest	1	1%	1
Human innovation	1	1%	3
Authorship	1	1%	1
Government information – Laws, Regulations, Procedures	12	11%	1.25
Culture	11	10%	1.09
Market opportunities for my products/services	7	6%	1.43
How to improve my product/service	6	5%	2.5
Tourism	6	5%	1
Current prices for my products/services	5	4%	2

The above table sorted by the weight associated to each type of information is given below.

Table 3.14: Weight given to information needed to carry out day-to-day activity

Type of information	Number of respondents	Associated weight
Other	14	4.5
About Peace	6	7
Country's situation	6	6
Economic development	2	6
Human innovation	1	3
Latest information on field of interest	1	1
Authorship	1	1
No information is necessary	1	0
Available jobs	38	3.02
Education/New Skills	65	2.8
How to improve my product/service	6	2.5
Weather	17	2.23
Current prices for my products/services	5	2
Health Care	39	1.92
Social and cultural events	19	1.89
News/Sports	32	1.78
Religion	41	1.44
Source of inputs	18	1.44
Market opportunities for my products/services	7	1.43

Type of information	Number of respondents	Associated weight
Government information – Laws, Regulations, Procedures	12	1.25
Culture	11	1.09
Tourism	6	1

Information obtained in this section was checked against respondents' response to questions relating to employment status, type of work, healthcare, studentship and principal source of income. The comparisons are presented in the following tables.

Table 3.15: Information needed to carry out day-to-day activity compared against employment status

Type of information needed	employment status																			
	civil servant	%	public sector enterprise employee	%	private organization employee	%	international organization employee	%	International NGO	%	Local NGO	%	Producer or service cooperative employee	%	Producer or service cooperative member	%	Casual worker	%	Domestic worker	%
Education/ new skills	3	20%	0		2	20%	1	50%	1	25%	1	100%	1	100%	1	100%	9	31%	3	10%
Market opportunities for my products/ services	0	0%	0		1	10%	0		0		0		0		0		1	3%	4	14%
Available jobs	0	0%	0		0		0		0		0		0		0		7	24%	3	10%
Social and cultural events	2	13%	0		0		0		1	25%	0		0		0		1	3%	3	10%
Weather	2	13%	0		1	10%	1	50%	0		0		0		0		0		1	3%
Government information – laws, regulations, procedures	2	13%	1	20%	0		0		0		0		0		0		1	3%	3	10%
News/Sports	1	7%	0		2	20%	0		0		0		0		0		4	14%	1	3%
Culture	0	0%	0		1	10%	0		1	25%	0		0		0		1	3%	0	0%
Religion	2	13%	1	20%	2	20%	0		1	25%	0		0		0		2	7%	9	31%
Tourism	0	0%	1	20%	0		0		0		0		0		0		2	7%	0	
Other	3	20%	2	40%	1	10%	0		0		0		0		0		1	3%	2	7%
TOTAL	15	100 %	5	100%	10	100%	2	100%	4	100%	1	100%	1	100%	1	100%	29	100%	29	100%

3.3.7 Use of Communication Media

This section tried to assess the community's use of communication media and answer questions such as where the media was being accessed, any cost involved and the amount, and the means of access where cost was not involved. It was found that sixty three respondents (55%) read newspapers to obtain information, one hundred and three (90%) radio, seventy-five (69%) television, sixty-six (58%) used telephone to communicate, one (1%) fax, forty-two (37%) the post office, and five (4%) used other means.

The following table shows the place where members of the community accessed the communication media they used.

Table 3.19: Place where communication media is accessed

Media	Place media is accessed	Number of respondents	%
Newspaper		**63**	**55% (of 114)**
	Buying	27	43% (of 63)
	Buying and borrowing	6	10% (of 63)
	From family	4	6% (of 63)
	From friends	9	14% (of 63)
	From friends and relatives	1	2% (of 63)
	From Library	2	3% (of 63)
	From other people	9	14% (of 63)
	From school where I work	1	2% (of 63)
	Home	3	5% (of 63)
	On the street	1	2% (of 63)
Radio		**103**	**90% (of 114)**
	Home	101	98% (of 103)
	Home/Cars	1	1% (of 103)
	Other people's house	1	1% (of 103)
Television		**79**	**69% (of 114)**
	Grocery	1	1% (of 79)
	Home	44	56% (of 103)
	Neighbor	32	41% (of 103)
	Recreation centers, Neighbor's	1	1% (of 103)
	School	1	1% (of 103)
Telephone		**66**	**58% (of 114)**
	Home	16	24% (of 66)
	Home, public, private	1	2% (of 66)

Table 3.23: Communication media use compared to principal source of family income

Principal source of family income	News-paper	%	Ra-dio	%	T V	%	Tele-phone	%	Fax	%	Post Office	%	Other	%
Daily labor	0	0%	1	1%	0	0%	0	0%	0	0%	0	0%	0	0%
Everyone has his own income	1	2%	1	1%	1	1%	0	0%	0	0%	1	2%	0	0%
Help from relatives	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
House rent	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1	20%
House rent, daily labor	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
House rent, salary and pension	1	2%	1	1%	1	1%	1	2%	0	0%	1	2%	0	0%
House rent, trading	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
No income specified	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Pension	11	17%	20	19%	20	25%	15	23%	0	0%	10	23%	0	0%
Pension and Salary	3	5%	3	3%	3	4%	1	2%	0	0%	0	0%	0	0%
Pension and self employed	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Pension, daily labor, trading	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Remittance	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Remittance, house rent	0	0%	1	1%	1	1%	0	0%	0	0%	1	2%	0	0%
Remittance, self employed, pension	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Salary	22	35%	31	30%	23	29%	23	35%	0	0%	14	33%	2	40%
Salary and trading	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Self employed	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Trading	5	8%	5	5%	4	5%	2	3%	0	0%	2	5%	0	0%
Trading and pension	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%

Along with the questions regarding the use of communication media, respondents who had an educational level of college and above were requested to air their opinions on the future of communication technologies such as the Internet. They were also asked to relate their thoughts to the advantages or disadvantages such technologies may bring to society if available in community centers such as the Kebele office. The following tables provide summaries of the responses to the question.

