

ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES
INSTITUTE OF GENDER STUDIES

**Challenges of and Opportunities from Access to Information and
Communication Technology– A Gender Perspective Analysis on
Arada Sub City, Addis Ababa**

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**A Thesis Submitted to Institute of Gender Studies in Partial
Fulfillment of the Requirements for the Degree of Master of Arts in
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Declaration

I, the undersigned, declare that the thesis is my original work, has not been presented for a degree in any other university. All references used for this thesis have been duly acknowledged.

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

Name_____

Signature _____

Date_____

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Abstract

Using a combination of qualitative and quantitative methods, this study identify the challenges of and opportunities from Access to ICTs from a gender perspective on selected residents of Arada Sub-city of Addis Ababa Administration. To this end, the study investigated the situation regarding access to computer and internet, frequency of using them, experience in using these technologies and place of use. The study involved 140 (122 for questionnaire and 18 for interview) participants who were selected from residents of Arada sub-city using convenience and purposive sampling techniques. The result of the study has indicated that ICT is affected by different socio-cultural and economic status and there is a gender gap in having access to ICT as a reflection of the gender disparity appears in the society. The study also find out challenges in having access to computer and internet technology the majority of the research respondents have indicated that access, experience, frequency, place and purpose of using computer and internet technology is affected by gender, educational attainment, income and age. Women have less access to computer and internet technology due to many barriers, women have less economical power than the of male, have less computer skill, have lots of responsibilities at home, shortage of time, less connected to technologies, unawareness on ICT's relevance to their life and not know the benefit out of these technologies are the major findings from the survey and the interview. In addition the participants notify that ICT's bring a new opportunity in their in their in their educational, social and professional life.

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Acronyms

AIDS- Acquired Immune Deficiency Syndrome

BPfA- Beijing Platform for Action

CEDAW- Convention on Elimination all forms of Discrimination against Women

CSA-Central Statistical Authority

ETC- Ethiopian Telecommunication Cooperation

HIV- Human Immune Virus

ICT- Information Communication Technology

ISP- Internet Service Provider

IT- Information Technology

NGO- Non Governmental Organization

UN/DESA-United Nations Department for Economic and Social Affairs

UNCTAD-United Nations Conference for Trade and Development

UNDP- United Nations Development Programme

UNECE-United Nations Economic Commission for Europe

UNIDO-United Nations Industrial Development Organization

UNIFEM United Nations Development Fund for Women

USAID-United States Agency for International Development

WSIS-World Summit on the Information Society

Operational Definition of Key Terms Used

Access – characterized by the existence of relevant knowledge, adequate capacity at different levels and promising experiences, to make use of computer and internet technology (UNESCO, 2007).

Challenges- economic, educational, cultural and other factors that exclude from benefits of ICT (Rikke 2006).

Computer technology- refers to use and opportunities in typing, word processing, spreadsheets, computer literacy, and simple access to computer equipment Meressa (2007).

Digital divide- The concept of “digital divide” refers precisely to the inequalities stemming from varying opportunities of access to and use of such technologies, which reflects the patterns of inequity that exist in society Hafkin and Taggart (2002).

Information Communication Technology (ICT) - refers to use of electronic devices to receive, process, retrieve, store and send information Lishan (1999).

Internet technology – refers to accessing the internet database and exchanging information via internet Meressa (2007).

Techno poor- refer to those who don't have knowledge and adequate capacity to use the computer and internet technology Mijumbi, R. (2003).

Techno rich - refers to those who have knowledge and adequate capacity to use the computer and internet technology Mijumbi, R. (2003).

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

ICTs (Information and Communication Technologies) refer to use of electronic devices to receive, process, retrieve, store and send information. ICTs has changed and is changing the entire “how-of lives”: it has changed how people communicate, how they market, how they teach and learn, how they govern, how they treat patients and much more untraceable area of their life. In line with this it is becoming very clear that the future will be the edge where there will be no single activity that is going to exist without utilizing the information and communication technology (Lishan, 1999).

ICTs have become a potent force in transforming social, political and economic life globally. It is viewed as an intrinsic part of nation building and has the potential to carry the new global knowledge-based-economy (Hattotuwa 2003).

ICTs reshape, reorganize, and restructure working methods through its generic advantages of efficiency, information sharing, storage, faster knowledge accumulation and dissemination. It can permit new and collaborative work methods (Huyer and Mitter 2003).

Further, ICTs can improve the quality of human life and can offer new types of education modalities such as distance learning and online training (Prosser 1997). Specifically, it has been argued that ICTs can assist in poverty alleviation and expand opportunities for economic development (World Bank 2007).

Access to ICTs provides people with new opportunities. However dramatic positive changes brought by ICTs have not touched all of the humanities. There is a digital divide between the “techno poor” and the “techno rich”, between people in developing world and developed ones, between the rich and the poor and between men and women. Many have been left out of the ICTs revolution, given the absence of basic infrastructure, cost, unfamiliarity, dominance of English language, and lack of demonstrated benefit from ICTs. Particularly, women who are more illiterate not know

English and lack opportunities for training in computer skills have been left out of the information revolution to a significant extent (Gurumurthy, 2004).

Domestic responsibilities, cultural restrictions on mobility, lesser economic power as well as lack of relevance of content to their lives, further marginalized them from the information sector (*ibid*).

The impact of Information and Communication Technologies on the quality of life of Ethiopians remains minimum. There are a number of obstacles to make information technology useful to the society. Developing nations such as Ethiopia acutely need the organization of their people around knowledge and information to break away from debt, destabilization, drought, desertification, demographic problems and dependency (Lishan, 1999).

Ethiopia has joined the world of the Internet before 13 years, on January 1st 1997. Ethiopian Telecommunications Corporation (ETC) being a transport and Service Provider in the country has taken the initiative to introduce the service (ISP 2003). The last thirteen years brought dramatic growth in information technology in Ethiopia. As a result, private companies that provide ICTs service have sprouted, import of computers has grown, Internet has been introduced, and the government has recognized the fundamental role of information and communications technology. Other steps of the government like proposing national information and communication development plan and the national information policy, the ongoing liberalization of telecommunications and the energy sector, establishment of computer science unit and information science school are some of the promising activities in the area.

1.2 Statement of the Problem

New technologies in the information and communication field are seen as guide in a new age. However, they have not touched all of humanity evenly. The existing power relations in the society highly determine possibility of utilizing the benefits from ICT.

ICTs (like any technology) is shaped by the values, assumptions, goals and prejudices of those involved in its design, engineering and financing (Derbyshire 2003). Its use and influence in society is shaped by the roles, values, assumptions and goals of those who own it and those who can access it. Technologies introduced into environments characterized by inequality tend to reinforce and even exacerbate it (*ibid*).

Development strategists are encouraging developing countries to embrace ICTs to avoid further social and economic marginalization. The uneven distribution of the use of information technologies across the societies is called the “digital divide” and reflects a division between the information "haves" and "have-nots" between and within countries structured along lines of race, ethnic group, class, age, region, and gender separating those who have access to abundant information resources from those who do not (Ahmed, 2004).

With all the benefits, access to new ICTs is still an isolated reality for the vast majority of people. Most of developing countries, particularly Ethiopia, have been, to a significant degree, left out of the information revolution due to many barriers. These barriers cause even greater problems for women in developing countries. Women within developing countries are in the deepest part of the divide. They are further removed from the information age than are the men whose poverty they share (Bisnath, 2005).

There exist attributes and barriers in the path of women to gender inequality and access to ICTs. These are resource endowments, infrastructure, telecommunication policies, skills and educational levels, socio-cultural norms, positions of men and women in production and reproduction, and digital preparedness of the country. The same problems always stand in the way of women’s progress: unequal educational

access, glass ceilings in industry and research, lack of financial resources resulting from the women themselves or choices made by their families and stereotypical attitude to women's involvement in the field of technology (Huyer and Mitter, 2003).

Technology has been viewed as gender and value neutral and having the ability to traverse human cultural barriers. Yet this is not always the case. Gurumurthy (2004) reflects that women have been "excluded from science, creation, design and use of technology". Women are socialized toward non-technical careers (Huyer and Mitter 2003). Thus, it is patently dangerous to accept that technology works everywhere and provides solutions to development challenges by itself.

The effectiveness of technology is dependent on the culture under whose frames it was negotiated and can be transformed. ICTs have brought employment gains. However, patterns of gender segregation are being reproduced in the information economy where men hold the majority of high-skilled, high value-added jobs, whereas women are concentrated in the low-skilled, lower value-added jobs. Work in computer centers as a typist perpetuates the devaluation of women's labor. According to (Huyer and Mitter 2003) ICTs are designed and created within the male dominated environments and therefore do not necessarily correspond to specific needs of women. This is the "gender digital divide".

The gender gap in the digital divide is of increasing concern; if access to and use of these technologies is directly linked to social and economic development, then it is imperative to ensure that women in developing countries understand the significance of these technologies and use them. If not, lack of access to information and communication technologies becomes a significant factor in the further marginalization of women from the economic, social, and political mainstream of their countries and of the world. Without full participation in the use of information technology, women are left without the key to participation in the global world of the twenty-first century. (Hafkin and Taggart 2002)

In the discussion of gender and technology, it must be remembered that women, especially African women's access to technology depend on their multiple identities: class, ethnicity, caste, race, age and that these interplay with gender to define women's access to technology. Women have multiple identities that interact with gender to define their access to technology. Gurumurthy (2004) reminds us that men and women from the same social context may not have equal access to technology.

ICTs can be used to either exacerbate or transform unequal gender power relations. ICTs cannot create gender equality, or end poverty, but they can be tools for social action and positive social change. But this is possible only if women have equal access to and control over ICT as that of men. (Hafkin and Taggart 2002) This study examines how computer and internet technology can be used as a potential ally to gender equality and identify underlying demographic and socio economic issues that have affected men's and women's access to computer and internet technology in Arada Sub-City Administration of Addis Ababa.

1.3 Objective of the Study

1.3.1 General Objective

The main objective of the study is to identify the challenges of and opportunities from Access to ICTs from a gender perspective on selected residents of Arada Sub-city of Addis Ababa Administration.

1.3.2 Specific Objective

Specifically this research has been designed to:

- Identify the techno-rich and techno-poor among the selected sample and their access to computer and internet technology
- Find out the gender gap in access to computer and internet technology among the selected techno-rich and the techno-poor residents of Arada Sub-city.

- Identify demographic and socio-economic challenges of the techno-poor for access to computer and internet technology in the Sub-city.
- Identify the opportunities for the techno-rich from access computer and internet technology in the Sub-city.

1.4 Basic Research Question

The study aims at answering the following basic question: what are the challenges of and opportunities from Access to ICTs from a gender perspective? And what are the demographic and socio-economic factors that affect access to internet and computer technology in Arada Sub-city of Addis Ababa Administration?

1.5 Rationale of the study

This paper deals with the intersection of two areas: gender and Information and communication technologies (ICTs). It emanated from my interest in both fields, i.e. gender and computer technology. The basis for this research derives from my assertion that many things related to globalization have effects of social exclusion as a mirror to the real situation in the life of people. The ICTs arena should be seen from the gender perspective so that related problems can be tackled and ICTs vital role can be used to bring about new changes. In connection to such exclusion, UN secretary General, Kofi Annan once said:

The so-called digital divide is actually several gaps in one. There is a technological divide, great gap in infrastructure, there is a content divide. A lot of web-based information is simply not relevant to the real needs of people and nearly 70 per cent of the world's websites are in English, at times crowding out local voices and views. There is a gender divide, with women and girls enjoying less access to information technology than men and boys. This can be true of rich and poor countries alike. (UNESCO, 1998: 14)

Researches carried out by Hafkin and Taggart (2002) on the current access women have to ICT put that access to ICT as the third most important issue facing women globally, after poverty and violence against women. If gender equality is a goal, it requires an urgent sensitivity towards ICT development. By this way, it may ensure that ICT will be a powerful vehicle to shape the digital future and to lead to the gender equality of the e-society.

On the other hand opportunity to access ICT will give women new opportunities for expanding their projects and the possibility of a social, political and cultural change. ICT offer them the possibility of accessing information and communications anywhere on the planet, which might alleviate the isolation of many women in their homes or remote places and facilitates their knowledge and social capital enhancements.

1.6 Significance of the Study

This research create some understanding about the factors affecting men's and women's access to ICTs, and opportunities to access computer and internet technology in Addis Ababa, specifically Arada Sub-city. There are no much research works that relate to gender and ICT in Ethiopian context. Thus, the study could be used as a stepping stone for further study by individuals and governmental organizations and policy makers.

1.7 Limitation of the Study

Due to time and resource limitations the study has been limited to Arada sub city of Addis Ababa Administration. Again, although ICT refers to the use of electronic devices to receive, process, retrieve, store and send information, it is difficult to address all of the technologies. As a result, this paper has focused on specific type of ICT: the use of computers and internet technology. Not only this, since the focus of this paper is on access to computer and internet technology which needs education and knowing English language, it was important to restrict the respondents' level of education to a minimum of high school graduate.

1.8 Ethical Consideration

The researcher has clearly explained the purpose and objective of the research for the respondents of both the questionnaire and the interview which forward clear impression about the study.

The confidentiality of the information was explained, and consent from every participant was ensured before any of the researches activities were conducted. Respondents who were not interested to take part in the research were exempted without imposing any further pressure. Those who declined were replaced with those who were willing to participate.

1.10 Organization of the Paper

The paper has been organized in five chapters. The first chapter deals with the introduction with sub divisions of background of the study, statement of the problem, objective of the study, research question, definition of key terms, significance of the study, ethical consideration and limitation of the study. The second chapter is concerned with review of related literature on ICT, access to ICT, access to ICT in Ethiopia and women and access to ICT and feminist theories related to the nature of the study. The third chapter deals with research methodology and the study area profile. The fourth part includes data presentation, analysis and findings, and finally chapter five contains conclusion and recommendations.

