

The Case of Women in Sub-Saharan Africa and IT Perspectives

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Abstract

“ICTs are important tools that provide the [Sub-Saharan Africa] women access to lifelong learning and training, to productive assets, and to credit. Neglecting to give women access to these tools not only deprives them and their families of income, but reduces the skill-level of a nation’s human resource, limits national productivity, and bars a country from being competitive in the global market” (International Telecommunications Union, 2003).

While Sub-Saharan Africa women have historically assumed the role as both housewife and subsistence farmer, the reality is that these women have not had the opportunity to become a strong and viable part of modern economies in that region. However, this trend is changing with the exponential growth of information and communications technologies (ICT) globally, giving many historically underserved women access to computers, the Internet and other related technologies. This paper examines the integration of women in ICT in Sub-Saharan Africa. We do so by examining major bottlenecks to such integration from historical and contemporary perspectives. In discussing multiple projects, we demonstrate that these bottlenecks are being addressed through initiatives in the region, and how Sub-Saharan Africa women are getting integrated into the information age and becoming contributors to their countries’ socio-economic development strategies. We also employed interviews to understand women’s reactions to these initiatives. Our findings indicate that women were highly optimistic, embracing ICT as a practical mechanism for achieving entrée into the labor force. However they perceive significant structural barriers, such as gender discrimination in hiring practices, difficulties balancing ICT work with traditional roles in the home, and the lack of employment opportunities which would allow them to capitalize on their ICT skills. These findings suggest significant economic, technological, and social policy implications for ICT in Sub-Saharan Africa.

Keywords: Women, Information and Communications Technology, Information Society, Sub-Saharan Africa, Economic Development.

Introduction

How has the increasing availability of information and communication technologies (ICT) significantly improved gender equality in developing nations and empowered women? In this paper, we address this question by examining the extent to which the positive impacts enabled by ICT are realized by women in Sub-Saharan Africa (SSA), a region which is home to 33 of the 48 poorest nations of the world, and a region almost nonexistent in much of mainstream ICT research (see Appendix A). In a special issue of the *The Information Society* on ICTs in developing countries, Sahay and Avgerou (2002) rightly stated that ICTs “are expected to play a key developmental role” in poor countries. They further stated that “many see in these technologies the potential for turning around uncompetitive industries and dysfunctional public administration, and for providing unprecedented opportunities for the information-intensive social services, such as health and education.” In the same study, they lamented the acute lack of research which focuses on developing nations. This absence is extremely troublesome given that developing nations are home to 2/3 of the world’s population.

While ICT opens possibilities, such as increased opportunities for networking, consumption, information gathering and workforce participation, these positive outcomes are not assured. For instance, cultural and economic barriers which have traditionally limited education and economic participation for women may also limit their access to and use of ICT. Consequently, we consider not only the human agency of women, but also the social milieu in which their agency is to be exercised. This social milieu consists of diverse institutional spheres such as education, politics, employment

practices, domestic relations, healthcare and housing which directly shape women's life chances and ICT use.

In this paper, however, we focus on multiple projects and institutions which serve to redress the often intractable problem which has come to be known as the digital divide. The concept of the "digital divide" has been useful in articulating disparities in access to ICT, particularly in the developing world, and it has been used to inform the development of policies and programs to promote social inclusion and economic development. More recently, the digital divide discourse has broadened to include not only issues relating to access to ICTs, but also the capability and capacity in leveraging ICT for the advancement of historically underserved populations, the development of local content on an ICT platform, and the creation of appropriate policy measures to cultivate an enabling environment for using ICT (Isaacs, 2002).

In the developing country context, digital divide policies and programs typically utilize ICT to advance modernization, promote social and economic development, and improve of the status of women. Gender inequality tends to slow economic growth, according to Christiaan Poortman, World Bank Vice President for the Middle East and North Africa:

"No country can raise the standard of living and improve the well-being of its people without the participation of half its population. Experience in other countries have shown over and over again that women are important actors in development - to hold them back is to hold back the potential for economic growth" (World Bank, 2004).