Table 3.24: Thoughts on the use of new technologies

Thoughts on the use of new technologies (Internet, etc.)	Number of respondents	%
Availability shows that the country is developing.	1	7%
Expansion of communication will facilitate knowledge of the world.	1	7%

Thoughts on the use of new technologies (Internet, etc.)	Number of respondents	%
Has good potential for communication with the world.	5	33%
Is showing a good start in the country.	1	7%
It is a very important source of information.	2	13%
Possibility of using Internet like using the telephone will allow us improve our conditions.	1	7%
The country is not moving along with advances in technology. Maybe it is because of the country's ability to introduce such things. It has no meaning for someone who doesn't know what Internet is all about.	1	7%
Usefulness to society.	3	20%
TOTAL	**15**	**100%**

Respondents' opinion on the advantages/disadvantages of availing new information technology to the community is summarized by Table 3.25.

Table 3.25: Thoughts on the advantages/disadvantages of availing new technologies in community centers

Thoughts on availing information using new technologies in community centers					
Advantage	**Number of respondents**	**%**	**Disadvantage**	**Number of respondents**	**%**
Contact with the outside world helps people understand the economic situation they are relatively in. Helps compare the country's situation against the rest of the world.	1	7%	As people lack awareness they don't use it.	1	7%
Exchange information easily.	3	20%	Cultural erosion will exist.	2	13%
First people should be knowledgeable why they are needed. If available in the Kebele, lots of people can use them.	2	13%	Lack of someone who can be available in the Kebele knowledgeable about such things.	2	13%
Informs the society about new technology and helps share of experience from other countries for development.	1	7%	No	3	20%
It is important for the learned society in the community.	1	7%	People won't use it properly. Will be damaged after short period of use.	1	7%
The information it provides.	5	33%	Reduces job opportunities.	1	7%
Useful.	3	20%	The community is not aware of the technology - will result in use only by youngsters.	1	7%

3.3.8 Library/Information Centers Use

Fifty-eight (51%) of the total respondents indicated that they had visited a library to date. The libraries visited and the number of respondents who visited them are presented in the following table.

Table 3.26: Libraries visited by respondents

Library	Number of respondents	%
National Library	18	31%
School libraries	16	28%
Wereda 22 Pubic Library	9	16%
SOS High School Library	5	9%
City Hall Library	3	5%
Commercial college	3	5%
Kebele 41 Public Library	3	5%
Kefetegna 4 school library	3	5%
more than one	3	5%
Office Library	3	5%
Shimelis Habte School and TMS	3	5%
Balcha Aba Nefso School Library	2	3%
British Council	2	3%
Iran Embassy	2	3%
Kefitegna 24	2	3%
Addis Ketema SSS Library	1	2%
Afework Library	1	2%
Ayer Tena Library	1	2%
Black Lion Library	1	2%
Ground Forces Library	1	2%
Kennedy Library, AAU	1	2%
Kokebeh Tsibah Library	1	2%
Kotebe College	1	2%
Law School Library, AAU	1	2%
Military political department library	1	2%
Nekemte high school library	1	2%
Nekemte public library	1	2%
Police Forces HQ	1	2%
Popolare Library	1	2%
Technical School (A.A.) Library	1	2%
Wingate school library	1	2%

The above list makes up a total of ninety libraries. Out of these thirty-eight (42%) are school libraries, six (7%) higher education institutions, thirty-five (39%) public and eleven (12%) not falling into any of the three categories. The respondents' response to visiting a library was cross-checked against their educational level, being currently a student and newspaper readership. The results are presented in the following tables.

Table 3.27: Library visits compared to educational level

Educational Level	Visited a library	%	Didn't visit a library	%
secondary completed	21	88%	3	13%
secondary incomplete	13	54%	11	46%
college diploma completed	7	100%	0	0%
junior secondary incomplete	4	31%	9	69%
technical/vocational completed	3	100%	0	0%
Junior secondary completed	2	40%	3	60%
technical/vocational incomplete	2	100%	0	0%
college diploma incomplete	2	100%	0	0%
post graduate	2	100%	0	0%
first degree incomplete	1	100%	0	0%
No schooling	0	0%	7	100%
Traditional/Religious	0	0%	3	100%
Adult Literacy Program	0	0%	6	100%
Primary school completed	0	0%	2	100%
primary school incomplete	0	0%	8	100%

Table 3.28: Library visits compared to studentship at present and newspaper readership

Respondents' Status	Visited a library	%	Haven't visited a library	%
Currently a student	16	52%	15	48%
Currently not a student	41	53%	34	44%
Newspaper reader	38	60%	24	38%

3.3.9 Markets frequented and source of information on prices

The questions in this part tried to identify the markets and shops frequented by the community members. They also try to identify the information sources the community members employ to reach a decision on prices. One hundred thirteen (99%) respondents indicated visiting a

single market while thirty-seven (33%) of these indicated visiting a second market. The following table presents the markets visited by members of the community.

Table 3.29: Markets visited by respondents

Market	Number of visitors	%
Merkato	102	89%
Lideta Gulit (Gulit)	22	19%
Neighborhood shops	9	8%
Mexico	3	3%
Kolfe	2	2%
Kebele 01 Tlosa Sefer Mill	1	1%
Arega Sefer Gulit	1	1%
Birmo	1	1%
Cherkos	1	1%
Spare part importers	1	1%
Piazza	1	1%

The following table summarizes the names of the shops/shop owners frequented by members of the community in the markets they often visit.

Table 3.30: Shops/shop owners visited by respondents

Name of shops/shop owners	Number of respondents	%
No specific shop	11	10%
Worku shop	11	10%
Doesn't know names of shop owners	7	6%
Neighbourhood shop	5	4%
Dula shop	2	2%
Melese Shop	2	2%
Muradu Shop	2	2%
Tana Gebeya	2	2%
Tatek shop	2	2%
Addisu shop	1	1%
Ato Ahmad	1	1%
Birru Shop	1	1%
Dawit shop	1	1%
Desalegn shop	1	1%
Doesn't use shops	1	1%
Dubai Tera	1	1%
Eninish shop	1	1%
Fikre	1	1%
Girma shop	1	1%
Iyob Haile	1	1%
Meka	1	1%
Muze shop	1	1%