CHAPTER TWO: REVIEW OF RELATED LITERATURES

The researcher looks around for relevant secondary data. Secondary data were collected from books, research thesis, articles and journals, which brings together descriptions about information communication technologies (ICTs), use of ICTs, different access to ICTs, access to ICT in Ethiopia, challenges of men and women for access to ICTs and opportunity with in access to ICTs.

2.1 ICT (Information Communication Technology)

ICT presents opportunities for empowerment, self-esteem, communications and actions that influence overall development (Lishan, 1999). ICTs do not only provide opportunities to participate in global economy, but is also important in increasing the ability of people to learn, innovate and act differently and it is used as a companion in the bid to fight against poverty.

Information communication technologies have made it possible for people to communicate, network and collaborate on a more global scale that was previously impossible. Alliances have been built between the local and global. For individual men and women, the Internet has been a space that allows both for anonymity and solidarity, for self-expression and for building connections. ICTs have also facilitated the building of a more inclusive public sphere – allowing the aged, the disabled and the discriminated to communicate.

ICTs revolution promises potential advantages for all. At the same time, this revolution has major implications globally for the organization of society, concerning employment, training requirements and human relations. In general society's ability to develop is determined by its ability to access information, so that information and access to information technologies are no longer a luxury but a human need (UNESCO, 2007).

Information and communication technologies have become the major ingredients in social and economic development. The advances in technology can be used in less developed countries specially in fighting poverty.

2.2 Access to ICT

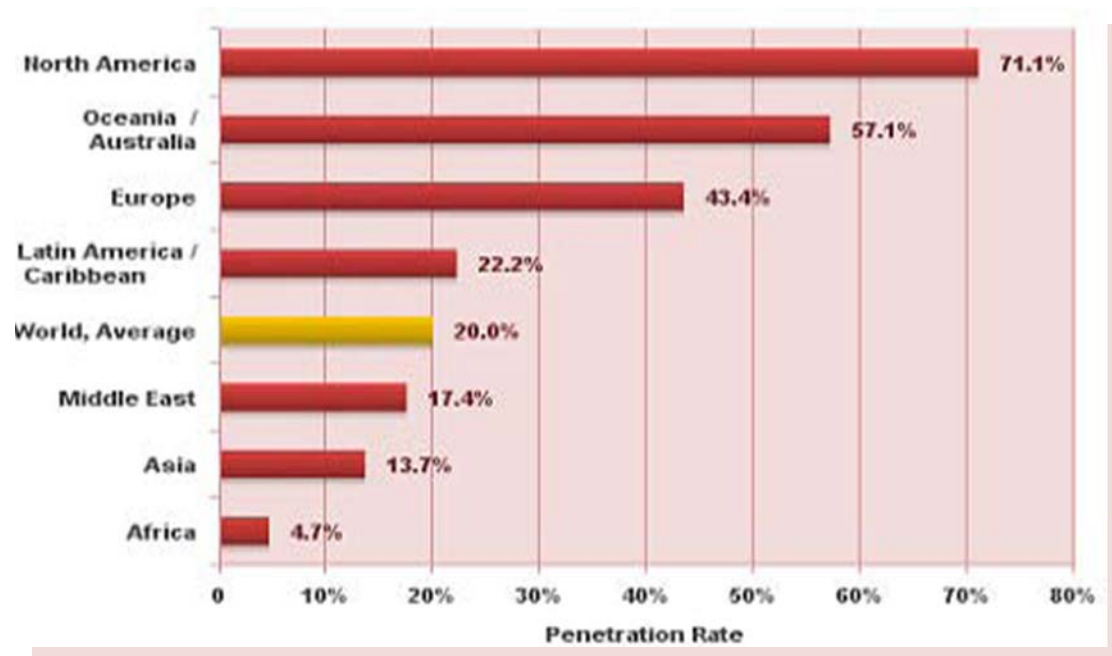
There are unequal power relations in societies that contribute to differential access, participation and control of ICTs. Limited diffusion of ICTs in most African countries due to social and economic difficulties and hostile policy environments led to a digital divide, where the benefits are accrued only to few people. This created a gap between the techno-rich and techno-poor - those with access to information technologies and those without. Africa in particular is in danger of being left behind (UNESCO, 2007).

The divisions between winners and losers in the global ICTs arena are stark. There are many constraints for having different access in this arena like the control of the ICTs technology by powerful corporations, and the power relations between rich and poor countries, the state and citizen, men and women. It highlights how, in the process of globalization, the potential of ICTs is captured for furthering the interests of the powerful.

ICTs have been the driving force of an increasingly globalized economy, orchestrating the division of labor, the movement of goods, the operation of the financial markets, and knowledge exchange. Despite this profound worldwide impact of ICTs, the vast majority of people so far have not come into direct contact with them. In 2002, 600 million people were online (9.6 percent), which means that more than 5.5 billion (90.4 percent) of the people of the world were offline. From on liners, 66 percent were in the developed countries, in which 19 percent of the world's population lives (Rikke, 2006).

There is high level of infrastructure divide between the developing and the developed countries. The statistics from ITU (2003) shows there is usage of 113.4 phones per 100 population in the US and 7.36 in Africa. Telephone connections have historically been the backbone of Internet connectivity, and are therefore at the heart of the infrastructure divide.

Figure 2.1 World Internet Penetration Rates, December 2007



(Source: world internet statics <http://www.internetworldstats.com>)

As shown in the above figure, the internet penetration in Africa is 4.7% while North America leads by making 71.1% of the techno rich population. From the total world population out of 10,000, the 1022.78 have got internet access. When we see this in terms of countries, out of 10,000 populations 2575.99 Americans, 2169.95 Europeans' and only 123.35 Africans have got the access. (ITU, 2004)

According to Huyer and Mitter (2003), in Ethiopia internet users per 10,000 people are only 63. In Percent this is 0.63% of the population who has the access to internet. Out of this population women held only 13.7 % of internet users.

2.3 Women and Access to ICT

The global impact of ICTs on many aspects of life, coupled with their highly uneven spread and accessibility, has given rise to the notion of “digital divides,” gaps separating those who can access, use effectively, and shape the new ICTs and the spheres they alter, and those who cannot. Research has shown that digital divides open up along the lines of established economic and social inequalities, and that they become deepest where multiple forms of arbitrary social stratification intersect. This severely disadvantages women and girls, who also suffer from additional forms of discrimination (Rikke, 2006).

The countries of the South, particularly rural populations, have to a significant extent been left out of the information revolution, given the absence of basic infrastructure, high costs of ICTs deployment, unfamiliarity with ICTs, dominance of the English language in Internet content and indeed – lack of demonstrated benefit from ICTs to address ground-level development challenges. These barriers pose even greater problems for women, who are more likely to: be illiterate; not know English; and lack opportunities for training in computer skills. Domestic responsibilities, cultural restrictions on mobility, lesser economic power as well as lack of relevance of content to their lives, further marginalize them from the information sector. (Gurumurthy, 2004)

The gender divide within the digital divide can be seen in the lower numbers of women ICTs users as compared to men. One illustration of this is that the majority of the world’s women do not use the Internet. They are excluded from the World Wide Web. The digital divide within countries broadly reflects the gender divide. Women are in the minority of users in almost all developed and developing countries. The trend for differentiation in use starts early, as seen in the United States where boys are five times more likely than girls to use home computers and parents spend twice as

much on ICTs products for their sons as they do for their daughters (UNDP, 1999).

Although there is evidence to suggest that globalization has given some employment opportunity to skilled and educated women, the general impact of globalization on the Gender division of labor in developing countries has been negative. Women Continue to be assigned to those jobs with the least skilled level of work and lowest remuneration (Hafkin and Taggart 2002)

Gender influences factors such as income, time constraints, literacy, level of education, language, and cultural contexts that affect access to facilities, training, and employment in the information technology area. Seemingly gender neutral, national level decisions about infrastructure can impact gender and affect women's opportunities to use new technologies (*ibid*).

The digital divide has strong connections to poverty, which is also of particular relevance for women because more than 70 percent of the world's poor are women. The majority of poor women live in developing regions, but poverty in general, and women's poverty in particular, is increasing concern in determining access to ICTs.

This “feminization of poverty” has been observed for quite some time in affecting the quality and quantity of women's work, minimizes job opportunities and wipe out them from other benefit of ICT. The work of Sophia Huyer (2003) has demonstrated that because women and girls often do not control the finances of the home or do not have sufficient personal income, they may lack the financial resources to purchase radios, televisions, or computers or to pay Internet service providers (ISPs) for monthly access to the Internet. Girls and boys have differing access to computer skills training in primary and secondary schools.

Illiteracy and low language training levels are other barriers for access to information, more limited access to financial resources for covering the costs of the equipment required. Women's access to ICTs and their control of them is not the same as that of men. Access implies the possibility of making use of them, which means not just technology but also information and knowledge. Among responses to the APC's 1996

Women's Networking Survey, language was one of the top barriers to Internet use for women from Eastern Europe, Latin America, and Africa. In 1999 English was the language of 95 percent of Web pages. By 2000, the estimate was 68.4 percent with predictions of further decline (Hafkin and Taggart 2002).

Women, due to their multiple roles, are less likely to have free time to spend using the Internet whether at home, at work, or at public Internet centers. Women's response to the APC's survey (1996) in Asia confirmed that time is a major constraint to women's access (Hafkin and Taggart 2002).

Socio-cultural norms that discourage women from studying science and technology, and the feminization of the ICT jobs that women hold also have their own impact on women's access to ICT (Sharon 2004). Similarly, attitudes that consider computer science as tough field to enter have their own share in the game. For example, Africa remains the area of greatest concern as African women have the lowest participation rates in the world in science and technology education at all levels (*ibid*).

The fact that the dominant cultural understanding of technology as a masculine activity means that women have often chosen not to engage with it – not because they are excluded but because it does not fit with their self image of what it is to be a woman. Traditionally, anything that is difficult to perform is considered a preserve of the male species. Therefore girl students would psychologically have a barrier to taking up science subjects, including ICT education. There is a shortage of role models who have succeeded in ICT careers and can be emulated among the womenfolk in the community. Boys have more access to technology at home than girls from a young age even in the rural community. Therefore girls have less hands-on experience in technology than boys even before they reach schools. Accordingly, boys are encouraged and have more positive attitudes towards ICTs than girls (Gurumurthy, 2004).

Because ICT sectors are widely managed by men, the practice has an impact in designing gender sensitive policies which may directly affect women's access and

participation in ICT. According to Furze's survey in line ministries of developing countries, out of 201 senior government officials responsible for information and communication technologies, only 11 were women (5.5 percent) (1996).

Increasing women's access to information and communication technologies in developing countries involves increasing availability of communication in areas where women live, since most women in developing countries live in presently underserved areas. Extension of infrastructure, particularly wireless and satellite communications is crucial to increase women's access to information technology. Emphasis needs to be on common use facilities, such as Tele-centers, phone shops, and other forms of public access in places convenient and accessible to women. (Hafkin and Taggart 2002)

We must recognize that with the entire digital divide what we have to decide is whether we either play the game and turn it to our advantage or lose out completely. It is important to analyze how ICT changes benefit women and why they sometimes harm them.

2.4 Access to ICT in Ethiopia

Ethiopia has joined the world of the Internet as of January 1st 1997. Ethiopian Telecommunications Corporation (here after ETC), being a transport and Service Provider (ISP) in the country, has taken the initiative to introduce the service. According to ETC's journal in 2004, internet host sites in Ethiopia are 37, with a total 25,000 Users per 10,000 inhabitants: 3.88 Internet bandwidth (Kbps): 10,240 (Adane, 2006).

The flow of information is very much limited constrained by existing information and communication infrastructure. Ethiopia has 3 telephone lines for 1000 people, 1 post office for 50,000 people, 1 newspaper for 1375 readers. Although 72% of the population receives good quality radio signals, the number of radio sets is very limited. Around 3 million television viewers a very few of these own television sets. The survey of Lishan Adam indicated that the majority of Internet users in Ethiopia are from the private sector which accounts for 66%, international organizations and

embassies 20%, the academic sector about 9% and the government the remaining 5% Lishan (1999).

According to USAID report in 2001 Ethiopian users as percent of the population is 0.01%. In Ethiopia, 20 hours of Internet access per month costs \$77 (including local phone costs), while per-capita income is estimated at \$110/year which will be to 8.4 times the GDP per capital even for the elite. This amount of usage would account for 50 percent of a university professor's take-home pay. (UNIFEM and UNU/INTECH, 2006)

On paper facts related to internet connectivity in Ethiopia, Maurico (2006) puts infrastructure as main issue in Ethiopian internet penetration. Maurico mentions that the only internet provider in Ethiopia is Ethiopian telecommunication cooperation which is owned by government. Due to this there is a limited connection. As Maurico puts it:

There is only one Internet Service Provider (ISP) in Ethiopia and it is illegal for any other to be established, and it is the government owned Ethiopian Telecommunications Corporation (ETC). The ETC's major problem is its connection to the international Internet, i.e, the back bone that supports all the connections in the country. It is based on a satellite connection via Intelsat and has only a band width that is not more than 50Mbps (2006: www.abtassoc.com)

Infrastructure, geographic dispersion and the sophistication of use of ICTs are some of the barriers for women to access ICTs in Ethiopia. This implies that most of the populations who live in rural areas have no access to ICTs. As women in rural areas can't migrate to urban area as men due to social and economic factors, ICTs is a dream for most Ethiopian women. Even in urban areas where about 15% the populations live there is a high rate of poverty incidence which leads to low access to ICTs.

According to Hafkin and Target (2002) in Ethiopia from the whole population internet users in Ethiopia in the year 2000 was 0.1% or 58,390 in number, from which only 13.9% are women. Women are at the most disadvantaged groups in Ethiopia due to long-standing cultural, social and economic barriers. The limited capacity of women's organizations, the wrong perception adopted by some women due to lack of experiences, the traditional stigma and inadequate participation of girls in science and technology are the major factors for marginalization of women. What is more, women are less in taking part of the design, implementation and evaluation of information and communication technology policy and projects in Ethiopia. They are grossly under-represented in the ICT policy formulation process. All those that draft the policy document are men (Lishan 1999).