There are several reasons for this link: Women can play an instrumental role in lifting their families out of poverty through labor force participation; Women are also more likely to invest their earnings in their children, and assume critical, life sustaining

responsibilities without which men and boys could not survive much less enjoy high levels of productivity. Thus, women's empowerment is important for determining a country's economic success and sustainability. The extent to which women and girls benefit from development policies and programs has a major impact on a countries' overall development success and growth prospects (World Bank, 2004, Hafkin and Taggart, 2001; Liu and Wilson, 2001).

It may be, however, that pre-existing gender inequalities will be reflected in the differential abilities of men and women to appropriate ICT. Perhaps those opposing empowerment of women will be more effective in imposing their views, and we will see a continuation or a worsening of gender inequality (Daly, 2003). Throughout the world, there has been much speculation as to the existence and causes of, and the remedies for a large gender gap in the ICT. Unlike women in the United States and other developed countries, women in most developing countries have had to deal with the kind of oppression that does not allow them to have the same goals and objectives sought by men or their female counterparts in more modern countries. In developing countries, traditions of male dominance are commonplace. Conventional roles of not only motherhood, but one's place in the broader society, impact how women engage in diverse practices such as education, career progression, public mobility and female-male interactions. Likewise, Sub Saharan Africa presents a classic case of a continent struggling with gender issues in and out of the workplace. According to Hafkin and Taggart's *Gender, Information Technology and Developing Countries Report* (2001), SSA warrants the greatest degree of concern. They observed that "*African women*

have the lowest participation rates in the world in science and technology education, at all levels” (p 29).

In what follows, we describe the longstanding barriers, such as access to education and traditional divisions of labor, which help to explain the low participation rates of women in ICT. Next, we describe our research approach along with data collected from women in SSA, in particular, Kenya. We offer our analyses on these data as well as implications for policies to further social, economic and technological inclusion for underdeveloped African countries.

Traditional Bottlenecks

The SSA region suffers from major gender inequalities in the work place in many disciplines, such as ICT (Mbarika et al., 2004). Even though ICT has become a global industry whose development may help to improve the quality of life in third world countries such as those of SSA, there are certain traditional bottlenecks that have hindered the SSA woman from participating effectively in the formal labor force. Because the women in this region have always been active in agriculture, local trade and other economic pursuits, a large majority of working women are found in the informal sector of the labor force (Hafkin and Taggart, 2001).

For instance, SSA women grow 80 percent of the food produced, and yet few are allowed to own the land they work. They work twice as long as men, often 15 to 18 hours a day, but often earn only one tenth of the wages of their male counterpart. Similar to their American counterparts, SSA women experience the gender gap along both economic and social context (Hafkin and Taggart, 2001; The Institute of Women’s

Policy Research, <http://www.iwpr.org>). According to the Dice 2003 Annual Salary Survey, the pay gap among U.S. women to men remains in the double digits at 11 percent. The pay gap among men and women exists in many countries for many jobs, and among SSA women, this disparity is even greater.

As SSA women attempt to move into contemporary forms of employment and finance, they face a variety of legal, economic and social constraints. For instance, it is often more difficult for women than men to gain access to ICT resources and credit. Agricultural extension and formal financial institutions are biased toward the male and against the female clientele, this despite women's major role as producers. In fact, some laws in many countries in this region still treat women as minors. In Zaire, for example, a woman must have her husband's consent to open a bank account. As a result, they are less well equipped than men to take advantage of the better income-generating opportunities that have emerged in the region. The positive side is that these factors have spurred the growth of women's groups and co-operatives that give loans, health care and educational initiatives, and provide other relevant services to women (See the Federation for American Women Educationalists¹, and FLAME²).

Education continues to be a major bottleneck to integration of the SSA woman into contemporary economies. Under colonial rule, access to education was restricted (Lewis, 1999) as African children were prepared for the roles deemed appropriate by the imperialist power brokers. Sons of chiefs had privileged access to schooling; a practice that served both religious and political motives that mainly benefited the imperialists. These practices set precedents that were subsequently followed by African

¹ <http://www.advanceafrica.org/index.html>

² <http://flamme.org/index.html>

families, thereby giving priority to the education of boys, leaving girls uneducated to later serve as housewives and child-bearing 'machines'. Prior to independence, few African children attended school beyond the primary education level (Lewis, 1999; Mbarika, 2004). By 1960, only 25 percent of primary-school-age children were in school, compared to twice that number in Latin America and Asia (Lewis, 1999; Mbarika, 2004). As a result, one of every two women in the region is illiterate. Even within the last decade, technical education necessary to gain computer and related ICT skills still remain elusive for many SSA women. Moreover, there is a very negative attitudes towards schoolgirls in scientific and mathematical fields (Liu and Wilson, 2001; ITAA Blue Ribbon Report, 2003). Therefore, science and technology education is lowest among women in SSA. Table 1 portrays the literacy rates for various regions around the world and shows that the education of women is lowest in SSA and Asia.