Table 3.35: Messages sent/received compared against employment situation

	Source/destination of Message sent/received					
	Within the city	%	Elsewhere in the country	%	Outside the country	%
Employment status						
civil servant	8	100%	5	63%	4	50%
public sector enterprise employee	3	100%	2	67%	3	100%
Private organization employee	3	100%	3	100%	1	33%
International organization employee	0	0%	0	0%	1	100%
International NGO	1	100%	1	100%	1	100%
casual worker	11	100%	7	64%	3	27%
Domestic worker	12	92%	9	69%	4	31%
Type of work						
Domestic work (including housewife)	29	223%	24	185%	8	62%
Manual work (builder/mason/carpenter)	3	27%	4	36%	2	18%
Weaving	3	100%	1	33%	0	0%
Blacksmith	1	100%	1	100%	1	100%
food/drink selling	1	100%	1	100%	0	0%
Driving/mechanic/taxi boy	1	50%	1	50%	0	0%
Factory work	1	50%	0	0%	0	0%
health work	2	100%	1	50%	1	50%
Trading	7	100%	4	57%	2	29%
Government office work	2	100%	2	100%	1	50%
Others (specify)	29		18		18	
Pensioner	7	78%	6	67%	3	33%
self-employed	8	89%	6	67%	4	44%
Unemployed						
Looking for work but unable to find any	30	100%	21	70%	10	33%
not at paid work and is not looking for work	12	80%	9	60%	4	27%

The following chart compares messages sent and received by respondents against their receipt of remittances, if any.

Table 3.36: Media used to send/receive messages compared against source/destination of messages

Message sent/received	Communication media used													
	Newspaper	%	Radio	%	TV	%	Telephone	%	Fax	%	Post Office	%	Other	%
Within the city	58	92%	95	92%	72	91%	64	97%	1	100%	40	93%	5	100%
Elsewhere in the country	38	60%	69	67%	54	68%	53	80%	1	100%	36	84%	3	60%
Outside the country	30	48%	38	37%	37	47%	32	48%	0	0%	28	65%	2	40%

Table 3.37 compares the communication media use of respondents against the modes of communication they frequently use.

Table 3.37: Media used to send/receive messages compared against communication media used for other activities

Message sent/received	Communication media used													
	Newspaper		Radio		TV		Telephone		Fax		Post Office		Other	
Messenger	19	30%	40	39%	29	37%	30	45%	0	0%	18	42%	0	0%
Travel	39	62%	67	65%	50	63%	40	61%	1	100%	27	63%	5	100%
Letter (Postal service)	36	57%	54	52%	45	57%	40	61%	1	100%	37	86%	3	60%
Telephone	46	73%	71	69%	60	76%	61	92%	1	100%	37	86%	2	40%
Fax	1	2%	1	1%	1	1%	1	2%	1	100%	1	2%	1	20%

3.3.11 Information seeking

Respondents were given an open-ended question requesting what they wanted to learn more about and where they thought they would be able to do so. The following three tables list what they wanted to learn more about, where they would be able to learn and a link between the answers to the two questions.

Table 3.38: Items respondents wanted to learn more about

What do you want to learn more about?	Number of respondents	%
Further education	40	35%
Skills	27	24%
Getting a job	20	18%
Nothing	14	12%
Trading	14	12%

Wanted to learn about	Place of learning	Number of respondents	% of who wanted to learn about
	Go overseas	1	17%
	Practice	1	17%
	School	3	50%
Further education	Family	3	8%
	Friends	3	8%
	From knowledgeable persons	8	20%
	Go overseas	3	8%
	Library	2	5%
	Media	4	10%
	Observation	2	5%
	Office	1	3%
	Practice	1	3%
	School	24	60%
Getting a job	Family	2	10%
	Friends	2	10%
	From knowledgeable persons	5	25%
	Go overseas	1	5%
	Media	4	20%
	Observation	1	5%
	School	5	25%
Getting credit	Media	1	100%
	Kebele	1	100%
Go overseas	From knowledgeable persons	1	33%
	School	2	67%
Healthcare	Media	1	100%
	From knowledgeable persons	1	100%
Improving living conditions	Media	1	50%
	School	1	50%
Increasing income	Media	2	100%
	Public discussions	1	50%
	Friends	1	50%
	Family	1	50%
Nothing		14	100%
Skills	Association membership	2	7%
	From knowledgeable persons	10	37%
	Kebele	1	4%
	Media	5	19%
	Observation	3	11%
	Practicing	3	11%
	School	11	41%
Serve God	Church	2	100%
Trading	Children	1	7%
	Friends	1	7%
	From knowledgeable persons	7	50%
	Go overseas	1	7%
	Library	1	7%
	Media	1	7%
	Observation	2	14%
	Practice	1	7%

The telecenter provides Internet and email services freely for one year. Efforts are under way to ensure the sustainability of the telecenter's operations after a year. Photocopy is available for Birr 0.50. Fax and telephone services, although envisaged with the equipment and connection already in place, are not functional because of the provision of such services being restricted to the Ethiopian Telecommunications Corporation (ETC). However, it was noted that the only fax machine in town as of April 26 was the one at the telecenter. The plan was to provide services for a fee based on the local rate plus some additional charge. The telecenter has three computers, a printer, one photocopy machine, a telephone and a fax machine. In addition, there are three other on-loan computers used for training purposes.

Wolisso was chosen as a pilot telecenter site in November 1997. The Public Library, the community center for information use and exchange, was selected to host the Telecenter. Planning of the room for the Telecenter, building up of the Telecenter and setting up of equipment was carried out with the community's participation. Training on basic computer, Internet and CD-ROM use was provided to 206 members of the community before the inauguration of the telecenter.

The British Council covers the administrator's salary, the Internet bill and stationery for one year. The City Council covers the telephone charges. It is important to note that the Telecenter has only one dial-up account with the only ISP in the country, the Ethiopian Telecommunication Corporation. The income from photocopying (Birr 0.50 per page) and printing (Birr 1.50 per page) services goes to the City Council. A cashier from the City Council is stationed at the center and handles all transactions. The building which houses the Telecenter, the public library, is the property of the City Council.