2.5 Challenges for Access to ICT

The primary obstacle in making use of ICTs for economic growth or poverty reduction in many countries is the absence of or limited scope of existing ICTs infrastructure, particularly in rural areas. Basic ICTs infrastructure is concentrated in a few countries and in urban settings. For most of Africa's rural population, ICTs are physically out of reach. Where ICTs infrastructure is in place, its use is often constrained due to inadequate supportive infrastructure, in particular electricity and, to a lesser extent, transport systems. (African Partnership Forum 2008)

Affordability and public access, which are of fundamental importance especially for rural Africa, are challenged by issues of financial sustainability. A lack of a competition keeps prices for ICTs services unattractively high. Local radio stations have difficulties paying qualified staff and high licensing fees. (Africa partnership forum 2008) Regarding the poor, who may be of the greatest need, they are often the ones with least access; they also tend to have slower adoption of ICTs (Gomez & Hunt, 1999, O'Farrell, 2001).

With new ICTs, jobs may be lost or created, and this raises the issue of capabilities needed to take advantage of the opportunities ICTs create (Rubery & Grimshaw

2001). In this respect, it is expected that professionals and people with white collar jobs would have more use for ICTs, while low-skilled workers are more likely to lack physical and social access to information technologies (Niles & Hanson 2003). As for education: studies in the west show that the occupation of the head of the household and their educational attainment were strong and positive predictors respectively of internet adoption (Wareham, 2004). One reason why the better educated are more likely to benefit from ICTs is because literacy made a prerequisite to using the technology. The better educated and more literate will be using ICTs more than the less educated and illiterate.

Age also contributes in having access to ICTs. Younger people are more motivated to use Information and Communication Technologies, especially because use of these technologies, especially the computer and internet technology. Some studies in America have shown that with respect to the use of the internet a clear age threshold existed whereby peoples after age 55 are not in the digital revolution rather the young generation is highly interested (Wareham, 2004).

2.6 Opportunities within Access to ICT

ICTs have given women fresh opportunities: ICTs can improve women's business, leading to increase in production, to new or changed products, or to the products of higher quality. This leads to high profit and greater economic strength. A group of women in developing country can sell their products to other countries via internet. Women's organizations use the Internet to share information and build a national coalition for change; real-time e-mail exchanges between parliamentarians and their constituents spur accountability and transparency (World Bank, 2007).

The way that women use technologies and organize their user groups is often more cooperative and collaborative than that of men, who have a far more individualistic approach. Whereas men tend to explore the technology out of curiosity and fascination, women, because of time constraints, technophobia, and limited access, tend to use computers out of necessity, with a genuine willingness to communicate

effectively with others. As a result, women are creating special spaces for themselves and seeking to share ideas and exchange views with diverse groups. (Hélène, 2007)

ICTs can provide spaces for diverse, bottom-up and low-cost communication. They can amplify women's voices, and help to publicize women's experiences and perspectives. The project of gender justice requires that mainstream spaces be infused with new worldviews that derive from women's own experiences and challenge, qualify or expand accepted ideas.

ICTs could be used to inform women about their human rights and how to apply them for empowerment and decision-making in all areas of individual and community life. ICTs have also been used as tools for social transformation and gender equality. ICTs allow women to form networks, be these self-help groups, economic cooperatives, or political pressure groups. While this is important for women worldwide, it carries a particular significance for women living in comparative isolation (e.g., rural women, older women, or handicapped women, and women who face other types of structural discrimination and human rights violations, such as extreme poverty or displacement) (Rikke, 2006).

ICTs can be used in women networks and organizations to get their message out and making their voice heard with networks of women around the world, to share information, advice and experiences it could help their advocacy efforts (Sharon 2004). ICTs could provide services that restructure specific human rights violations against girls and women. With respect to education and training, they could, for instance, provide distance education and e-learning, with a view to increasing girls' opportunities to receive the same amount and quality of education as boys. This goal was fixed in the pre-ICT era by CEDAW's Article 10, elaborated in the BPfA (Rikke, 2006).

ICTs offer many possibilities for non-formal and continued education, which can have important gender implications. They can deliver education content to the doorstep, which, for women with constraints on mobility and access to public places, can be a significant starting point.

The new ICTs have great potential to benefit women worldwide. As a vast source of information, ICTs constitute a powerful learning tool; they provide access to training and market information that can help women's businesses succeed, and they offer a direct and more inexpensive means of communication for women's organizations and enable them to share knowledge on a quick and collective basis (UNIFEM, 2006). In the professional life of women ICTs can reinforce their positions with appropriate training. Women who know about the new findings in their areas of specialization can enroll for refresher courses and participate in meetings and seminars to improve their work (World Bank, 2007).

In a manner comparable to education, ICTs could provide health information in general and health information for women and girls in particular, including information on family planning. ICTs are being used in response to the crisis posed by HIV/AIDS. Grain Africa, a non-governmental organization (NGO) in Kenya, is exploring setting up HIV/AIDS resource centers that use new ICTs to promote better access to AIDS advice, counseling, and test results without fear of being stigmatized. (Gurumurthy, 2004).

Opportunity of having access to ICT brings many interrelated benefits to women. In the economy Women need information to improve and reinforce their economic independence through commercial activities, such as information on exchange-rate fluctuations, international market trends, prices of foodstuffs and other commodities on the market, and bank transactions (conditions for obtaining credit, etc.). They might then integrate themselves economically with women of other towns and even other regions. (Worldbank 2007)

IT is a forceful tool to improve governance and strengthen democracy. It is particularly powerful for giving a voice to women who so frequently have been isolated, invisible, and have no voice in developing countries. Information technology can contribute to the political empowerment of women as tools for networking to perform social and political advocacy, to strengthen women's participation in the political process, to improve the performance of elected women officials, to improve women's access to government and its services, to educate, and to disseminate

indigenous knowledge. IT is particularly useful in increasing the transparency and accountability of government—an application from which women can particularly profit (Hafkin and Taggart 2002).

2.7 Theoretical consideration

The theoretical framework used in the analysis of the findings was based on a feminist theory. There are various feminist stand points regarding women's access to ICTs. Women in technology / a Liberal approach deals with ICTs as a tool to uncover women hidden from history. It sees technology as inherently neutral whereas the Gendered approach sees technology as culture. To reject the view that technology is inherently neutral or inherently masculine means to understand gender and technology as cultural processes which can be negotiated and transformed. The relationship between gender and technology is seen as the core issue.

Liberal feminists see technology as neutral; they don't critique technology by itself. They suggest that to improve women's access to technology in a society we should challenge stereotypical sex roles (Gajjala, 2002).

Marxist feminists examine the power relation of technology in terms of class. For them women's exclusion from technology is due to the gender division of labor and the historical and cultural view of technology as masculine. They see technology as a means of reflecting male power as well as capitalist domination. Technology is still seen as neutral and "misused" under capitalism. (*ibid*)

The third world feminists challenge western systems of knowledge and technology by asserting that they are colonizing and displacing local knowledge and experiences. They offer a new vision of technology that is democratic, non-colonial, and non-patriarchal. Furthermore, this group puts too much emphasis on people based knowledge systems and rejects possible adaptation of modern technologies for progressive purposes. They argue, the fact that women have multiple identities must be remembered, i.e. identities of class, ethnicity, caste, race, age – and that these interplay with gender to define women's access to technology. (Gurumurthy, 2004)

CHAPTER THREE: METHODOLOGY

3.1 Research Method Applied

The researcher has used both quantitative and qualitative research methods in order to identify the challenges of and opportunities from Access to ICTs from a gender perspective on selected residents of Arada Sub-city of Addis Ababa Administration.

3.1.1 Quantitative Method

Quantitative research has the ability to effectively translate data into easily quantifiable charts and graphs. Quantitative research method was used to know demographic and socio economic factors related to access to ICT in the selected sample. Descriptive survey, which is believed to be vital to measure ICT users and the type of use and the nature of users, is known for obtaining information concerning the current status of phenomena and to establish associations between variables. (Hopkins, 2000)

The survey data were disaggregated by sex, level of correction, age and economic status, so as to compare the participation of women and men from different demographic and socio-economical groups the concerning access to and usage of computer and internet technology.

3.1.2 Qualitative Method

The strength of qualitative research is its ability to provide complex textual descriptions of how people experience a given research issue. It provides information about the “human” side of an issue – that is, the often contradictory behaviors, beliefs, opinions, emotions, and relationships of individuals. Qualitative methods are also effective in identifying intangible factors, such as social norms, socio-economic status and gender roles (Creswell, 1994). This research, thus, makes use of qualitative research methods to provide critical insights and deeper analysis in to the challenges and opportunity of the participants experience in relation to accessing ICT.

3.2 The Study Area

The study is conducted in Arada sub-city, Addis Ababa. The researcher use the lottery method and take Arada sub-city from the ten administrative sub-cities found in Addis Ababa. Arada is the oldest of all sub cities located in the central part of the capital. Arada has ten administration Kebeles (districts).

According to CSA (2007), Arada Sub city has about 212,129 Population and is located at 90 01' 12'' (471000 m) and 90 03' (476000 m) North latitude, and 380 44' 9.6'' (997000 m) and 380 46'58'' (100,100 m) East longitude with a total area of 11.56 Km² (1156 Ha).

3.3 Nature of the Sample

The sample is selected from a population of Arada sub city residents. For the quantitative method the researcher used 122 respondents, of which 67 are men while 55 are women respondents. The respondents' age composition ranges from 15 - 57 while their educational level varies from high school graduate to master's degree. For the qualitative data collection 18 respondents were selected, of which 11 were men and 7 were women. As to age composition in this group, the lower age is 24 while the upper is 45. Regarding their educational level, 6 were high school graduates, 4 were diploma holders, 7 were degree holders and only one was master's degree holder. Their personal incomes have also widely varied as their backgrounds.

3.4 Sampling Techniques

3.4.1 Sampling Technique for Quantitative Data

The sampling technique used in this study was Convenient sampling. The researcher chose the sample according to ease of access (Ritchie and Lewis, 2005), with the specific aim of getting both the techno-rich and techno-poor respondents from different socio-cultural and economic backgrounds. The research incorporated 122 participants for quantitative data collection so as to acquire information concerning

diverse views and experience of men and women. The sample size was determined with estimation considering feasibility, time, cost and accessibility of respondents (Russell, 2001).

3.4.2 Sampling Technique for Qualitative Data

For the qualitative data collection, the researcher used purposive sampling which helps to get both the techno-rich and techno-poor individuals from different socio-cultural and economic backgrounds. They were 18 respondents, 10 (6 women and 4 men) from techno-poor group and 8 (5 men and 3 women) from the techno-rich group.

3.5 Sources of Data

The data sources used for this study include both primary and secondary sources. The primary sources were respondents for interview and survey data. The secondary sources included relevant documents like books, published and unpublished research theses, articles, journals and websites.

3.6 Instrument used for data collection

Two types of data collection tools were used in the study. They were questionnaire and semi structured interview schedules. The questionnaire included both open and close ended questions designed to measure respondents' access to computer and internet technology. The questionnaire was prepared in English. Items for the questionnaire were partly adapted from the content of relevant literatures reviewed, and partly developed by the investigator.

Before the collection of the main data pilot study was made by selecting respondents to test the effectiveness of questions. Based on the feedback obtained, relevant corrections were made for the final questionnaire. Semi structured interview schedule was used to gather data regarding challenges of and opportunities within access to ICTs brings to men and women's life in bringing gender equality.

3.7 Data Collection Procedure Followed

The data collection procedure started with the survey. First the questionnaire was distributed to 122 respondents. After finalizing the survey the researcher conducted interview with 18 respondents. After that observation was conducted first at internet cafés and next at Ethiopian telecommunication communication.

The survey was conducted in Arada sub city administration office on residents who came to the administration office for some administration related issues and who were waiting in line. The participants were given chance to decide if they want to participate in the research or not. The researcher gave a brief explanation on what the research is all about and respondents had a chance to reflect on their ideas and got the opportunity to ask questions that needed further clarification. For the interview the researcher arranged appointments to the respondents. The interviews were conducted as per the appointments.

Out of 140 questionnaires distributed only 122 were taken for the analysis since 11 were not returned and 7 were incomplete. In the collection of the data relevant to the study, assistance was obtained from Arada sub city administration.

The researcher spent three days and observed the needed samples in three selected internet cafes at Arada sub city. Observation was conducted in three internet cafés found in the sub city (Marseille Internet Café at “Amestekilo”, Tilahune Business Center at “Piasa” and Bluebell Internet Café at “Aratkilo”) and in Ethiopian Telecommunication Corporation sales office at “Arat kilo”.

3.8 Method of Data Analysis

After data collection was completed, field notes and data obtained through interviews were transcribed, coded and fed into the computer using Microsoft Excel and Microsoft Access software. Depending on the nature of the questions and data percentages and Charts, graphs and tables were used to interpret the research findings. Based on the results interpretations and conclusions were made.

CHAPTER FOUR: DATA PRESENTATION, ANALYSIS AND FINDINGS

4.1 Background Characteristics of Survey Respondents

While doing the survey effort was made to maintain the balance of gender composition of respondents. Out of 122 respondents 67(54.91%) were men while the rest 55(45.08%) were women.

Table4.1 Distribution of survey respondents by gender, age, educational level and personal monthly income

Respondents background		frequency	percentage
Gender	Men	67	54.91
	Women	55	45.08
	Total	122	100
Age	15-24	46	37.7
	25-35	34	27.86
	36-46	25	20.49
	47-57	17	13.93
	Total	122	100
Educational level	High school graduate	43	35.24
	Diploma holder	23	18.85
	Degree holder	45	36.88
	Masters degree holder	11	9.01
	Total	122	100
Personal Income	0-500	21	17.21
	501-1000	26	21.31
	1001-1500	33	27.04
	1501-2000	21	17.21
	2001-2500	12	9.83
	2501-3001	8	6.55
	Total	122	100

When we come to the age composition of respondents, the highest number is in the group 15-24 which accounted for 37.7% of the total respondents, the rest 25-35, 36-46, 47-57 age groups accounted for 27.86%, 20.49%, and 13.93% respectively.