Table 1: Adult literacy rates by sex (% literate adults in the population aged 15 or over)

Regions of the World	1990			2000		
	Both	Male	Female	Both	Male	Female
Sub-Saharan Africa	47.3	59.8	36.1	59.7	70.2	49.6
Arab States	51.3	64.3	38.0	62.0	73.1	50.6
Latin America & Caribbean	84.7	86.4	83.0	88.5	89.7	87.3
East Asia	76.2	85.7	66.4	82.8	90.0	75.4
South Asia	46.1	59.1	32.2	54.1	66.2	41.2
Developed countries	96.7	97.4	96.1	98.5	99.0	98.0

Source: UNESCO report, 2001. p. 26

Technical education is a significant determining factor in who acquires desirable skills and becomes a valuable worker and who does not. SSA has very low percentages of women in technical and vocational education (TVE). Moreover, the

women who do enroll in TVE are often only prepared in such non-technical areas as secretarial work, garment manufacture, home economics and hairdressing. Men, however, are often trained in more economically productive fields such as mechanics and electrical and civil engineering. For example, according to a UNESCO report, girls in Namibia account for only 11.8 percent of the total enrollment in secondary technical and vocational education institutions. Most are in the garment manufacture and secretarial sectors as already observed. In Malawi, girls are hardly represented at all in primary and lower-secondary technical schools, making up an average of only 4.6 percent of such enrolments from 1989 to 1993 (Atchoarena and Delluc, 1999).

Parting with Tradition

Breaking the traditional role of the SSA woman presents a challenge to the government agencies, international development agencies, educational institutions and companies working to broaden the participation of women in ICT-related fields. However, it also presents many opportunities because, in spite of their oppression, women are still the major economic force in the region, partly because they constitute a larger part of the population and partly because of the sheer size of the female work force (Hafkin and Taggart, 2001; Liu and Wilson, 2001). While the dissemination of information has become a necessity in development throughout the world, the positive aspects of ICT have largely bypassed SSA women. The few women who have access to ICT typically hold clerical positions, which often do not lead to promotions up the corporate ladder. Therefore, there are very few women at the systems analyst,

managerial, or consultant levels. The few women who have reached these ranks are likely to have been trained privately by their employers. A few privileged ones have obtained their computing qualifications abroad, mainly in the USA, Canada, and UK. Thus, SSA women are grossly under represented in ICT management jobs, but rather are often limited to data entry and other lower paying and status positions. Further, a limited number of Kenyan women (less than 2%) study in science, technology and engineering curricula, according to Hafkin and Taggart (2001) in their study of ICT education among women in developing countries. It is apparent that the impact of ICT on women and the role women are playing in the ICT field is minimal as a result of the general status of women in the region.

It becomes important to give these women an opportunity to play a major role in the ICT sector because of the potential advantages for improving a broad array of life chances. For example, ICT can facilitate access to education and health care, minimize isolation, facilitate economic growth, alleviate poverty, and provide empowerment. Training women in ICT can help alleviate the acute shortage of ICT skills need by employers in SSA (Mbarika et al., 2002). Moreover, women have certain unique intrinsic skills such as business and management aptitudes, and people and communication skills that could prove useful towards the improvement of Africa's overall economic development.

Research Approach

Although the level of integration of women and ICT in SSA appears to be among the worst in the world, there has been major efforts to address this dilemma. Several

donor organizations are helping empower the women to become major players in the socio-economic development agenda of their countries in general, and in the development and use of ICT, in particular. However, the question remains, how have women responded to and been empowered by these programs?