Table 3.42: Photocopy and Printing services usage statistics for the month of April

April	Photocopy service (pages copied)	Printing service (pages printed)
1st week	119	18
2nd week	139	39
3rd week	306	2

3.4.3 Service provision

Initially the users were conducting Internet searches on their own which were frequently unsuccessful. They were guided to the Web directories[5] available in the center and identified the Web addresses they needed from the directory. They, however, were not restricted to the sites within the directories. Visited sites are bookmarked to facilitate access to the sites the next time someone wants to see them. Users don't have access to the Internet in the absence of the telecenter administrator. However they can use the computers for other tasks.
Users print out information retrieved from the net. The centre also provides information search services on the Internet to clubs in schools such as the 'AIDS Club' and the 'Environment Club.' The result of one search was printed and provided to the clubs. The center is also planning to set up clubs, on topics which don't overlap with existing clubs. Users are also observed by the center administrator to like surfing the net alone, with no one sitting beside them.

The existing opening hours of the center didn't fit well into the schedule of users. The center is already receiving complaints to that effect. It is also manifested in the center being actively used by only twenty-five of the potential two hundred and six users. While the Telecenter schedule fits well into the working culture of teachers, office workers and agricultural

[5] Harley Hahn's Internet & Web Golden Directory, 1998 Edition
Webster's New World Pocket Internet Directory and Dictionary

extension workers can't use the resources except on Saturdays, the day on which the telecenter had a short opening period and tends to be congested. Low use was noted on days of cultural/religious holidays. However this was also reflected in the number of library users, as the library is housed in the same building.

The telecenter administrator's observation was that most users preferred to follow their personal interests more than professional (task-carrying) ones. The fax service is mainly being used to handle correspondences with the British Council office in Addis Ababa.

The telecenter administrator and others interviewed noted that the demand from the public at large was focused on computer literacy training. A plan to provide training outside working hours was still under consideration.

A member of the local youth council, who is also a member of the telecenter committee, spoke of the opportunities it is providing in terms of computer literacy and other potential job opportunities to the unemployed members of the youth council. A member of the youth council who is unemployed participated in one of the initial training reported the potential of finding employment with the new skills she acquired. This is an encouraging impact of the telecenter.

A student in the town high school was interviewed while using the services of the library in the next room. He was not informed of the services available in the telecenter and how they could be accessed. He thought that it was necessary to pay a fee to use the telecenter. This comment highlights the necessity for carrying out promotional activities.

The head of the library that houses the telecenter indicated the contribution of the telecenter in terms of promoting other library services. He stressed the need to promote Internet use to other groups of the community who are not covered at present; but may find some value in its use. According to him, most users were coming to use the computer facilities rather than the Internet, and there was a need to promote Internet use. He observed that Internet use was being given emphasis to a restricted group (teachers, from observation.) According to him the reason was due to the little or no orientation provided on Internet use to many participants due to connection failures during the period. The need for providing basic computer training, to the extent of charging a fee that fit the local standards, was proposed. He noted that agricultural related workers in the city used Internet services for correspondence purposes focused on getting admissions to universities abroad.

A teacher at the agro-technical school, who is also a member of the Telecenter Committee, stated that he wasn't yet adequately acquainted with the Internet. The reason for this was that the availability of only one computer connected to the Internet was not sufficient. He stated that he and other colleagues used a spreadsheet program to prepare grade reports and generate rankings for the first semester of the academic year. This clearly showed innovative use of facilities. He further mentioned use of the available Internet directories and finding them useful. He and other colleagues saved, printed or viewed Web pages online. He pointed out that students and unemployed youth were the main users of the telecenter. The need for proactive service using the Internet to attract non-user sectors of the society was raised. Also suggested was the need to add personnel to the telecenter and library if extra hours were needed. He attributed the heavy use of the facilities by teachers to their working only for half-a-day. He forecasted that the rainy season, when schools will be closed, would bring more youth to the telecenter.

Another interviewed user was a physics teacher, also from the Wolisso agro-technical school. He stated using mainly email, had less knowledge of computers and used the Internet for 30 minutes to 1 hour on days he visited the telecenter. Asked why he had logged on for about two hours, as observed before the interview, he replied it was related to the fact that he didn't have access in the past two weeks due to service unavailability. (Because of some misunderstanding with the City Council over settlement of telephone bills, there was a disruption of the services. It was sorted out by the time of the interview. Meanwhile, it was learnt that users were using other non-Internet-based facilities.) He stated that there was no computer available at the school where he taught. Queried if he was ready to pay for the services, he replied he would do so for extremely useful items. However, he noted that it would lower his usage of the services. He stressed the need to publicize the telecenter. He was already corresponding by e-mail with the staff of the Physics Department of Addis Ababa University he was acquainted with. He exchanged information of professional and personal nature using his Yahoo account.

4. Interpreting the available data: search for the link between ICTs and their potential use in marginalized communities

This section analyzes the existing information use techniques and methods in the community. Then data obtained from a working community telecenter will also be discussed. The aim is to answer the question whether ICTs can successfully support the existing information use and infrastructure in marginalized communities or not.

4.1 Literacy

Although multimedia tools allow the non-literate section of the society to use ICTs for learning purposes, it is important to have a literate section in a community to sustain the use of ICTs such as the Internet. From the data collected on the community under discussion, we find that there is a relatively high rate of literacy (ninety-two out of one hundred and fourteen). Forty-nine of the total respondents have some level of knowledge of the English language (see Table 3.1). Another literacy indicator is that there exist a reasonable number of students in the community.

At the other side we find a significant number of community members who didn't complete their education to a certain 'markable' level (see Table 3.3). Out of these fourteen were in the fourteen to twenty-five age group. This indicates the existence of other problems inhibiting students from succeeding in their educational endeavors. This is also an opportunity to use ICTs to cater for continuing education. Another literacy related observation is that a high number of community members discontinued their education before or after completing high school (see Table 3.2).

Social and cultural events attracted the attention of domestic workers and civil servants. Information on weather conditions were mainly needed by civil servants. The categories who needed to know more about government information such as laws, regulation and procedures were domestic workers and civil servants. Domestic workers were the ones who wanted to know about religion.

The other item used to examine stated information needs was the type of work respondents were engaged in (see Table 3.16). Again, the significant relations are discussed here. Domestic workers, manual workers, drivers/mechanics/taxi boys, and traders were the main groups who indicated the need for information for education and gaining new skills. Traders were the only group who indicated their need for information on market opportunities for products and services. Domestic workers and manual workers were the ones who needed more information on available jobs.