When we examine the educational level, 43(35.24%) of respondents were high school graduates, 23(18.85%) diploma holders, 45(36.88%) degree holders and the rest 11(9.01%) were masters degree holders.

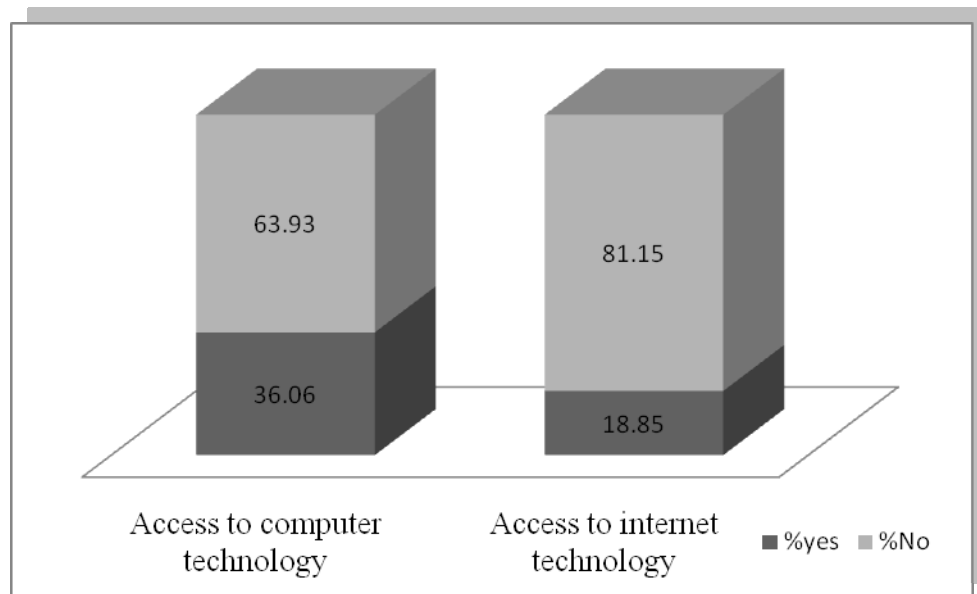
Regarding the personal income of respondents, out of 122 respondents those who earn 0-500 birr per month accounted for 21(17.21%). Those who earn between 501-1000 accounted for 26(21.31%), between 1001 and 1500 accounted for 33(27.04%), between 1501 and 2000 accounted for 21(17.21%), between 2001 and 2500 accounted for 12(9.83%) and between 2501 and 3001 accounted for 8 (6.55%), respectively.

4.2 Background Characteristics of Interview Respondents

Out of 18 respondents, 10 (6 women and 4 men) were from techno-poor group whereas 8 (5 men and 3 women) were from techno-rich group. Their age range is between 25 and 45. Regarding their educational background, 6 were high school graduates, 4 were diploma holders, 7 were degree holders and one was master's degree holder. Economically, the level of personal income of the participants highly varied.

4.3 Access to Computer and Internet Technology

Figure 4.1 Access to computer and internet technology.



From the entire 122 respondents only 44 (36.06%) respondents are categorized as techno-rich in having access to computer technology, while 78(63.93%) group under the techno-poor category.

Even the 44 respondents who had access to computers differ in terms of the frequency of use, experience, purpose and place of using computer. When we see how often the “computer users” use computer technology, from the 44 most of them, 18 (40.9%) responded they use computer once in three days. Only 5(11.36%) said they have access to computer technology on daily basis. The remaining 8 (18.2%) and 11(25%) reported that they use computer every two days and once in a week, respectively.

Concerning their experience of using computers, the result shows that half 22(50%) of those who had access to computer said they have only “up to 2 years” experience, while 12(27.27%) of them said they have “2- 4years” experience. Similarly, 8(18.2%) of them said they have “4 - 6 years’ of experience and 2(4.54%) of them “6-10 years’ of experience. This shows how much using computers is a recent phenomena.

From the 44 computer techno-riches only 5(11.36%) got access to computer at home, the majority 20(45.5%) of the computer users got the access at business centers, while 7(15.9%) got access to computer at school and 12(27.27%) got access to computer at offices.

When we look at the pattern of access to internet technology, from the 122 respondents only 23(18.85%) are the techno-riches in having access to internet technology, whereas the majority 99(81.15%) of the respondents categorized under the techno-poor group.

From those who said they have access to internet technology most of them, 10 of the (43.47%) use internet once a week, whereas only 4(17.39%) of them use internet technology daily. The rest 5(21.73%) and 3(13.04%) said that they use internet every two days, and once in three days, respectively. This shows that even those who have the access to internet have low rate of using these technologies.

As to their experience in using internet technology 12(52.17%) of them said they have only “up to 2 years” experience, while the rest 7(30.4%), 3(13.04%), 1(4.34%) said they have experience of “2- 4years”, “4-6 years” and “6-10 years”, respectively.

With respect to the place where they use internet, from the 23 respondents who have access to internet the majority 10(43.47%) use internet at internet cafes. Only 2(8.69%) of them said they use internet at home, while 4(17.4%), 6(26.08%) said they use it at school and office, respectively.

Generally, the data shows that most of the respondents who have access to computer and internet (techno-rich group) (73.9% versus 26.08%) use computer and internet technology for their educational and work purpose rather than personal use.

The finding reveals that access to computer and internet technology are different things, peoples have access to computer, which will make them technology user's without communication. To say they have access to ICT (information communication technology) having an access to internet technology is a prerequisite as in to fulfill the

communication. On the challenge part the researcher puts reasons for having different access to computer and internet technology.

4.4 Gender and Access to Computer and Internet Technology

4.4.1 Gender and Access to Computer Technology

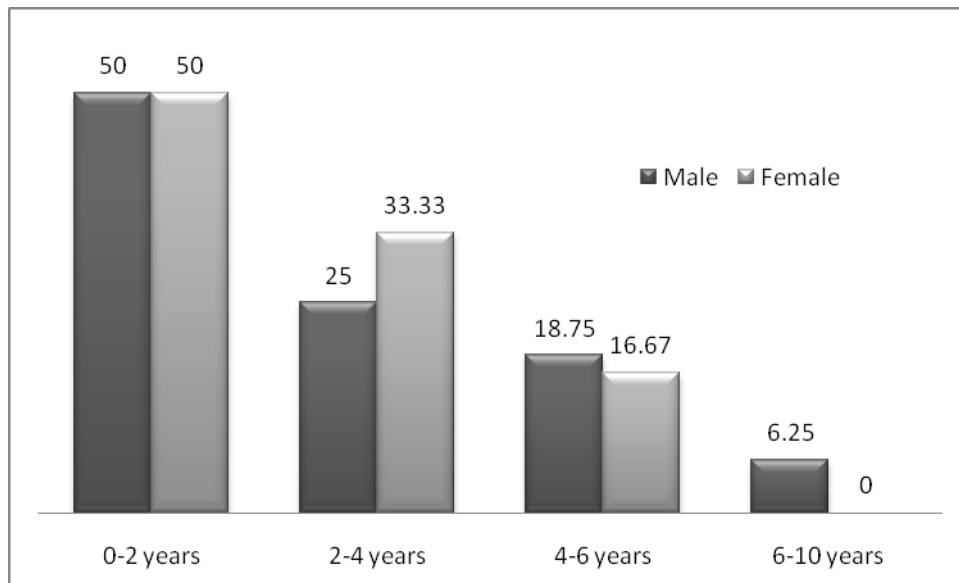
The first thing to note, in terms of the impact of gender on access to computer technology, is how far gender has shade light on access to computer technology. In this regard, there appears to be difference in the proportion of women and men who access computer followed by difference in frequency, experience, place and purpose of using computer.

Table4.2 Gender and access to computer technology

Access to computer based on gender	Women		Men		Total
	Frequency	%	Frequency	%	
Yes	12	21.81	32	47.76	44
No	43	78.18	35	52.23	78
Total	55		67		122

A look at the above table reveals that from 67 men respondents 32(47.76%) have access to computer technology, while the rest 35(52.23%) have no access to computer technology. On the other hand, from 55 women respondents only 12(21.18%) have access to computer and 43(78.18%) don't have the access to computer. Overall, the majority of computer users are male (47.76% versus 21.81%), which shows high gender disparity in access to computer technology.

Figure 4.2 Gender and Experience of Using Computer Technology.



According to the information obtained from the survey, experience of using computer technology is also affected by gender. From the 32 men respondents who have access to computer technology 2(6.25%) have experience of “6- 10 years”, 6(18.75%) have “4- 6 years”, 8(25%) have “2-4 years” and 16(50%) have experience of only two years. On the females side, from the 12 respondents who have access to computer technology 2(16.69%) have experience of “4-6 years”, 4(33.33%) have “2-4 years” and 6(50%) have experience of only two years. There was no women respondent with experience of using computers for more than six years.

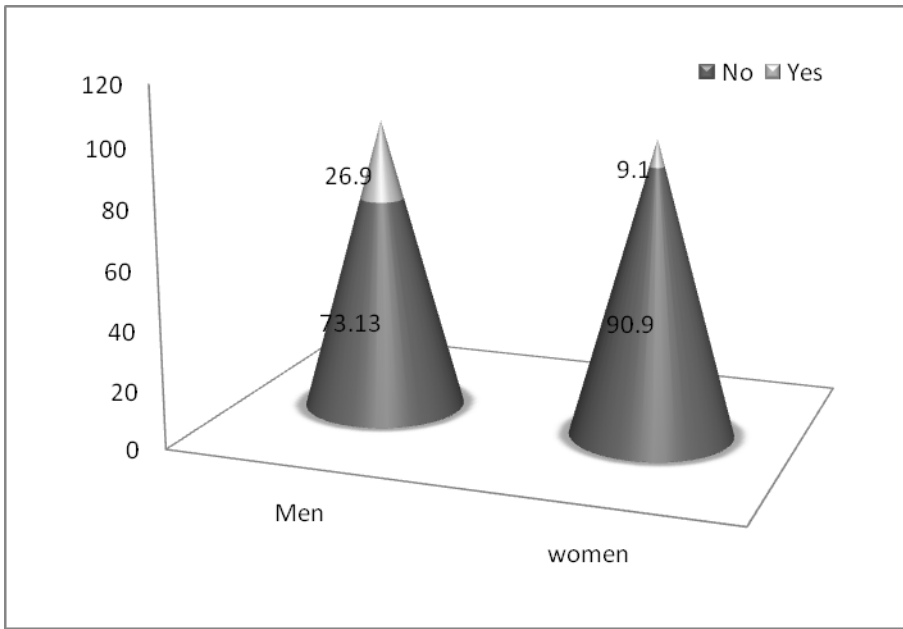
According to the survey data, the frequency of using computer also varies for men and women. From men who reported to have access to computer 15(46.87%) of them use computer every three days, while the rest 7(21.87%), 6 (18.75) of them use computer once a week and once every two days, respectively. It was only 3(9.4%) of them who are able to use it daily. While one male respondent report that he got access to computer technology at friends home. When we came to women, 4(33.34%) of them said they use computer once a week, 3(25%) of them and 2(16.67%) of them use it every three days and every two days, respectively. It is the remaining 2 (16.67%) that are able to use computer on daily basis.

The place where one could get access to use computer has its own role either in encouraging or discouraging the users. In relation to this, slightly higher number of men reported that they use computer at home 4(12.5%) with respect to the number of women which is 1(8.33%). While 15(46.87%) and 8(25%) of men said the place where they use computer is business centers, office, the number of women who use it at these places is 5(41.6%) and 4(33.34), respectively. Only 5(15.63%) of men and 2 (16.66%) of women reported to use computer at schools. The difference as it relates to gender is apparent.

4.4.2 Gender and Access to Internet technology

If we look at the pattern of gender and access to internet technology from the 122 respondents (67 men and 55 women) while 18(26.9%) of male respondents have access to internet technology, it is only 5(9.1%) of female who have the access.

Figure 4.3 Gender and Access to Internet

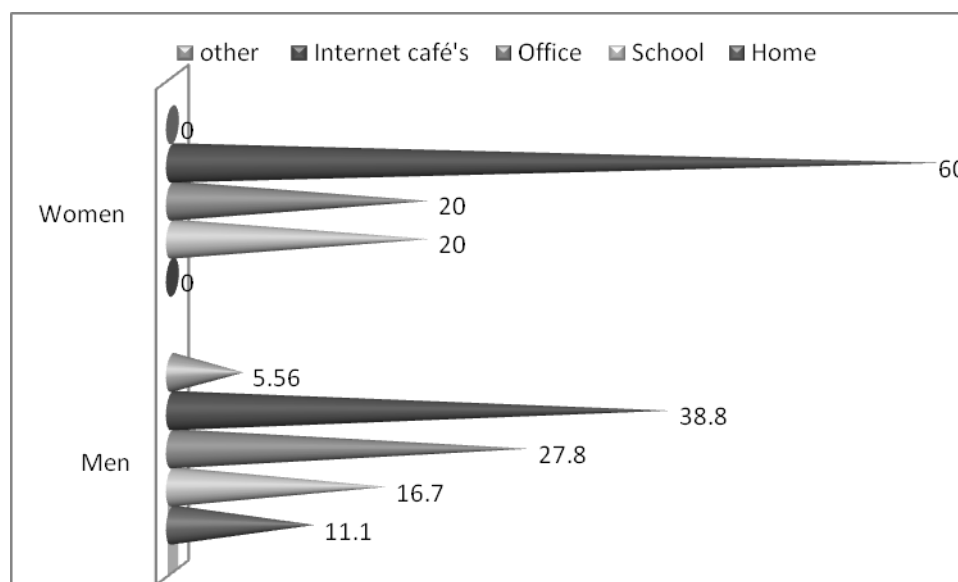


According to the information obtained from the survey, experience of using internet also influenced by gender. From the 18 men respondents who have access to internet technology only 1 has experience of 6- 10 years. While 2 (11.12%) of them have

experience of 4- 6 years, 6(33.4) of them have 2-4 years of experience. Half of them, 9(50%) have experience of only two years. On the part of females, from the total 5 women respondents who have access to internet technology 1(20%) have experience of 4 – 6 years, 1(20%), 2-4 years, while 3(60%) have experience of only two years. No woman respondent reported to have above 6 years experience.