To examine this question, we conducted a study comprised of two distinct parts. First, we present four major initiatives (programs) being offered by donor organizations. We selected these programs because they represent a diverse spectrum of institutional arrangements and approaches for alleviating the digital divide. In addition, these programs provided ICT access and training to African women.

In the second part of the study, we sought to understand what specific differences have ICT use made socially, economically, and politically for the African woman. This led us to conduct interviews with women who were the intended benefactors of the numerous digital divide initiatives. Using Cameron's (1992) notion of "empowering" research, we conducted interviews to solicit the views of the researched group about the phenomena under investigation. Women are part of the emerging digital environment, and it is, therefore, necessary to understand issues explaining how they are actually benefiting from and using ICT. It is equally important to understand the obstacles faced by women who seek to enter and thrive in ICT-related educational programs and employment fields. However, a particular danger associated with researching and writing about disadvantaged groups is that the researcher herself may contribute unwittingly to the oppression of the group by making statements which could be interpreted to support popular prejudices (Herring, 1996). Accordingly, we are careful to avoid generalizations that could contribute to the popular stereotypes about women in

developing countries. We also were cautious about romanticizing the technology and seeing only its positive and beneficial impacts.

We conducted structured interviews with thirty two women enrolled in the Bachelor of Business Information Technology program at Strathmore University in Kenya. All of the woman were in their 3rd or 4th year of study, and were enrolled in the “Social Impact of ICT” course. We constructed an interview guide based on a prior study of the conceptualization of ICT by African American women in the US (Kvasny, forthcoming) which was organized around the following themes: perceptions on gender and ICT, motivations and barriers to learning about IT, definitions of the digital divide, desired outcomes of computer training, and the value of the IT training and access. The themes and representative questions are included in Table 3.

Table 3: Research Themes and Questions to Study’s Participants

Themes	Representative Questions
Motivation for learning about IT	In your opinion, why do people participate in this IT program? What is at stake if you do not learn about IT?
Challenges & barriers to learning about IT	What barriers and challenges did you face today as you prepared to come to class? As you move forward to leverage the IT skills that you’ve gained, what roadblocks or challenges do you face?
Definitions of the Digital Divide	In your own words, what is the digital divide?
Attitudes / Beliefs about IT	What were some of your initial beliefs about computers when you first came to class? How have these initial beliefs changed as a result of your experience in this course?
Value of the IT training and access	How will you use your IT skills to improve your quality of life?

We therefore conducted written interviews in Kenya, an East African country. During the interviews, each woman was instructed to reply to the questions by anonymously writing her response in a booklet. The booklets were, then, sent to researchers in the US. This interview process resulted in an average of 4 pages of hand written responses for each interviewee (approximately 128 pages of interview texts). Thus, the interviews were highly structured with each woman receiving exactly the same questions in the same order. While there were no opportunities for follow up questions or clarification, we did consult with our colleague in Kenya to assist us in understanding terms and other cultural aspects which we found unfamiliar. For instance, the US researchers did not understand the term “attachment” (an internship). We also found that all of the women discussed gender but only one woman explicitly talked about her race. This led the US researchers to inquire about the demographics of the interviewees and racial / gender identity in Kenya. These discussions helped the US researchers to better understand the Kenyan context, which led to a more cultural sensitive analysis of the data.

Data Analysis

We employed traditional techniques for analyzing qualitative texts by finding illustrative themes which emerge across interviews (Glaser and Strauss, 1967; Miles and Huberman, 1994). Two researchers began by independently reading and coding five interview texts. The coding utilized a grounded approach that was not informed by a *priori* theory. Weekly meetings were held to discuss the interim analysis. The codes were synthesized and refined, and an additional batch of 5 interviews was selected for

analysis informed by the codes. This process was continued for two months until all of the interviews were coded.

Next, the texts with similar codes were typed and grouped together for more focused analysis. We began clustering low level codes into more abstract themes, and finding relationships among the higher level themes. During this phase of focused coding, the entire research team met to share our perceptions about the data, and to build consensus on the analysis. As we began to write up our findings, we presented the results to with colleagues from Kenya and Cameroon for member checking. It was important that we accurately captured the narratives, and provided a credible account of research.