Information needed compared against the employment situation community members were engaged in also brought similar results (see Table 3.17). Education, new skills and available jobs were mentioned as important information needs by those on the look out for jobs and pensions. Self-employed respondents indicated information on market opportunities for products/services and available jobs. This indicates that the self-employed were engaged in trading or looked for available opportunities in the area they were self-employed in. Education, new skills, religion, news and sports constituted the information needs of people not at paid work as well as those not looking for work. Non-students sought more information to carry out daily tasks than those who are presently students did (see Table 3.18). Most of the students said needed information related to education/news skills, healthcare, news and sports.

This indicates that an overall information profile can be developed based on these needs and could be tailored to a group of individuals employed in different sectors.

4.6 Communication Media

The questions in this section focused on obtaining information on which media were used by community members, how and where they were accessed. The communication media used by a large number of respondents turned out to be radio (see Table 3.19). Television, telephone and newspapers followed this. Regarding place of access, it was mainly at home for radio. Television access was available at home and at neighbors'. Telephone facilities are available at home, in neighborhood shops, neighbor's home, workplace and public coin box telephones. Some members of the community have their own private post office boxes and shared it with neighbors and family members. Other access points for post office boxes were office and school. Personal interaction was also mentioned as a communication medium. The fact that the majority has access to radio and television indicates information on jobs, education, etc. can be gathered and delivered through interactive technologies as well as community broadcasts.

Cost of access varied according to the media used (see Table 3.20). These were Birr 50,00 per year for annual television fees, an average of Birr 2.95 per month for post office use and Birr 1.82 per week for newspapers. Three type of fees were involved in telephone access. These were Birr 27.44 per month as an average fee for home telephone, Birr 0.70 per call for calls made from kiosks providing such services and Birr 0.20 per call for calls made from public telephone coin boxes. One respondent indicated spending an average of Birr 2.00 per week on battery cells for operating a radio. Clearly the use of kiosks (not legal) is 3.5 times expensive

when compared to the use of coin boxes. This indicates public telecenters could be profitable, could self subsidize and reduce the cost of communication for communities.

An attempt was made to compare usage of communication media against the educational level of respondents in the community (see Table 3.21). Non-educated members of the community mainly used radios, telephone and the post office. Those who attended adult literacy programs were noted to be newspaper readers. This shows the functionality of the program. Newspaper readership in general was strongly observed in community members with an educational level of junior secondary and higher; while telephone, radio and television use was uniformly scattered different educational level groups within the community. High cost of newspapers forced member of communities to seek various ways of getting it. This shows significance for new ways of delivering news print such as using plain paper and ordinary printer at a lower cost.

The data obtained for the question regarding source of update on current events was verified by comparing it to the sources indicated in communication media used (see Table 3.22). The comparison also provided an indication that groups who used communication media also used telephone and postal services.

Trying to compare communication media use against principal source of family income, it was discovered that community members who indicated salary, pension or both as their principal income were the main users of communication media (see Table 3.23). Households whose principal income was trading followed them. This may serve as an indication that salaried people, along with pensioners who were formerly in the same path, have a developed use of communication media. The fact that both groups are getting a fixed amount of income,

secondary schools were the highest visitors (see Table 3.27). Those who didn't have education or abandoned their education before achieving a 'markable' level constituted the part of the community who didn't visit a library. Library visits were also cross-checked against current student status and newspaper readership (see Table 3.28). A relatively larger proportion of the newspaper readers had visited a library. A significant difference wasn't observed in case of student status. Clearly the majority of members of the community visited health centers compared to libraries. This shows significance of health centers as demonstration sites of new technologies. However since the majority of educated visit libraries, libraries could become key sites for accessing information.

4.8 Market use and price information

The community members most usually frequented the main market in the city, Merkato (see Table 3.29), followed by the smaller market in the area and the neighborhood shops. Although Merkato is located relatively close to the Kebele, it is difficult to state this as a sole reason for its being frequently visited. This is based on observations that people from across the city visit Merkato for shopping purposes. An attempt was also made to identify the shop owners who owned shops frequently visited by respondents (see Table 3.30). Several respondents identified some shops in the neighborhood, while shops located in relatively further markets were not identified. It was also learnt that most members in the community visited a market at large and used any of the shops rather than specific shops within it.

Nearly all respondents indicated that they decided on prices after bargaining (see Table 3.31). Some indicated consulting other sources before deciding on the price of goods. The main ones used were families, friends and neighbors. It is assumed that these groups must have done

[6] The National Library has a section that works as a public library. Its location is relatively closer to the

4.10 Information seeking

Information on methods and means employed by community members to seek information was obtained in some of the responses to the questions, summarized and analyzed earlier. The information seeking behavior of users in terms of information they find necessary to improve their living conditions was requested along with where they expected to be able to obtain the information. Further education, skills upgrading, getting a job and trading ranked at the top of information needs (see Table 3.38). The information sources which received high value for their ability to contain information for the above were schools, knowledgeable persons and media (see Table 3.39 and 3.40). The mention of knowledgeable persons again confirmed the tendency of the members of the community to exploit non formal information sources equally with formal information sources. Clearly introduction of new technology should provide mechanisms for networking with knowledgeable persons (health, job searching techniques, new business opportunities, etc.) and support the flow of tacit knowledge (insights).

4.11 Community telecenter

A high usage of facilities was observed at the Wolisso telecenter. The need to create an enabling environment for the provision of services was noted. It was reflected in the working hours of the telecenter, settling of telephone bills and government policy. The working hours were inconvenient for sections of society such as office workers, health professionals and agricultural extension workers. Problems associated with the settlement of telephone bills have affected the services for some time. Government policy which allows a single ISP to serve the country, added with the ISP's inability to expand its services is affecting the quality of available services and the finances of users. The fact that a user survey was not conducted to establish a user profile has been a drawback.

A list of the findings in this chapter along with the conclusion reached based thereon is provided in the next chapter. Recommendations on the conclusion forwarded are also listed.

5. Conclusion and recommendation

Based on the analysis of the data obtained from the survey and interview of telecenter users, the following conclusions are made on the use of information in marginalized communities and the media and means employed to do so. In order to facilitate the conclusions this part is divided into three sections covering access (infrastructure) issues, content/application issues and the enabling environment.