Frequency in using internet also varies depending on gender. From men internet users, 10 (47-55%) said that they use internet once a week, 3(16.7%) use in three days, 2(11.1%) use it in two days and 3(16.7%) have access to internet daily. When we came to women, 3(60%) use in two days. And equal number 1(20%) use in two days and daily.

Figure 4.4 gender and place of using internet technology



Regarding where they use internet, 2(8.69%) of men respondents said they use internet at home, while no women in the survey study claimed to have internet access at home. While 3 (60%) of female internet users got the access at internet cafés and equal number 20% of female respondent's mention they have the access at office and school. While 7(38.8%), 5(27.8%), 3(16.7%) male users mention they got the access at internet café's, office and school.

Table 4.3 internet users on three selected internet café's

Observation of internet users on three selected internet café's				
		men	women	Total
Marseille internet café	day 1	16	2	18
	day 2	11	1	12
	day 3	20	4	24
Tilahune business center	day 1	21	5	26
	day 2	25	4	29
	day 3	15	2	17
bluebell internet café	day 1	32	7	39
	day 2	21	5	26
	day 3	34	8	42
Total		195	38	233
Percentage		83.69	16.3	100

The observation done on the three selected internet café's also show that from the total data of 233 internet users at internet café's women internet users held only 38(16.3%) while men held 195(83.69%) of the whole internet users at the three internet café's.

Also the data collected from Ethiopian telecommunication cooperation sales office at “Aratkilo” by observation show that from five different 100 group CDMA SIM card buyers. The first 100 have 21 women and 79 male, the second 100 have 12 women and 88 men, the third 100 have only 8 women and 92 male, the fourth 100 have 11 women and 89 male the fifth 100 have 14 women and 86 men.

From the total 500 CDMA SIM card buyers, 66 (13.2%) women and 434 (86.8%) men, this shows a great gender disparity in using CDMA. Although buying SIM card doesn't mean they use it this data also shows how there is a big gender gap in having access to internet and internet technology. The factors determining men and women different access to computer and internet technology will be discussed in the challenges women and men face to have access to ICT's part briefly.

4.5 Challenges in Access to Computer and Internet Technology

As mentioned at the beginning of this study, one of the purposes of the research was to find out the challenges to have an access to computer and internet technology. As indicated in the literature review, the challenges of having access, experience, frequency, place of using computer and internet technology for the techno-poor is determined by their demographic and socio-economic status. An attempt was made to see how much the different demographic and socio-economic factors had effect on variables such as access, experience, frequency, place and purpose of using computer and internet technology. For this purpose the researcher collected data on gender, educational attainment, income and age to in order to check how they relate to the variables.

4.5.1 Income and access to computer and internet technology

Table4.4 income and access to computer

Income	Access to computer				total	
	Yes		No			
	number	%	number	%	number	%
0-500	2	9.52	19	90.47	21	17.21
501-1000	5	19.23	21	80.76	26	21.31
1001-1500	13	38.24	21	61.76	34	27.86
1501-2000	13	61.9	8	38.09	21	17.21
2001-2500	8	66.67	4	33.33	12	9.83
2501-3000	3	37.5	5	62.5	8	6.55

The response obtained concerning relationship between income and access to computer technology revealed that income has had a strong effect on access to computer. Accordingly, the group with income of 2000-2501 and 2501-3000 birr per month showed higher access to computer technology (66.67% and 61.9% of them, respectively). Other groups with income of 500,501-1000, 1001-1500 and 1501-2000 per month showed access rate of 9.52%, 19.23%, 38.24%, and 37.5%, respectively.

When we observe the relation between income and access to internet technology, the majority, 8(66.7%) of the participants within income group of 2001-2500 birr per month and 5(62.5%) of them within income group of 2501-3000 said that they have access to internet technology. On the contrary, a very low portion of participants expressed to have access to internet in the other income groups: 5(23.8%), 4(11.76%) and 1(3.84%) of participants in the income groups of 1501-2000, 1001-1500 and 501-1000 birr per month reported to having access to internet, respectively.

How often they have access to computer and internet technology also determines their type of access. From the figure below one can easily notice that income contribute highly to use internet technology frequency. Participants with higher income, i.e., 2501-3000 birr per month and more said they use internet daily or every two days while those in the lower income groups, i.e., 500 to 1000 birr said they use internet less frequently (once a week or less).

The results of the study indicated that income has a greater impact on where one can use computer. Accordingly, 66.67% respondents with income of 2501 to 3000 birr per month indicated that they use computer at their home, whereas the rest said they use at office. The minimum income group with 500 and less birr monthly income respondents response to school and office use is equal(50%). This clearly shows that participants in the lower income groups use computer and internet where it is free, i.e. school and office, while the richer can create access at personal level. It seems that the rich are more likely to be techno-rich and the poor are more likely to be techno-poor.

4.5.2 Educational level and access to computer and internet technology

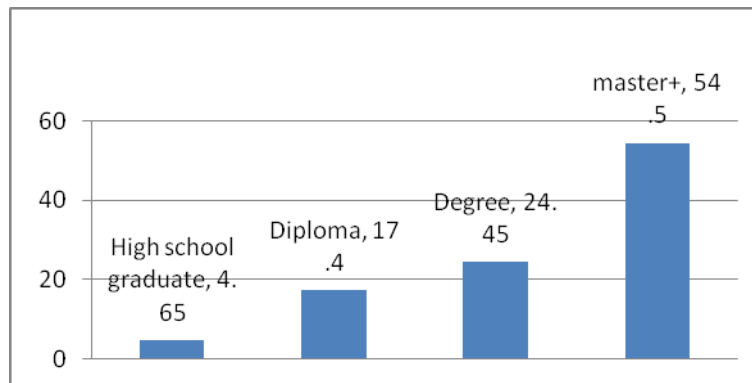
Table4.5 Educational level and usage of computer

Educational level	Usage of computer				total	
	No		Yes			
	number	%	number	%	number	%
High school graduate	32	74.41	11	25.6	43	35.24
Diploma	16	69.56	7	30.43	23	18.85
Degree	27	60	18	40	45	36.88
master+	3	27.27	8	72.72	11	9.01

As clearly shown in the table below, the majority of the computer users are those with educational attainment having masters and more, 72.72% of those respondents have the access to computer technology. While degree, diploma and high school graduate have 40%, 30.43% and 25.6% respondents who have access to computer technology respectively.

When we come to access to internet technology, higher educational level found to be related to better access to internet technology. The result showed that access to internet declined proportionally to decline in educational attainment. Thus, 6(54.5%) of masters degree holders, 11(24.45%) of first degree holders, 4(17.4%) of diploma holders and 2(4.65%) of high school graduates reported to having access to internet.

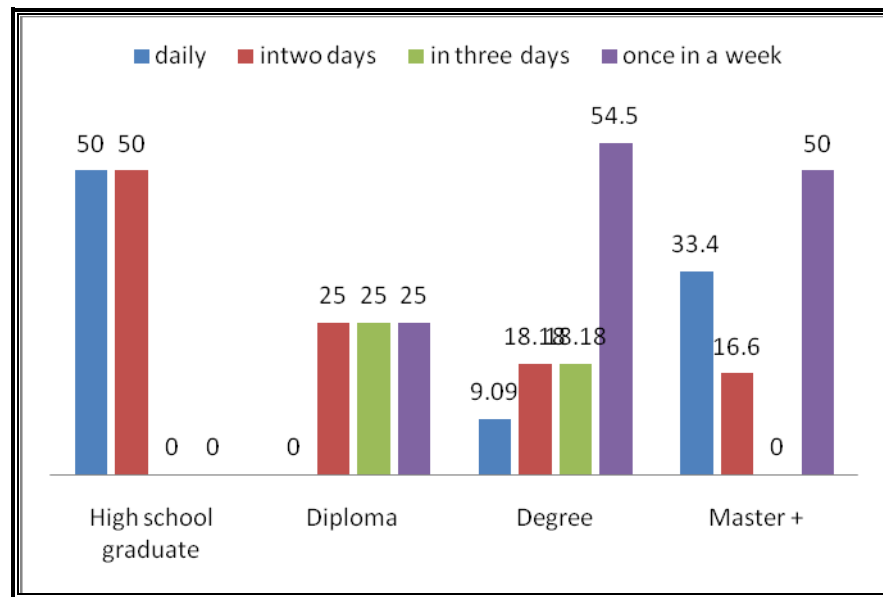
Figure 4.5 Educational attainment and access to internet technology



37.5% of respondents from masters degree group respond that they have access at office, another 37.5% say they use internet at and internet café's. the rest 25% of this respondents have an access at home . From High school graduate respondents 9.09%, 36.4% and 50% have an access at home , school and business center respectively, while from diploma 42.85%,57.14% respondents have an access to internet at school and office respectively, from degree 11.11%, 27.8% and 61.1% respondents have an access at home, office and business center respectively.

When we see the relationship between educational attainment and the frequency in accessing internet technology, 50% of respondents with masters degree and above said they use internet every three days, while only 25% first degree holders, 12.5% of diploma holders and 12.5% of high school graduates said they use internet every two days, daily and once a week, respectively. 44.5% of respondents with degree use internet in three days while equal(16.67%) number of respondents respond to daily, in two days and once in a week category. 42.85% of respondents with diploma got the access in three days while equal number of this group also have an access one in a week while the rest 14.3% use internet in two days.

Figure 4.6 Educational attainment and frequency of internet technology



When we see place of using computer in relation to educational attainment, most of the respondents said they get access to use computer technology at business centers. equal number(37.5%) of respondents from master and above group respond that they have access at office and business center the rest 25% of this respondents have an access at home . From High school graduate respondents 9.09%, 36.4% and 50% said they get access at home , school and business center, respectively, while from diploma holders 42.85% and 57.14% of respondents said that they get access to computer at school and office, respectively. The number of degree holder respondents who get access at home, office and business center is 11.11%, 27.8% and 61.1%, respectively.

4.5.3 Age and access to computer and internet technology

The results of the study indicated that the majority, i.e., 54.34% of respondents are from the young generation in the age group 15-24 having access to computer and internet technology. On the contrary, from respondents in the age group 47-57 and above only 11.76% said they have access to these technology, while in the age groups of 25-35 and 36-46 respondents who said they have access accounted for 12(35.29%) and 5(20%), respectively.

Table4.6 Age and access to computer technology

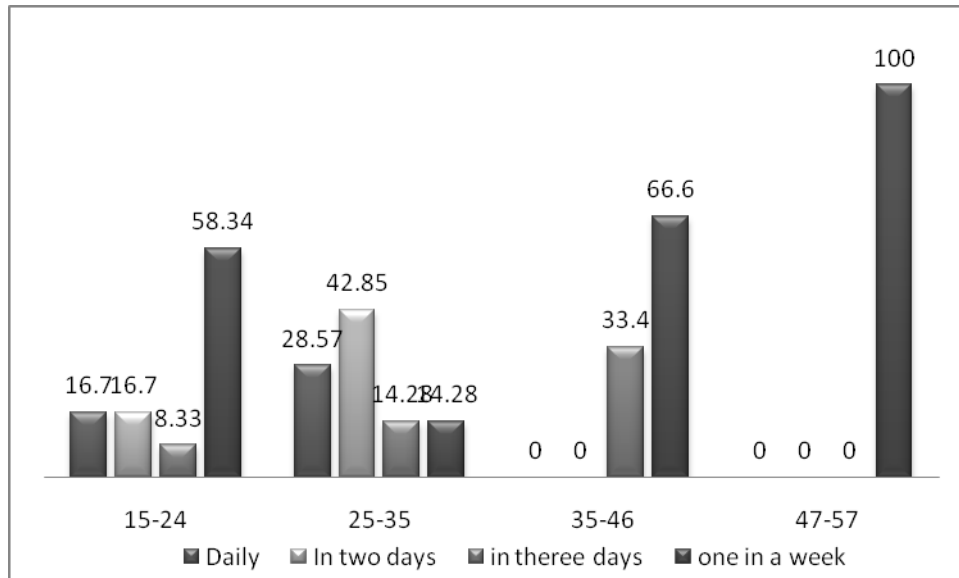
Age	Usage of computer				Total	
	No		Yes			
	Number	%	number	%	number	%
15-24	21	45.65	25	54.34	46	37.7
25-35	22	64.7	12	35.29	34	27.86
36-46	20	80	5	20	25	20.5
47-57	15	88.24	2	11.76	17	13.93

With regard to computer, internet access is also determined by age. The age group with highest internet users is the young generation between age group 15 to 24 which have 12(26.08%) respondents have access to internet technology, while 7(20.58%) out of 25-35 age group have access to internet technology and 3(12%), 1(5.88%) have an access from 36-46,47-57 category respectively. We Can summerize that the young the age the higher access to internet technology.

Responses obtained revealed that only 3(12%) of respondents in the age group 15-24 have access to computer technology daily, while 1(4%), 12(48%), 8(32%) of the respondents access every two days, every three days and once a week, respectively. In the age group 25-35, only 1(8.33%) of the respondents said he/she has got access to computer technology daily, while 5(41.6%) and 5(41.6%) of respondents said they have access every two days and every three days, respectively. In the age group 36-46 2(40%) of the respondents said they access computer every two days. No respondent from this group gets access to computer daily. While (50%) of respondents in the age

group 47-57 and above said they have access on daily basis, the same number said they access computer once a week.