Findings

In this section, we present the findings from both parts of our study. We begin by discussing four ICT projects to give a sense of the diversity of implementation models for taken on the challenges and opportunities found in the SSA context. Next, we provide the voices of the intended benefactors of these types of ICT programs as these subjects are often excluded.

PART 1: Ongoing Women-Based ICT Projects in Sub-Saharan Africa

Project 1: Cisco Systems/Cisco Learning Institute - The Gender Institute

Cisco Systems, Inc. is the worldwide networking leader of the Internet. Cisco provides a variety of solutions for connecting people and computer networks regardless of differences in geographical location or time. Cisco participates in several endeavors that focus on the value of education and the leverage of technology. Of the many

initiatives in which Cisco Systems is involved, one in particular targets women worldwide. The Gender Initiative was established in 2000 by the Cisco Learning Institute (CLI) and the Cisco Systems, Inc. As a public non-profit organization, CLI promotes educational research, the development of advanced technological learning tools, and the support of educational and charitable institutions and programs. CLI has partnered with several entities to assist in the development of educational and professional opportunities, and retention strategies for women in the field of ICT. Some of these partners include the Academy for Educational Development (AED) and the Institute for Women in Trades, Technology, and Science (IWITTS). Other partners include the Trust for the Americas, which supports the Gender Initiative in Latin America and the Caribbean, and the International Youth Foundation (IYF), which mainly targets Mexico, South Africa, India, and West Bank/Gaza (CISCO, 2004).

The goal of the Gender Initiative is to increase women's participation in the field of information technology by making ICT training and career opportunities more accessible. This is accomplished through the establishment of the Cisco Networking Academy Program, which trains students in such skills as designing and building networks and maintaining new and existing networks. The program is already established in the United States and has been tailored for women in other targeted regions of the world. Training at the academy is focused on providing women with the skills that will prepare them for advanced IT careers. Its scope allows the women to apply their knowledge in many different fields of interest, such as government services, education, business, and healthcare. Successful participants receive certifications such as the Certified Networking Associates (CAN) and the Certified Networking

Professionals (CNP), both of which are widely recognized in the IT industry (CISCO, 2004).

Because the SSA region has been slow in developing its computer networking capabilities, this training has the potential to allow women in the region to be more instrumental in the development of ICT initiatives within their own communities. Complete data on the long-term success of the Academy is unavailable as the project is still in its infancy. Data collection is done through a voluntary alumni website, also still under refinement. However, academies have been established in thirty least developed countries (LDC) throughout Africa, Asia, and the Caribbean. Approximately 15,000 students are currently enrolled in the academies. True to tradition, only 7 out of every 60 students enrolled are female (LDC Partners, 2004).

Project 2: World Bank Initiatives

The World Bank Group, one of the world's largest sources of development assistance, was founded in 1994 to focus on assisting some of the world's poorest countries. It provides both funding and expertise to organizations that wish to improve the living standards and conditions of developing nations. Specifically, the World Bank Group's Global Information & Communications Technologies (GICT) department combines private sector investment capabilities of the International Finance Corporation (IFC), the public sector advisory expertise of World Bank, and a global donor funded program called Information for Development (InfoDev). It serves as the World Bank Group's core department for ICT programs, projects, and policies directly aimed at helping women become more socially and economically independent in developing

countries such as the SSA region (Global ICT Department, 2004). Because the GICT retains expert ICT staff, it is able to identify and fund important and viable projects (CISCO, 2004).

One specific project is the implementation of the aforementioned Gender Initiative of Cisco Systems. The World Bank and InfoDev, along with other international organizations, partnered with Cisco to establish the Cisco Networking Academy Program. The training program, organized by the Economic Commission for Africa (ECA) in Addis Ababa, Ethiopia, is based on the curriculum of the Networking Academy. The course provides 280 instructional hours, takes six months to complete, and awards the participant the Certified Networking Associates certification on graduating (Cisco 2003). The program, the first of its kind, takes place at the Information Technology Center for Africa (ITCA) located in the United Nations Conference Center in Addis Ababa and is offered to both local and regional students.

The World Bank provided approximately one third of the funding required to begin this project. The first class graduated 26 women from 16 English-speaking countries. Cisco not only provided training to these women, but also trained and certified the ITCA personnel who would later provide training to the participants. The next training program began in March 2002 with a group of African women from French-speaking countries (CISCO Academy Connection, 2003).