5.1 Access (infrastructure) issues

It was found out that there is a direct relationship between the exposure of individuals to different institutions beyond their community and their access to ICTs. Community members engaged in activities centered in the community have less chance of accessing facilities than had they been employed elsewhere because of the inavailability of a wide range of facilities in the community.

The study confirmed a strong culture for sharing ICTs. Community members relied on their neighbors to access certain type of information and in the use of communication media. This ranged from getting advice on issues such as health and education to providing access to television, telephone and post office box. In instances where a community member uses a neighbor's facilities, such as telephone, the user involved covered the additional cost. This set up provides a base for sharing ICT resources, even if available only to the relatively well to do section of the community. This also shows the willingness of community members to pay a fee for the communication media they use.

A high rate of information sharing between families, friends, neighbors, community members and work colleagues exists. This information sharing is the main source of information in many instances where the habit of using formal channels of information transfer is not

developed or is non-existent. Thus community centers can be established both for the purpose of sharing a given communication resource and for sharing information.

It was also noted that ICTs could bring in substantial profit to small business. Existence of facilities which resell communication facilities such as kiosks providing telephones, recreational centers providing television and newspaper vendors providing on-the-spot reading services indicates a very good prospect for thriving private sector driven information kiosks in Addis Ababa.

Community members used communication media that fit their educational level. The use of certain kinds of communication media was related to income and type of employment. Thus access has direct relationship to education and level of income. Promotion of access should thus go hand in hand with improving education and employment.

The use of information centers such as libraries generally begins and takes root during the secondary level of education. Thus provision of interactive information to communities should be integrated to secondary school curriculum.

Community members select media based on a number of factors. Methods of communication employed varied based on the frequency of such communication, content, distance and cost. The price involved in communication tends to vary depending on the distance, so does the frequency. Thus a given technology cannot be adopted by communities unless it meets a set of criteria based on individuals' needs. Development of ICT access to communities should take these factors into account.

5.2 Content/ application issue

As regard to content the study found that community members shared common as well as unique information needs. Community members are already using different communication media to inform themselves. It is possible to identify the perceived and actual information needs of a community to design a profile that can be integrated in deployment of ICT at earliest stage. Such profile could change as communities adapt ICTs and integrate them in their daily lives.

Information is needed by the community members mostly to improve their incomes or for empowerment. The need for continuous education, upgrading and acquiring new skills was noted. They also needed help in locating available jobs. These should be a starting point of application of ICTs.

One of the applications of ICTs that would have immediate effect on communities is continuing education. Community members who attended adult literacy have greatly benefited from those programs. There is a need to continue providing such programs and integrate ICTs in delivery of further education.

The habit of using information sources for information on prices is not well developed. This may be related to the non-existence of a pricing information of goods understood by the consumer. The implication of such a practice is the disempowerment of community members who have to pay higher prices than provided by the market. In light of the fact that the community is a low-income one, there is a need for information on markets.

Unemployed members of the community looking for work engaged in frequent communication. This indicates the tendency among community members to employ communication media and communicate in search for jobs.

Communication existed between community members who received remittances and those who supported them. Internet will play a significant role in bringing these together.

5.3 Enabling environment (issues of introducing new ICTs)

Community members who were relatively better informed on ICTs know that ICTs are beneficial. However, there is skepticism on how ICTs might change the quality of life of the community. Therefore demonstration of ICTs should precede their effective use.

The monitoring and observation exercise at Wolisso telecenter shows that community centers require direct ownership of the constituency of that community. Representatives of users were involved in the committee that monitored the telecenter at Wolisso. This is an indication of rendering partnership in governance of facilities to community members.

Skill is a primary element in sustainability of interactive technologies such as the Internet. The introduction of a community center would help community members to have latest ICT skills at a lower cost that increase their chance of employment.

There is a need to promote actively all the services of the telecenter to avoid community members focusing on a single service. One was of ensuring this is by making sure that every potential user receives an introduction to all services.

Users are observed to be equally using the resources of the Telecenter without preferences based on age, sex and social status. This makes community-based services more attractive to fulfill information needs of diverse group indicated in the study.

Clearly marginalized communities already have the habit of using information and communication media to access information. Accordingly, the application of new ICTs, including the Internet on the top of the existing way of doing things will enhance the use of information in the community and is expected to create opportunities for improving the quality of life of community members.

5.4 Recommendations

For a successful utilization of ICTs at large and the Internet in particular to serve marginalzed communities, it is important to take into consideration the following points which emerged from this research.

- There is a need to create an integrated community information system drawing its resources from educational and health institutions, churches, libraries and shops in markets which most of the community members use to satisfy their information needs. The possibility of providing health-related information by members of the community who are health professionals should be investigated.
- There is a need to demonstrate to members of the community the importance of ICTs and their being easy to use.
- Users should be empowered to use the services in the way they deem to be appropriate. This would allow them to be familiar with the technology.

- ICT services should encompass all members of the community to the possible extent. This will help in avoiding the creation of a divide between those who have access and those who don't.
- There is a need to identify members of the society who can promote the use of ICT services as well as assist others in using them.
- The use of innovative ways of existing resources is necessary to overcome constraints to their use.
- There is also the need for improvement in policy so as to have improved facilities. Current facilities and pricing mechanisms hinder growth of ICT use.
- If the facilities are available, community members can innovatively use ICTs, thus strong emphasis should be made on improving access to ICTs.
- It is also important to take into consideration the sustainability of services and avoidance of frequent service disruptions. One way is to work out details before commencing service as disruption in the early stages.

Finally, it is recommended that if ICTs in general and the Internet in particular should be provided in the service of marginalized communities, the implementation should begin in centers where community members are already accessing information through formal channels. Among others, these include schools, libraries and health centers. They can also be centers for producing and disseminating content useful to community members. This approach would also allow the cost for accessing ICTs to be covered mainly by these institutions, as marginalized communities are unable to afford the high cost currently incurred for ICT access. Understanding information needs and profiles of communities is critical in this process.

5.5 Further areas of research

This study covered a prototype marginalized communities in Addis Ababa. Further research is required to see the applicability of the current findings to all communities.

A study into other social problems which inhibit community members, especially the young, from achieving educational goals is needed while proposing the introduction of other teaching methods, like distance learning which can be greatly enhanced by ICTs. The possibility of a countrywide ICT assisted distance learning program is another point to consider.

A similar study at the larger community level (Wereda) should be conducted as most of the formal information sources and other community facilities were shared among larger groups of Kebeles.