Figure 4.7 Age and frequency of using internet

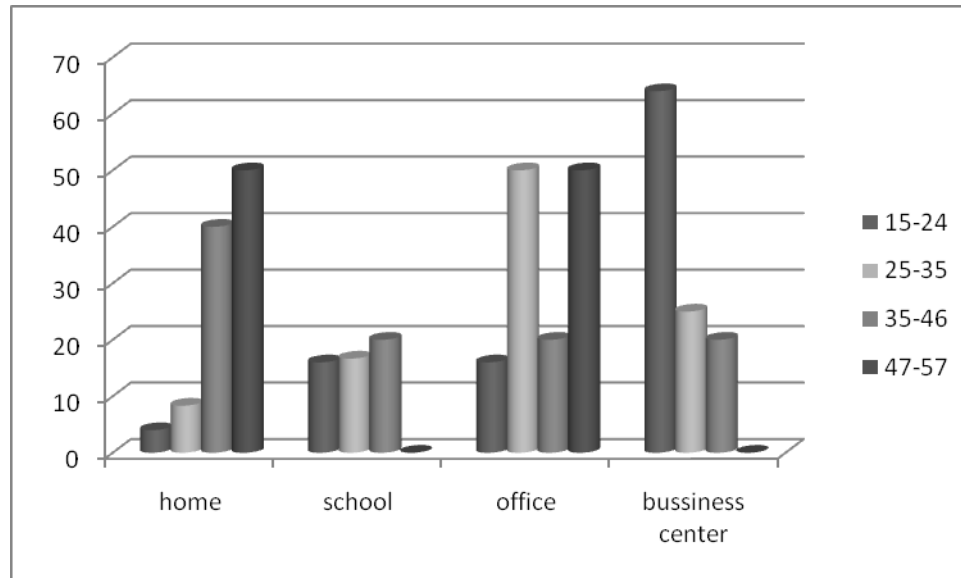


When we came to internet usage frequency as shown in the figure above, the majority, i.e., 7(58.44%) of respondents in the age group 15-24 access internet technology once a week. The remaining 2(16.7%), 2(16.7%) and 1(8.33%) of the respondents in the group reported that they get access daily, in two days, in three days, respectively. In the age group 25-35 the number of participants who have access to internet is very low, i.e., 2(28.57%), 3(42.85%), 1(14.28%), 1(14.28%) of the respondents being able to access the technology daily, in two days, in three days and once a week, respectively. Respondents aged 36-46 generally have low frequency of use as compared to the younger age groups. While 66.6% of them said they access internet once a week, 33.4% of them said they access every three days. In the age group 47-57 only 1 respondent said he/she has got the access once in a week.

Age also have a great impact in determining where one can use computer and internet technology. As shown in Figure 4.9 below, the majority of the young respondents labeled in the age 15-24 get access to computer at business center, while age group 25-35 get access at office. Most of the respondents in the age group 36-46 get access

at home. This shows that the higher the age, the higher is the probability to access personal computer at office or at home.

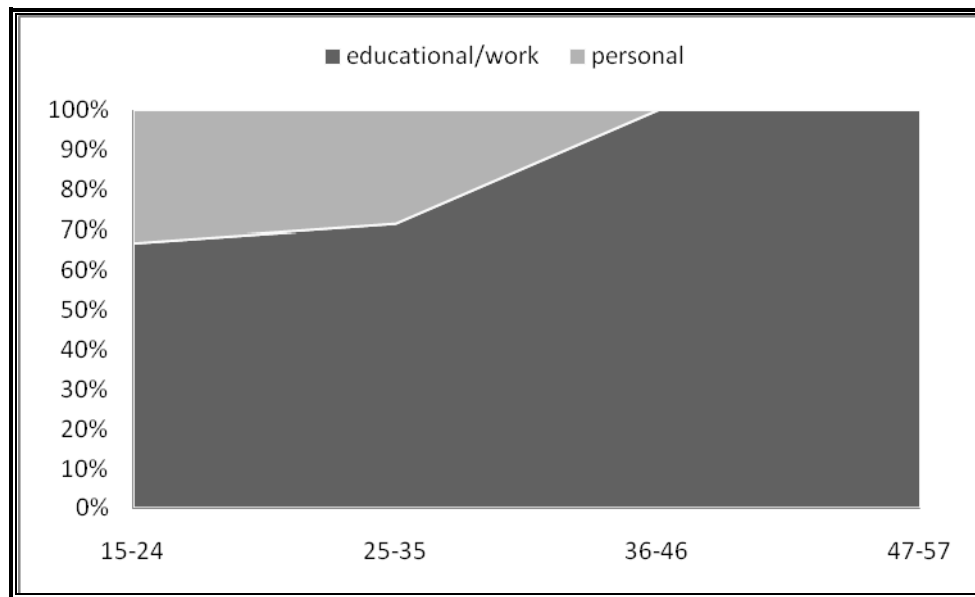
Figure 4.8 Age and place of using computer



Similarly, place of using internet technology is also affected by age. Most of the respondents (58.34%) in the age group 15-24 said they get access at internet cafés, while the rest 25%, 8.4% and 8.4% got the access at school, home and other places, respectively. From the age group 25-35, 42.85% of the respondents got access at office. The rest 28.57%, 14.28%, 14.28% of respondents got access at internet cafés, school and home respectively. From the age group 36-46, while 66.7% of the respondents got access at office, 33.3% were able use at internet café's.

As it is clearly shown in Figure 4.10, the survey data showed that the young groups' purpose of using computer and internet technology differs from that of the older ones. The elders look more serious in using those technologies for educational and work purpose rather than personal, while the young ones use it mostly for entertainment, communication and for educational purpose. This shows that the young generations are more likely to benefit from all the advantages the new technology offers them.

Figure 4.9 Age and purpose of using internet technology



The researcher used qualitative method basically to check whether the results from qualitative data support the findings of the quantitative data or not, and to capture issues that may not easily be obtained using quantitative means. The results obtained from the qualitative also reveal that access to ICT determined by societal status which includes gender, economical power, and educational attainment, which leave out the women, the poor and the illiterate one from the digital revolution. As one women interview respondent affirm that

ICT's are expensive and they are not that necessities to a woman who have other issues like me. Rather than investing my little money on buying computer and internet connection I prefer to use them for another purpose

Also another male respondent state that

We have a computer without an internet connection in the office; the connection is only for the bosses. We know it don't cost them that much since once they get the connection, but the problem is they don't think we need them, thinking it is a luxury to employees like us, they think if they give us the connection we won't do the work rather chatting online in the working hours, that is not the only use of ICT. I used to get the access when I was in campus,

the university provides to us and I know the benefit out of it the problem is it is not easy to have the access. I believe it has a lot of positive developments.

These experiences tell us a lot on who is using the ICT, still there is an attitude that ICT's are for luxury. peoples don't take them as a need in there day to day life they don't relate them to their life.

Also economical status has another factor in having an access to computer and internet technology. As we have seen in the survey the more having the economical power the more having the access to computer and internet technology. Poverty is the main problem that limits access to computer and internet technology, especially for women who are more likely to be the poorest one. One young women interview respondent mention that

I cannot say I have the access to computer and internet technology. I use it like once in a month to check my email, which connects me with friends abroad. I wish I can use these technologies more often. I get the course for computer and internet skill when I was learning my diploma. I can't afford to buy a computer and use at home if I get the access for free or a little cheaper I think I will use them daily. The problem is it is costly.

Skill is also another challenge mentioned by the interview respondent. Since the technology is new to the country most of the respondents don't learn computer and internet technology at skill, the young generation is more related to the technology since most of them start getting the access at school. For some of the respondents they have to take the courses from training institutes, here money and time are issue to have a skill to computer and internet technology. A 42 year old woman interview respondent says that

We have computer and internet connection at home, mostly my husband and my child use it. My child want me to use it, but I don't know how to use it she tells me what to do but when she leaves the computer and I sat alone I can't operate it. I prefer not to use it. If I want something my daughter will help me.

For the question I forwarded to this women why don't she take the courses at training centers she mention that

I don't have that time I have a lot of responsibilities. As a working mother, I have to go to work, manage the home, take care to my children's and on my spare time I run to the social life, my children education means a lot to me let they learn. May be when they finish their education and start their new life I may go back to school. Till that I will use their knowledge, it is the same.

Time is another issue especially for the woman who is expected to run here triple role effectively.

While some of the respondents say even getting the training still it is hard for them to use these technologies. Computer and internet skills should be practiced every day otherwise we may lose them and these skills need to be updated on being online frequently because the nature of this technology is being always new. One of my male interview participants mentions that.

Once at my office we all get the training in computer and internet technology the problem is I don't use these technologies often and when I need to use it every time it is getting newer and newer, even it is hard for me to use my window operating system mobile telephone which I get it as a gift from my son lives abroad. My children say, I can connect my mobile to the internet where there is a wireless connection around but I found it hard to operate it. Sometimes I get embraced when my 13 year old boy show me how to operate it. The time is good for you the young one's it is bringing life in easiest way but the old ones like me left confused.

The other problem is the stereotypical attitude, which limits young girls students to participate in the science fields which are technology oriented. One of my young girl respondents responds that

There is a connection at school but it is filled with boys we don't go there often I don't know why but we don't find ourselves interested what is in there, I use internet connection to check my email, but I prefer to use at internet café's.

The question I forward to this girl, why is it her for them to go to the internet room at school, she forward that

I don't know the exact reason, it is just not that comfortable to be around this boys.

From the above findings it can be inferred that there are a lot of challenges that limit the access to computer and internet technology relate to socio-cultural and economical status. Skill, cost, time and attitude are the main ones mentioned by the respondents we will find women more challenged by this factors who are more likely the poorest, expected to play their roles shaped by the society.

4.6 Opportunities within Access to ICT

ICT play an important role in bringing new positive changes in life and make life more easily, there is no untraceable area in life that can't be positively affected by ICT. To observe how ICT's are a potential to the society the researcher conducts an interview selecting 8 respondents from techno- rich group. Different benefits are mentioned on having access to computer and internet technology on education attainment, professional development, networking and entertainment.

ICT help as a tool for educational attainment by providing information which are updated on anything wanted one of male respondent mention that

Having an access to computer and internet technology make me to gain new knowledge and information which help my education. There are also educational resources on the Internet which I can access easily. They are in various forms such as journals and databases on various aspects of knowledge.

Another male interviewee responds that

By using internet technology I am in the way to fulfill my dream, I always want to learn Media Engineering which is not available in Ethiopia. There are virtual educational programs available online, with several programs for Bachelors and Masters Degrees. I apply to one university in America hoping to study there.

ICT's can be used in an educational sector as bringing a distance education they will help people who can have access due to many reasons. Specially, they can bring a positive change in gender gap in education. Women are known to be more illiterate than that of men due to reason's related to roles and time. ICT can make education accessible easily women can conduct their study of any level sitting at home.

One of the interview women respondent mentions

Having an access to ICT bring a great change in my life, specifically my educational life I don't need to go library to library searching for book I can get anything about any title online just by googling only, this play an important role in finishing my degree. And also I am planning to study for my masters online for next year in one of the universities found in India. I have two little kids, it won't be easy for me to go to school now but I can conduct my studies by distance education.

Another women respondent mention that she uses internet technology to diagnosis herself she puts

I used to be a patient of migraine. no doctor here can cure me, they always relate it with another diseases I used to take a lot of medicine one day I put in the internet and search for it after that I can cure myself by avoiding some nutrients which made me to be sick, I can cure myself without any medicine. After that I also search about anything related to my health.

From qualitative data, it can be inferred that respondents use this technologies for different purposes, other respondents mention ICT bring a lot for there professional development. One male respondent mention that

When I get confused with something in work I go and search for it, it help me to always update my knowledge towards my career. As being an IT expert I need to improve my knowledge daily since new technologies happen every time. We have a professional group online which you can forward any problem you face and many suggestions will be forwarded to you.

ICTs also help in bring social network especially for women who are more likely look to be isolated from the public world found it as a new way of expressing themselves and create new networks.

Being online help me to connect with my friends abroad daily and even create new friendships. I am a big fun of face book; I am online more than 5 hours daily which make me to know about the world beyond the oceans.

Which show as these technologies are important to women, because it is through them that they find out what is happening in the world

One of male respondent put it like this how ICT benefit him,

I can get communicated through the world, I can get new news online, I can download music's watch movies search for information I want. ICT make you to have knowledge on anything and anywhere in this world that you want know. It help me to understanding of issues that I want to know about anything it may be about my education, football, movie it will answer the questions all I got in mind, I just need only to Google it.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATION

5.1 Conclusion

The purpose of this research was to investigate gender gap in accessing to computer and internet technology among the techno-rich and the techno-poor residents of Arada sub city. The study tried to identify socio-economic and cultural challenges for accessing computer and internet technology and to look into the opportunities in accessing computer and internet technology.

To achieve this purpose, the following guiding questions were raised at the beginning of the study: what are the socio-economic and cultural status levels made a difference in access to internet and computer technology? And what are the fresh opportunities these technologies bring, specifically to the life of women?

To answer these basic questions an attempt was made to investigate what researches say about the object in point. It was found from different studies that access ICT is affected by different demographic and socio-economic status appears in the society and there is a gender gap in having access to ICT as a reflection of the gender disparity emerge in the society.

The research incorporated respondents from different demographic and socio-economic status and measured the difference between these different groups regarding variables such as access to computer and internet technology, frequency of use, experience of using the technology, place and purpose of using the technology.

Overall, the results from the analyses suggest that there is still a “digital divide” between men and women of Arada sub city of Addis Ababa in terms of access to ICT. The finding showed that participants of female gender, older age group, low levels of education and those from economically low income group areas are more likely to be grouped in the techno- poor category.

The analysis of data collected from survey, interview and observation showed that women had less access to computer and internet technology due to factors such as low economic power as compared to that of men, less computer skills, lots of responsibilities at home, shortage of time, less connection to technologies, irrelevance

of the technologies to their present life and lack of knowledge about the benefits of these technologies.

An attempt also made to look in to the reason behind women less access to those technologies show that women have less economical power than the of male, have less computer skill, have lots of responsibilities at home, shortage of time, less connected to technologies, don't find it relevant to their life and not know the benefit out of these technologies are the major findings from the survey and the interview.

According to the information obtained from the survey, experience, frequency, place and purpose of using computer and internet technology is also determined by gender.