Project 3: The Zimbabwe Women's Resource Center and Network (ZWRCN)

The Zimbabwe Women's Resource Center and Network (ZWRCN) is a non-governmental gender and development organization created in 1990 whose mission is

to help women in both the public and private sectors make informed decisions about political, economic, and social aspects of their lives (ZWRCN, 2003). ZWRCN describes its activities as "... gathering, interpreting, publishing, and disseminating rare and life-changing information in order to allow women to make informed choices about their lives and to influence government to implement gender-sensitive policies" (ZWRCN, 2003). Recognizing lack of information as a major hindrance to the development of women, ZWRCN empowers women by providing information on gender, women's health, and legal issues in Zimbabwe. ZWRCN has one comprehensive information department called Information Services, made up of four units: the Documentation Center, Internet Café, Gender and Development Talks, and Publications. Following are discussions of some of the activities undertaken by each unit to promote women's education and empowerment.

Documentation Center

The Documentation Center houses approximately 5000 documents, catalogued by theme, which provide information on gender issues such as violence against women, rape, land ownership, environment, politics, and decision making. The center's collection contains both published and unpublished material, which is maintained in a CDS/ISIS database. The center was formed in 1990 to help encourage research to fill information gaps on women's issues. The collection is composed of books, directories and files about various organizations, dictionaries, reports, theses, periodicals, newspapers, magazines, videos, CD ROMS, and fact sheets. Library members borrow documents for specified times at a reasonable fee (ZWRCN Documentation Center, 2003). The Center attracts journalists, army officers, researchers, students, policy

makers, and women's rights activists and serves as a rich resource on these issues (Information, 2003).

The Center partners with international organizations such as the Humanist Institute for Co-operation with Developing Countries (HIVOS), a Dutch non-governmental organization which operates on the basis of humanistic values. HIVOS contributed about 138.856 euros in 2001 to support programs of ZWRCN (Picture 2003).

Internet Cafe

ZWRCN supported the platform for action adopted at the 23rd session of the United Nations General Assembly in 2000 to recognize the increased opportunities that ICT create for women. The platform recognized ICT as tools for sharing knowledge, networking, and e-commerce activities. It posits that IT is no longer a luxury but an affordable means of disseminating valuable information on a timely basis. The ZWRCN's Internet Café project is the first initiative dedicated to training women locally to use the Internet and email to communicate, search for needed information, and enjoy the benefits of being part of a global online community (Internet 2003). Some of the activities undertaken by the Internet Café are:

- Provide email and Internet access to women and girls at affordable costs.
- Provide training to women and girls to make information technology more accessible.
- Disseminate information on CD-ROMs and other formats to reduce dependence on the Internet.
- Communicate with other women's groups, networking, online chat and the exchange of critical information on health, economic, and legal issues affecting women.

- Provide training for women in finding tools and resources on the Internet.

ZWRCN takes a proactive role in empowering women and girls with information technology. The first step is the recognition of the need for training women and providing them with various training courses such as:

- Introduction to Computers
- Email and the Internet Research
- Training to select software programs for various uses

At the Center, rural women are taught to use word processors, set up email accounts, search for information on the web, and to design their own business cards and brochures through printing services. This program encourages women to learn at their own pace in groups and individually.

Gender and Development Talks

ZWRCN holds monthly Gender and Development (GAD) talks that aim at collaboration between individuals and institutions to address gender issues. These discussions are lead by local, regional, and sometimes international speakers who are invited to facilitate controversial issues affecting SSA women. Good examples of topics covered are gender budgeting and the HIV/AIDS and how it affects women (Information Technology Association of America, 2003).

Publications

ZWRCN has taken different approaches to communication and the flow of information between women in the grassroots and women organizations. One useful method is through published “fact sheets” on politics, law, and other issues, which are

available in the main local language translations. These fact sheets have encouraged more women to get involved in political and economic issues so they become better informed. The flagship of ZWRCN is the quarterly magazine called *Woman Plus*. This magazine covers all of the themes and the latest news (Information Technology Association of America, 2003).

Project 4: Women Connect!