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by postal and telephone services. Daily communication, like weekly communication, took place mainly in the city and utilized self-travel, messenger and telephone services.

Messages sent and received to and from various destinations were compared against the employment situation of respondents. Domestic workers, casual workers and civil servants were the main ones who exchanged messages within the city, elsewhere and outside the country (see Table 3.35). Regarding the type of work respondents were involved in, domestic workers and traders conducted the major communications. Others who didn't fall into one of the type of works listed made significant numbers of communications. Of the unemployed members of the community, those who were looking for a job communicated more than those unemployed and not looking for jobs.

Community members who received remittances from different sources of origin exhibited use of communication media for communicating (see Figure 3.4). Such communication mainly involved the use of telephone, postal service and self-travel (see Figure 3.5). Community members who indicated sending/receiving messages also exhibited use of communication media including telephone and postal services both in terms of correspondence to different locations and modes of communication frequented (see Tables 3.36 and 3.37). Obviously communication by communities with each other requires availability of new interactive technologies to all. This cannot be achieved in short term. Regular communication to outside, substantial reliance on remittance, and the fact that most of these are in Europe and North America with access to the Internet shows a significant potential of Internet for communication with parties abroad.

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APPENDIX 1: Average annual income and expenditure data for Addis Ababa (Central Statistical Office of the Federal Democratic Republic of Ethiopia)

Wereda	Kebele	Average annual expenditure (in Birr)	Average annual income (in Birr)
22	1	1924.71	1266.39
14	17	2634.08	1458.54
5	22	2960.76	1330.22
24	9	3010.05	2187.42
22	3	3082.33	2163.89
10	16	3173.43	2028.26
3	41	3194.71	2034.06
23	16	3557.48	2083.15
25	6	3557.83	3577.96
14	22	3561.45	2528.43
11	5	3573.51	1993.02
21	31	3715.11	2535.86
19	2	3751.43	5802.14
15	32	3858.87	2112.32
27	9	3876.46	1752.03
20	42	4032.73	3689.81
1	6	4203.92	2960.08
5	15	4238.07	4775.00
4	36	4281.51	2699.64
3	53	4339.95	2130.17
21	14	4527.18	3424.76
6	13	4550.39	2043.30
28	2	4631.30	4885.66
21	23	4660.30	4194.46
2	14	4683.56	2998.30
6	8	4791.62	2895.81
20	45	4871.64	5241.02
24	11	4931.44	3665.28
1	1	4970.40	3447.69
11	15	5014.00	3225.25
9	21	5091.26	2991.20
26	5	5105.27	5992.48
23	10	5111.31	5190.45
16	7	5239.08	4928.15
16	22	5485.01	3623.27
8	11	5493.35	2523.81
8	3	5510.41	3426.93
20	52	5520.64	3824.74
28	4	5594.32	4755.88
7	32	5652.53	3712.89
19	57	5657.67	4114.79
17	25	5729.99	3835.00
17	1	5935.97	7447.69
15	26	5958.01	9238.79
16	11	6052.80	4938.61
5	6	6061.46	4568.37
9	9	6084.33	5758.63
19	55	6087.45	5666.40
2	9	6189.69	4458.66
17	21	6226.15	5433.67
18	35	6235.17	4154.09
26	1	6398.75	5431.81

Wereda	Kebele	Average annual expenditure (in Birr)	Average annual income (in Birr)
28	7	6437.95	6894.60
24	17	6524.05	4195.96
13	9	6525.14	4430.25
15	19	7046.41	6053.46
25	3	7065.76	6088.28
19	54	7093.59	11156.13
10	4	7123.71	5764.90
25	16	7136.43	3870.28
4	40	7136.90	5370.93
3	44	7144.68	3868.82
12	11	7458.97	2805.14
13	3	7537.27	6682.66
4	27	7586.98	5811.75
7	18	7666.10	5968.24
12	7	7806.59	2795.56
17	3	8059.06	10170.64
27	11	8153.23	3074.99
24	13	8398.62	6429.61
11	19	8880.71	3989.07
26	4	9022.10	9291.70
17	16	9410.55	6407.15
18	18	9459.40	10298.52
8	35	9546.98	12957.16
23	13	10127.46	11053.79
27	2	10164.15	12509.76
17	24	10483.12	8263.60
17	20	10670.28	12565.77
27	1	14594.62	13039.96
23	15	22015.99	16668.43

APPENDIX 2: Average annual income and expenditure data for Addis Ababa (Department of Economics, Addis Ababa University)

Wereda	Kebele	Average annual expenditure (in Birr)	Average annual income (in Birr)
3	30	3847.34	4311.47
11	1	4751.91	6265.00
3	31	5108.22	5802.67
12	11	5302.17	5652.00
20	39	5642.90	4656.00
10	22	6167.90	3136.00
12	20	6216.68	9155.14
8	2	6537.23	1782.00
12	12	6643.93	9970.00
10	17	6745.49	3625.67
11	14	6789.43	11724.00
18	15	7132.24	3956.67
21	1	7141.45	5772.00
10	1	7603.17	10371.65
21	23	7884.06	12077.80
4	37	7924.87	7114.00
24	11	8010.31	9234.60
20	43	8109.67	6226.00
9	6	8134.72	6080.00
18	6	8198.00	4923.00
21	5	8555.15	4330.00
3	41	8629.35	5133.83
2	10	8827.48	5364.58
9	20	8883.20	6760.00
21	25	9035.82	6436.29
16	9	9043.00	6390.00
13	9	9185.76	11122.00
20	38	9412.80	9784.00
13	8	9452.31	5645.00
11	4	9600.81	9579.23
13	11	9857.04	9704.00
2	13	10219.63	123275.0
13	6	10255.27	7189.56
2	15	10288.23	7800.75
9	2	11069.84	6145.00
23	8	11184.00	11908.44
17	20	11489.90	9669.67
16	2	11820.70	5700.00
23	12	12184.20	7936.40
8	24	12628.43	13810.00
21	24	12771.50	10600.00
14	17	12771.70	11131.33
3	42	12840.76	15438.95
15	32	12851.65	10631.00
9	11	12997.64	15327.60
1	5	15695.84	9260.00
18	34	16184.90	20199.25
1	7	18352.15	7624.60
4	38	19361.17	11581.00
5	16	27930.15	33692.83
2	2	30693.48	24891.27
11	8	37274.29	33998.40
24	10	50382.90	50967.20