Regarding the purpose of using computer and internet technologies, the result showed that females are more likely to use computer and internet technology for educational purposes than for personal one, while males are more likely to use them for personal development rather than work or educational purpose.

Educational attainment is one of the key factors to facilitate or hamper individuals' likelihood to access and use computers and internet technology. In relation to this the findings indicated that respondents with higher educational attainment had higher access to computers and internet technology, while those with low educational achievement had lower access to these technologies.

It was also noted from the results that the skill of using ICTs and knowledge about their benefits is strongly related to educational attainment. In a similar manner, experiences of participants in using ICTs and purpose of using them found to significantly vary in relation to educational attainment.

The study indicated age as one of the factors affecting access to and use of ICT. Consequently, respondents in the age group 15 – 24 found to have highest interest of using computers and internet.

The study revealed that age has impact on place of using ICT. Most of the young respondents who said they have access to computer and internet reported that they use ICT in internet cafes, where as the older ones reported that they use ICT at office.

The young generation found to use computer and internet technology at internet café's where as more of the old generation got the access at offices. Young generation purpose of using computer and internet technology differ from that of the elder one's. the elderly look more serious in using those technologies, while the young ones use it mostly for entertainment, communication and for educational purpose, which shows that the young generation are more likely are benefitting from all the advantage that the new technology bring.

Economical status has a great impact on determining access, place, frequency and purpose of using computer and internet technology. The poor one's take it as a luxury to use computer and internet technology rather than fulfilling their basic needs, unless they have free access at school or office.

Differences appear in access to ICT are persistent and have an impact on the ways and the extent to which members of different sub-groups involve themselves in the "information society." These differences can be tackled best by increasing the opportunities for use, in every instance; those with less access and experience with ICT (i.e. females, elder, lower educational and economical status) are more likely to have first should give the opportunity to got a training in ICT skills.

5.2 Recommendation

If we want to achieve Digital revolution in Ethiopia it is a must to provide equal access for the entire population with respect of any socio-cultural and economic status. From the findings we see that ICT can be used as a tool for development ICT's have a potential to help disadvantage groups as a result more must be done to eliminate the digital divide happen between men and women, the poor and the rich, the young and the old generation and between the educated and illiterate one.

The researcher want to patterns suggest an important role should be played by government, women organizations and other organs in providing and encouraging further access and use of ICT.

- Ethiopian telecommunication cooperation should work a lot to improve the quantity and quality of the infrastructure, and consider the cost of these technologies
- ICT policies must mainstream gender in order to bring women participants as a user and also as a developer of ICT.
- Awareness creation methods must be forwarded to the society about the benefit from ICT, specifically for women.
- Women organization and other intuitions have a lot to do in empowering women through the ICT revolution by providing ICTs which are accessible by women and give more emphasis on capabilities and socio-economic issues that women face.
- Free internet providers must be established in order to include the poor in the digital revolution
- Organizations and schools must give emphasis in giving training on ICT skill which focuses on women.

References

Adam, A. (2005). *Gender, Ethics and Information Technology*. 175 Fifth Avenue, New York,; palgrave macmillan.

African Women and the Information Age: A Rare Opportunity. Retrieved march 05, 2010, from Internet and ICTs: UN economic commission for Africa: <http://www.hsrinivas.org>

Alampay, E. A. (2006). *Beyond access to ICTs: Measuring capabilities in the information society*: University of the Philippines, The Philippines. International Journal of Education and Development using Information and Communication Technology (IJEDICT) , 4-22.

American Psychological Association (APA). (2001). *Publication manual of the American Psychological Association* (Fourth edition). Washington, DC: Author.

Bekele, Dawit. "*The Ethiopian Telecommunications: past, present and future.*" Paper presented at the Ethiopian Scientific Society Conference on Ethiopian Telecommunications in the Information age. Washington, DC. July 1996.

Central Statistical Authority. (2007). *the 2007 Population and Housing Census of Ethiopia*.

Creswell, J. W. (1994). *Research design: Qualitative & quantitative approaches*. Thousand Oaks, CA: Sage publications

Dlodlo, N. (2007). *Access tio ICTeducation for girls and women in rural south africa: a case study*. Scientific and Industrial Research Meraka Institute Advanced Institute for Information and Communication Technologies , 1-12.

ECA, (1997) African Information Society Initiative: An Action Framework. Addis Ababa

Furzey Jane. (1996). "*Empowering socio-economic Development in Africa; Utilizing Information Technology: A Critical Examination of the Social, Economic, Technical and Policy Issues, with Respect to the Expansion or Initiation of Information and Communications Infrastructure in Ethiopia.*" Addis Ababa: UNECA.

Gaijala R (2002), 'Cyber Feminist Technological Practice: Exploring Possibilities for Women Centered Design of Technological Environments', UN/INSTRAW Virtual Seminar Serious On Gender and ICTs, Seminar Two: Women and ICTs: Enabling and Disabling Environments, Retrieved on 28 April 2010 from <Http://Www.Un-Instraw.Org/Docs/Gender And Ict/Gaijala.Pdf>

Gertrudes Macueve, J. M. (2009, March 06). *The International Development Research Center: Science for Humanity*. Retrieved January 20, 2010, from IDRC: http://www.idrc.ca/en/ev-71313-201-1-DO_TOPIC.html

Gertrudes Macueve, Judite Mandlate, Lucia Ginger, Polly Gaster and Esselina Macome. (2009). *Women's use of information and communication technologies in Mozambique: a tool for empowerment?* Retrieved 5 2010, march , from the international development research center : http://www.idrc.ca/en/ev-1-201-1-DO_TOPIC.html

Gurumurthy, A. (2004), *Gender and ICTs Overview Report*. Retrieved on 12 Sep 2009 from <Http://Www.Un-Instraw.Org/Docs/Gender And Ict/Annand.Pdf>

Hattotuwa,(2003). *Career Women into ICT in Kenya: Progression, challenges and opportunities*. A Research Report under GRACE Project funded by the international Development Research centre IDRC.

Hélène,(2007). "Public-Private Partnerships for ICT Development: the Ghanaian Experience". Capacity.org, (18), 100-120.

Hopkins, W. G. (2002, may 4). *Quantitative Research Design: Department of Physiology and School of Physical Education, University of Otago*. Retrieved march 5, 2010, from SPORTSCIENCE Perspectives / Research Resources: <http://www.sportsci.org/index.html>

Huyer and Mitter. (2003) *Women's Empowerment through Information Techno logy*, New Delhi: Authors' Press.

ICT in Africa: *Boosting Economic Growth and Poverty Reduction*. (7-8 April 2008). 10th meeting of the Africa partnership forum (pp. 2-30). Tokyo, Japan: African Partnership Forum.

ICTs and Gender-Evidence from OECD and Non-OECD Countries . (2010). Retrieved march 05, 2010, from the world bank group: OECD: www.oecd.org/sti/ICT-employment

Information and communication technologies. (2010, February 28). Retrieved March 16, 2010, from Wikipedia:

International Telecommunications Union (ITU) (2003) *World Telecommunication Development Report. Access Indicators for the Information Society*.

International Telecommunications Union, *Internet from the Horn of Africa*, Ethiopia Case Study, <http://www.itu.int/ITU-D/ict/cs/ethiopia/index.html>

ITU, Ethiopia, ICT data, http://www7.itu.int/bdt_cds/CDS/Country_Data.asp?Country=ETH

ITU. (2003). *International Telecommunications Union (ITU) (2003) World Telecommunication Development*. Retrieved January 26, 2010, from http://www.itu.int/ITU-D/ict/statistics/at_glance/main02.pdf

ITU. (2004). Retrieved January 26, 2010, from http://www.itu.int/ITU-D/ict/statistics/at_glance/Internet02.pdf

Jane Ritchie and Jane Lewis . (2005). *Qualitative research practices*. New Delhi: SAGE publications.

Jørgensen, R. F. (2006). *Human Rights in the Global Information Society*. Massachusetts Institute of Technology: The MIT Press.

Lishan, Adam. (2 March 1999). *Information and Communication Technologies in Ethiopia: Past, Present and Future Potential for Social and Economic Development* . Ethiopian Information Technology professional Association Workshop: Qualitative survey conducted for a PhD Thesis

Litho, P. (13 Jul 2007,). *Do women's access to ICTs lead to empowerment? Looking at the CEEWA ICT project in rural Uganda* . Retrieved march 05, 2010, from genderIT.org: <http://www.genderit.org/en/index.shtml>

Mauricio, P. (2006). *ICT in ethiopia* . Retrieved February 11, 2010, from http://www.Mauricio_Poodts at abtassoc.com

mercorios, d. (2 july 2002). *debate on the opportunities and obstacles for women and men in the digital revolution* . WSIS noontime dialog during prepcom 1 for WSIS.

Meressa Neme (2007) *Administration and staff readiness for potential use of ICT in education: the case of college of education, AAU* (unpublished master thesis AAU) Addis Ababa.

Mijumbi, R. (2003). *Bridging the gender gap: women in the information society*. Retrieved March 05, 2010, from the free library by farlex: <http://www.thefreelibrary.com/>

Nancy Hafkin and Nancy Taggart. (2002). *Gender, information technology and developing countries: an analytic study Executive Summary* . the Office of Women in

Development Bureau for Global Programs, Field Support and research United States Agency for International Development(USAID) Task Order 27-2432

Njeru, S. (2009, December 23). Information and Communication Technology (ICT), Gender, and Peacebuilding in Africa. *Volume 3, Issue 2 - ISSN: 1659-3995*

O'Farrell, C. (2001). Information Flows in Rural and Urban Communities: Access, Processes and People. *UDRSA Conference 2001*.

Pajares, F. (2007). *Elements of a proposal*: Emory University.

Prosser, T. (2000) *the Law and Regulators*, Clarendon Press Oxford.

Quantitative VS. Qualitative. (2009). Retrieved MARCH 05, 2010, from ANSWERS RESEARCH: <http://answersresearch.com/>

Reddi, A. D. (2006). *women's literacy and information and communication technologies: lessons that experience has taught us*. New Delhi 110016 India: Commonwealth Educational Media Centre for Asia,.

Rosemary Crompton, d. G. (2002). *changing forms of employment- organization, skills and gender*. 29 West 35th Street, New York, NY: Taylor & Francis e-Library.

Russell, L. (2001) *some practical guidelines for effective sampling size determination* University of Iowa. Retrieved March 5 2010 from <http://www.stat.uiowa.edu/techrep/tr303.pdf>

Schmögnerová, B. (2004). Access to financing and ICT for women entrepreneurs in the UNECE region: challenges and good practices. *entrepreneurship and smes Sales No. E.04.II.E.11* , 1-22.

Sharon,(2004) Telecentres and the gender dimension: an examination of how engendered telecentres are diffused in Afric', Unpublished MSc thesis, Georgetown University, Georgetown.

Tandon, S. M. (2009, June 30). information and communication technologies for women's socio-economic empowerment. *world bank group working paper series* , pp. 1-90.

The Digital Divide, ICT and the 50x15 Initiative. (2010, April 3). Retrieved May 5, 2010, from Internet World Stats Usage and Populaiton Statistics: <http://www.internetworldstats.com/>

The Status of Information and Communication Technologies (ICT) in Ethiopia. (2007, August 22). Retrieved march 5, 2010, from WITFOR: <http://www.witfor2007.org/>

UNDP (1998), Human Development Report

UNESCO. (1998.). *Women iin the Digital Age - Using Communication technology for Empowerment: A Practical Hand book.* (p. p. 14.). Rome: Society for International Development and Women.

UNESCO. (2010, April 19). *ICT in Education.* Retrieved may 05, 2010, from UNESCO: Communication and Information : <http://www.unesco.org/webworld>

UNIFEM and UNU/INTECH. (2006, October 15). Retrieved January 26, 2010, from "Gender and Telecommunications: An Agenda for Policy.": <http://www.unifem.undp.org/conferen.html>

UNIFEM. (2003). *women and information communication technology.* 304 East 45th street, New York

United Nations (2005) *Gender Equality and Empowerment of Women through ICT,* New York: Division for the Advancement of Women, Department of Economic and Social Affairs, United Nations.

United Nations Development Programme (UNDP) (2001) *Human Development Report 2001: Making New Technologies Work for Human Development,* Oxford University Press.

WITFOR. (2007). *Ethiopian ICT Policy.* Retrieved march 05, 2010, from WITFOR: <http://www.witfor2007.org/about-ethiopia>

World Bank (1998) *World Development Report 1998/99: Knowledge for development.* The International Bank for Reconstruction and Development/ the World Bank. Oxford University Press.

World Summit on the Information Society (WSIS) (2003). *Declaration of Principles.* 12 December. Document WSIS-03/GENEVA/DOC/4-E

World youth (2003). *Youth and Inforamtion Communication Technology.* World Youth report.

Worldbank. (2007). *Engendering Information & Communication Technologies: Challenges & Opportunities for Gender-Equitable Development.* Washington, DC 20433: The World Bank The International Bank for Reconstruction and Development.

Annex 1-survey questioner

Addis Ababa University: Institute of gender studies

Post graduate program

Questioner for Arada sub city residents;

Dear respondents;

The purpose of this survey is to examine demographic and socio economical factors that hamper effective access to computer and internet technology for men and women, look at the challenges and opportunities of these two technologies. For better understanding in the question access to computer means use and opportunities in typing, word processing, spreadsheets, computer literacy, and simple access to computer equipment and when I mean access to internet technology I mean accessing the internet database and exchanging information via internet.

Please don't write your names and don't give your answer by consulting others

Respond by putting (X) mark or by writing your responses on the space provided where applicable.

Section One: Background Information

1. Age: ____ 15-24 ____ 25-35 ____ 36-46 ____ 46-57
2. Sex: ____ Male ____ Female
3. Personal monthly income: ____ 0-500 Birr ____ 501-1000 Birr
____ 1001-1500 ____ 1501-2000 Birr ____ 2001-2500 Birr
____ 25001-3000 Birr other _____
4. Educational background: ____ High school graduate ____ Diploma
____ Degree ____ Masters degree other _____

Section Two: Access to computer technology

5. Do you use computer technology? ____ Yes ____ No.
6. If your answer is No for question number 5, can you put your reasons for not using those technologies?