APPENDIX 3:
INFORMATION NEED SURVEY OF A COMMUNITY IN ADDIS ABABA

March 2000

City/Town Addis Ababa
Wereda 22
Kebele 01
House No ____

Interviewer _____
Date and time of interview _____
Language used in interview _____
Checked by _____

School of Information Studies for Africa (SISA)
Addis Ababa University

1. Age ____

2. Sex _____

3. Languages:

3.1 Mother Tongue _____ Speak __ Write __
3.2 Other languages

_____	Read __	Speak __	Write __
_____	Read __	Speak __	Write __
_____	Read __	Speak __	Write __
_____	Read __	Speak __	Write __

4. Educational Level:

4.1 Did not attend school __
4.2 Traditional/Religious Education __
4.3 Adult Literacy Program Certificate __
4.4 Primary school (Complete ____) (Incomplete ____)
4.5 Junior Secondary (Complete ____) (Incomplete ____)
4.6 Secondary (Complete ____) (Incomplete ____)
4.7 Technical/Vocational school (Complete ____) (Incomplete ____)
4.8 College Diploma (Complete ____) (Incomplete ____)
4.9 First Degree at University (Complete ____) (Incomplete ____)
4.10 Post-Graduate __
4.11 Too Young to Attend __
4.12 Other _____

4.13 Currently a student? Yes __ No __

Schools Attended: _____

5. Employment status:

5.1 Employee
5.1.1 Civil servant __
5.1.2 Public sector enterprise employee __
5.1.3 Private organization employee __
5.1.4 International organization employee __
5.1.5 International NGO __
5.1.6 Local NGO __
5.1.7 Producer or service cooperative employee __
5.1.8 Producer or service cooperative member __
5.1.9 Casual worker __
5.1.10 Domestic worker __

5.2 Type of work

5.2.1 Domestic work (including housewife) ___
5.2.2 Manual work (builder/mason/carpenter, etc.) ___
5.2.3 Tailoring ___
5.2.4 Weaving ___
5.2.5 Craft work/potter ___
5.2.6 Blacksmith ___
5.2.7 Food/drink selling ___
5.2.8 Driving/mechanic/taxi boy ___
5.2.9 Factory work ___
5.2.10 Teaching ___
5.2.11 Health work ___
5.2.12 Trading ___
5.2.13 Government office work ___
5.2.14 Work on the street (shoe shining, car washing and watching, etc.) ___
5.2.15 Others (specify) _____

5.3 Livestock raising __

5.4 Pensioner __

5.5 Self-employed _____

5.6 Unemployed

5.6.1 Looking for work but unable to find any __
5.6.2 Not at paid work and is not looking for work

6. Your household

Respondent is head of household yes __ no __

Number in household __ men __ women
__ under 15 years old __ over 55 years old

What is the principal source of family income?

_____

Which clinic/hospital have you visited in the past three years? _____

Do you immediately go to see a physician when someone in your family/yourself is ill?
Yes ____ No ____

If no, whom do you consult first? _____

7. Remittances

Does the household receive regular remittances from family members or other living in:

Within the city?	Yes __	No __
Elsewhere in the country?	Yes __	No __
Outside the country?	Yes __	No __

How important are these remittances for the household?

Very important __ Moderately important __ Unimportant __

8. What are the two major issues for the country at the present, according to you?

_____

_____

Where do you get information on updates to the above issues?

_____

_____

9. What kind of information do you need to carry out the activity you are engaged in?

Information Type	Tick (✔) Prioritize, if possible, by using more (✔)
Education/new skills	
Health care	
How to improve my product/service	
Current prices for my products/services	
Sources of inputs	
Market opportunities for my products/services	
Available jobs	
Social and cultural events	
Weather	
Government information – laws, regulations, procedures	
News/Sports	
Culture	
Religion	
Tourism	
Other:	

10. What communication media do you use?

	Where	Cost involved (Yes/No)	Amount (for Yes)	Means (for No)
Newspapers				
Radio				
Television				
Telephone				
Fax				
Post Office				
Other				

Only for respondents who have education (Diploma + above).

- What do you think of the future technologies (e.g. Internet)?)

_____

_____

- What advantages/disadvantages do you think will be there if information was to be provided using these new technologies in community centres (e.g. kebeles)?

_____

_____

11. Have you ever visited a library? Yes _____ No _____

If yes, which library(ies)? _____

12. Which markets do you often go to?

_____

Name of shop(s)/shop owner(s) _____

How do you decide on the price of goods you purchase?

- Bargaining on quoted price

Other sources (e.g. family, friends) _____

13. How often do you send a message and which media of communication do you use?

	Frequency		Means	
	Never	0	Messenger	1
	Everyday	1	Travel	2
	Every week	2	Letter (Postal Service)	3
	Every month	3	Telephone	4
	Every quarter	4	Fax	5
	Rarely	5	E-mail	6
			Other	7
Within the city?				
Elsewhere in the country?				
Outside the country?				

14. How often do you receive a message and which media of communication do you use?

	Frequency		Means	
	Never	0	Messenger	1
	Everyday	1	Travel	2
	Every week	2	Letter (Postal Service)	3
	Every month	3	Telephone	4
	Every quarter	4	Fax	5
	Rarely	5	E-mail	6
			Other	7
Within the city?				
Elsewhere in the country?				
Outside the country?				

15. What do you want to learn more about so as to improve your living condition?

_____

_____

Where do you think you will be able to learn about these things?

_____

House Number	Replacement (if any)	Reason for replacement
1430	1429	didn't agree for interview
1472		
1475	1476	didn't agree for interview
1497		
1517		
1530		
1540		
1560	1561	
1572		
1582	1581	didn't agree for interview
1612		
1613	1615	house doesn't exist (demolished)
1638	1639	didn't agree for interview
1650		
1666		
1686		
1702		
1713	1751	(near 1711)
1717	1719	house doesn't exist

Declaration

This thesis is my original work and has not been presented for a degree in any other University.

(Signed)
Assefa Bahta
May 19, 2000

This thesis has been submitted for examination with my approval as a university advisor.

(Signed)
Dr. Lishan Adam
May 19, 2000