_____.

7. If your answer is yes for question number 5 how many years had it been since you start to use computer technology? ____ 0-2 years ____ 2-4years
____ 4-6 years ____ 6-10years other _____

8. Where do you use computer technology now? _____

9. How often do you use computer technology? ____ Daily ____ in two days
____ in three days ____ once in a week other _____

10. Do you own a computer? ____ Yes ____ No

11. Why do you use computer for?

12. Can you list down which computer programs are interesting for you?

13. Can you express the reason for your answer in number 12?

Section Three: Access to internet technology

14. Do you use the internet technology? _____yes _____no.
15. If your answer is no for question number 14 can you put your reasons for not using those technologies.
- _____
- _____
- _____
16. If your answer is yes for question number 10 how many years had it been since you start to use internet technology? _____0-2 years _____2-4years
_____4-6 years _____6-10years other _____
17. Where did you use internet technology now? _____
18. How often do you use internet technology? _____Daily _____in two days
_____in three days _____once in a week other _____
19. Do you own a internet? _____Yes _____No
20. Why do you use computer for?
- _____
- _____
- _____
21. Can you list down which internet programs are interesting for you?
- _____
- _____
- _____
22. Can you express the reason for your answer in number 21?
- _____
- _____
- _____

23. Can you list down to which sites you are familiar with?

24. What new opportunity do these technology brought to your life?

26. Is there anything or issues you would like to be included in this paper?

Thank you, for taking your time and fill the questioner helpfully.

Annex 2- interview guide

Semi structured Interview guide for computer and internet users

Introduction

I would like to be grateful for your willingness to participate in my study. I would ask you some questions about the issues that hamper effective access to computer and internet technology for men and women, and concerning at the challenges and opportunities of computer and internet usage forward to gender equality.

I can assure you that the data collected from this interview will be used only for academic purpose.

You are a key informant to me, if some questions are personal, it is not exposed to anyone and confidentiality will be secured. It is to hear your opinion and experience about gender issues raised in the access to computer and internet technology. Please tell me the fact you know about the issue. I will try not to take more time than we argued but if you are not comfortable by any thing you can tell me at any time to stop the interview. The interview is completely based on your voluntarily and willingness. If you come across to any question that you don't want to respond, tell me to pass it. I hope you will participate in the study, while your views are important.

If you are comfortable with tape recorder it will be best if I use it, since it is difficult to write down all your answers you give.

- Age
- Sex
- Educational background
- Monthly income
- Do you have access to computer and internet technology? Where did you got this access? And for what purpose you use this technology?

- What do you think are the reasons for different access to computer and internet technology?
- Do you think men and women have equal access to computer and internet technology? When we say access it refers to both instant and feature of using computer and internet technology. If you say no what are the reasons?
- Do you think men and women reasons for using this technology differ?
- Do you think these technologies hinder or promote the struggle to bring gender equality?
- Does you think these technologies will bring new opportunity to women's life?
- How can we use these technologies to help us in the struggle to bring gender equality?
- What should be done to improve the situation?

Thank you

Annex 3- observation check list

Observation check list

Observation enables the researcher to describe existing situation it is a systematic description of events. Observation provides a gender disaggregated information on those who use ICT at the internet cafes. The researcher spent three days and observed the needed samples in three selected internet cafes at Arada sub city.

Observation was undertaken in three internet café's found in the sub city (which are Marseille internet café found at "Amestekilo", Tilahune bussisness center found at "Piasa" and Bluebell internet café found at "Aratkilo") and in one Ethiopian Telecommunication Corporation sales office found in 4 kilo.

Internet café number one				
		Men	Women	Total
Day 1	Morning 3:00-7:00			
	Afternoon 7:00-11:00			
Day 2	Morning 3:00-7:00			
	Afternoon 7:00-11:00			
Day 3	Morning 3:00-7:00			
	Afternoon 7:00-11:00			

Usage of computer technology

Do you have access to computer					
		NO		YES	
		Number	%	Number	%
Total		78	63.93	44	36.06
Gender	Male	35	52.23	32	47.76
	female	43	78.18	12	21.81
Age	15-24	21	45.65	25	54.34
	25-35	22	64.7	12	35.29
	36-46	20	80	5	20
	46-57	15	88.24	2	11.76
Educational level	High school graduate	32	74.41	11	25.6
	Diploma	16	69.56	7	30.43
	Degree	27	60	18	40
	master	3	27.27	8	72.72
Personal monthly income	0-500	19	90.47	2	9.52
	501-1000	21	80.76	5	19.23
	1001-1500	21	61.76	13	38.24
	1501-2000	8	38.09	13	61.9
	2001-2500	4	33.33	8	66.67
	2501-3001	5	62.5	3	37.5

Experience of using computer technology

Experience of using computer											
Total		0-2 years		2-4 years		4-6 years		6-10 years		other	
		number	%	number	%	number	%	number	%	number	%
		22	50	12	27.27	8	18.2	2	4.54	0	0
Gender	Male	16	50	8	25	6	18.75	2	6.25	0	0
	female	6	50	4	33.33	2	16.67	0	0	0	0
Age	15-24	11	44	8	32	5	20	1	4	0	0
	25-35	6	50	3	25	2	16.67	1	8.37	0	0
	36-46	4	80	1	20	0	0	0	0	0	0
	46-57	1	50	0	0	1	50	0	0	0	0
Educational level	High school graduate	9	81.81	2	18.18	0	0	0	0	0	0
	Diploma	4	57.14	3	42.85	0	0	0	0	0	0
	Degree	6	33.34	6	33.34	5	27.78	1	5.5	0	0
	master	3	37.5	1	12.5	3	37.5	1	12.5	0	0
Personal monthly income	0-500	2	100	0	0	0	0	0	0	0	0
	501-1000	4	80	1	20	0	0	0	0	0	0
	1001-1500	8	61.53	5	38.46	0	0	0	0	0	0
	1501-2000	8	61.53	3	23.07	2	15.38	0	0	0	0
	2001-2500	0	0	3	37.5	5	62.5	0	0	0	0
	2501-3001	0	0	0	0	1	33.34	2	66.7	0	0

Place of using computer technology

place of using computer											
		home		School		office		Business center		other	
		number	%	number	%	number	%	number	%	number	%
Total		5	11.36	7	15.9	12	27.27	20	45.5	0	0
Gender	Male	4	12.5	5	15.63	8	25	15	46.87	0	0
	Female	1	8.33	2	16.66	4	33.34	5	41.6	0	0
Age	15-24	1	4	4	16	4	16	16	64	0	0
	25-35	1	8.33	2	16.67	6	50	3	25	0	0
	36-46	2	40	1	20	1	20	1	20	0	0
	46-57	1	50	0	0	1	50	0	0	0	0
Educational level	High school graduate	1	9.09	4	36.4	0	0	6	0	0	0
	Diploma	0	0	3	42.85	4	57.14	0	0	0	0
	Degree	2	11.11	0	0	5	27.8	11	61.1	0	0
	Master	2	25	0	0	3	37.5	3	37.5	0	0
Personal monthly income	0-500	0	0	1	50	1	50	0	0	0	0
	501-1000	0	0	5	100	0	0	0	0	0	0
	1001-1500	1	7.7	1	7.7	4	30.76	7	53.84	0	0
	1501-2000	2	15.4	0	0	2	15.4	9	69.24	0	0
	2001-2500	0	0	0	0	4	50	4	50	0	0
	2501-3001	2	66.67	0	0	1	33.33	0	0	0	0

Frequency of using computer technology

Frequency of using computer											
		Daily		In two days		In three days		Once in a week		other	
		Number	%	number	%	number	%	number	%	number	%
Total		5	11.36	8	18.2	18	40.9	11	25	2	4.6
Gender	Male	3	9.4	6	18.75	15	46.87	7	21.87	1	3.12
	female	2	16.67	2	16.67	3	25	4	33.34	1	8.34
Age	15-24	3	12	1	4	12	48	8	32	1	4
	25-35	1	8.33	5	41.6	5	41.6	0	0	1	8.33
	36-46	0	0	2	40	1	20	1	20	0	0
	46-57	1	50	0	0	0	0	1	50	0	0
Educational level	High school graduate	1	9.09	2	18.2	3	27.3	4	36.4	1	9.09
	Diploma	0	0	1	14.3	3	42.85	3	42.85	0	0
	Degree	3	16.67	3	16.67	8	44.5	3	16.7	1	5.56
	master	1	12.5	2	25	4	50	1	12.5	0	0
Personal monthly income	0-500	0	0	0	0	0	0	1	50	1	50
	501-1000	0	0	0	0	3	60	2	40	0	0
	1001-1500	1	7.7	3	23	5	38.5	4	30.77	0	0
	1501-2000	1	7.7	0	0	8	61.53	4	30.77	0	0
	2001-2500	2	25	3	37.5	2	25	0	0	1	12.5
	2501-3001	1	33.4	2	66.67	0	0	0	0	0	0

Usage of internet technology

Do you use internet technology?					
		No		Yes	
		Number	%	Number	%
Total		99	81.15	23	18.85
Gender	Male	49	73.13	18	26.9
	female	50	90.9	5	9.1
Age	15-24	34	73.91	12	26.08
	25-35	27	79.4	7	20.58
	36-46	22	88	3	12
	46-57	16	94.11	1	5.88
Educational level	High school graduate	41	95.34	2	4.65
	Diploma	19	82.6	4	17.4
	Degree	34	75.5	11	24.45
	master	5	45.5	6	54.5
Personal monthly income	0-500	21	100	0	0
	501-1000	25	96.15	1	3.84
	1001-1500	30	88.24	4	11.76
	1501-2000	17	80.95	5	23.8
	2001-2500	4	33.4	8	66.7
	2501-3001	3	37.5	5	62.5

Experience of using internet technology

Experience of using internet											
Total		0-2 years		2-4 years		4-6 years		6-10 years		other	
		number	%	number	%	number	%	number	%	number	%
		12	52.17	7	30.4	3	13.04	1	4.34	0	0
Gender	Male	9	50	6	33.4	2	11.12	1	5.6	0	0
	female	3	60	1	20	1	20	0	0	0	0
Age	15-24	8	66.7	3	25	1	8.33	0	0	0	0
	25-35	4	57.14	2	28.57	1	14.28	0	0	0	0
	36-46	0	0	2	66.7	0	0	1	33.4	0	0
	46-57	0	0	0	0	1	100	0	0	0	0
Educational level	High school graduate	1	50	0	0	1	50	0	0	0	0
	Diploma	2	50	2	50	0	0	0	0	0	0
	Degree	5	45.5	4	36.4	1	9.09	1	9.09	0	0
	master	3	50	2	33.4	1	16.7	0	0	0	0
Personal monthly income	0-500	0	0	0	0	0	0	0	0	0	0
	501-1000	0	0	1	100	0	0	0	0	0	0
	1001-1500	1	25	2	50	1	25	0	0	0	0
	1501-2000	3	60	2	40	0	0	0	0	0	0
	2001-2500	7	87.5	0	0	0	0	1	12.5	0	0
	2501-3001	1	20	2	40	2	40	0	0	0	0

Place of using internet technology

place of using internet											
		home		School		office		Business center		other	
		number	%	number	%	number	%	number	%	number	%
Total		2	8.69	4	17.4	6	26.08	10	43.47	1	4.34
Gender	Male	2	11.1	3	16.7	5	27.8	7	38.8	1	5.56
	female	0	0	1	20	1	20	3	60	0	0
Age	15-24	1	8.34	3	25	0	0	7	58.34	1	8.32
	25-35	1	14.28	1	14.28	3	42.85	2	28.57	0	0
	36-46	0	0	0	0	2	66.7	1	33.3	0	0
	46-57	0	0	0	0	1	100	0	0	0	0
Educational level	High school graduate	0	0	1	50	0	0	1	50	0	0
	Diploma	0	0	0	0	2	50	1	25	1	25
	Degree	1	9.09	3	27.27	2	18.18	5	45.45	0	0
	master	1	16.67	0	0	2	33.4	3	50	0	0
Personal monthly income	0-500	0	0	0	0	0	0	0	0	0	0
	501-1000	0	0	1	100	0	0	0	0	0	0
	1001-1500	1	25	2	50	1	25	0	0	0	0
	1501-2000	0	0	1	20	1	20	3	60	0	0
	2001-2500	0	0	0	0	3	37.5	4	50	1	12.5
	2501-3001	1	20	0	0	1	20	3	60	0	0

Frequency of using internet technology

Frequency of using internet											
		Daily		In two days		In three days		Once in a week		other	
		number	%	number	%	number	%	number	%	number	%
Total		4	17.39	5	21.73	3	13.04	10	43.47	0	0
Gender	Male	3	16.7	2	11.1	3	16.7	10	55.6	0	0
	female	1	20	3	60	0	0	1	20	0	0
Age	15-24	2	16.7	2	16.7	1	8.33	7	58.34	0	0
	25-35	2	28.57	3	42.85	1	14.28	1	14.28	0	0
	36-46	0	0	0	0	1	33.4	2	66.6	0	0
	46-57	0	0	0	0	0	0	1	100	0	0
Educational level	High school graduate	1	50	1	50	0	0	0	0	0	0
	Diploma	0	0	1	25	1	25	1	25	0	0
	Degree	1	9.09	2	18.18	2	18.18	6	54.5	0	0
	master	2	33.4	1	16.6	0	0	3	50	0	0
Personal monthly income	0-500	0	0	0	0	0	0	0	0	0	0
	501-1000	0	0	0	0	0	0	1	100	0	0
	1001-1500	1	25	0	0	2	50	1	0	0	0
	1501-2000	0	0	3	60	0	0	2	40	0	0
	2001-2500	2	25	0	0	1	12.5	5	62.5	0	0
	2501-3001	1	20	2	40	0	0	2	40	0	0