The Women Connect initiative is a project that aims to empower women through effective communication strategies in media, information technology, health, and networking among women owned nongovernmental organizations (Mukenge, 2002). Launched in January 1999, Women Connect aided women NGOs specifically in Uganda, Zambia, and Zimbabwe (Mukenge 1). ZWRCN works with Women Connect to train women at dissemination workshops (Mukenge 2). Women Connect also helps to set up IT facilities in rural areas. Its mission is to provide vital health-related information to rural women and to encourage them to share their problems or concerns regarding health issues with other women groups or networks. For this purpose the women are given training in email, Internet access to download health information that meet their particular needs (Mukenge, 2003; Women Connect, 2003a). This initiative is undertaken by sponsorship from The Pacific Institute for Women's Health (PIWH), The Bill and Melinda Gates Foundation, The University of Southern California (USC) Annenberg Center for Communication, and Global Fund for Women (Mukenge 3).

One of the major objectives of Women Connect is to help women NGO's to use ICT towards the advancement of women's health. The Small Grants program is a

project undertaken by Women Connect to give technical assistance to NGOs. Case in point, twenty-six women's groups conducted projects in Zimbabwe, Zambia and Uganda. The area of focus of the projects was media or ICCT. Eight projects focused on email, Internet and ICCT training for their staff. Five projects were related to development of websites and two other projects were related to establishing Internet cafes and IT training to women's groups and women parliamentarians. Nine organizations implemented multi-media campaigns in rural community newsletters. Most of the projects provided information about women's health, particularly HIV/AIDS, cancer, STDs, and safe sex (Women Connect, 2003b).

In summary, the aforementioned ICT projects illustrate modestly successful initiatives by foreign (Western) donor organizations to promote use of ICTs among African women. However, we saw the need to gather a richer set of data to better understand the intended beneficiaries of these technologies. We sought to let voices of the SSA women speak. In the next we present additional findings based on interviews with 32 women based in an East African (SSA) country, Kenya.

PART 2: Women's Responses to ICT Initiatives

As detailed in the previous section, many ICT initiatives have been developed to assist women in SSA in learning about ICT and entering ICT-related professions. In this section, we begin by discussing African women's motivations for participating in these ICT initiatives. Next, we discuss the women's expectations for leveraging ICT to improve their life chances. We conclude by examining the degree to which the women felt empowered to realize these expectations.

Motivations

Nearly one-third (10 out of 32) of the women participated in the ICT educational program at Strathmore University because they perceived substantial job opportunities upon graduation. The ICT sector was described as a new and “*an upcoming field*”, and as “*a new field in Kenya and a very dynamic field which affects all aspects globally*”. They also believed that there were few ICT professionals because the training was not widely available. For instance, one woman remarked that “*not many people in Kenya have this sort of information [and] this is because currently in Kenya there lacks professionals in this field*”. Not only were jobs seen as plentiful, they were also seen as well paying. “*I think IT is a field that will provide me with a means of earning good income in future*”. “*IT programs have proved to be more well paying careers than other technical careers in the country*”.

Three women stated that they were attracted to ICT programs based upon the content of the curriculum and the prestige of the institution providing the learning opportunity. Many remarked specifically about acquiring skills which would enable them to integrate ICT into business organizations. For instance, “*the integration of business in the IT program made it even more attractive for me*”. “*This course is not a technical course. I am not interested in details about technologies...I am interested in how I can use IT more efficiently and a broader view.*” The barriers to entry were also low, so women felt that were able to enter and succeed in the coursework. “*The entry grade (requirements) are low (C+), anybody can get a C+, and Bs in English and*

mathematics". Another woman remarked that *"[i]t is in Strathmore, Strathmore has a good name (reputation)"*.

Thirteen of the women were motivated by the very instrumental desire for career success. They wanted to be more competitive in the job market, and this ICT program provided opportunities to *"get a qualification that enables them to work in a relatively new area of work in Kenya"*. Some women were more entrepreneurial, and saw ICT as a way to start their own business. *"Since I have the basics of IT and my course provides a grounding I can build up on my own, I could start my own enterprise using this knowledge"*. For some women, business ownership was once a dream that now can potentially be achieved. *"Given that I would like to learn IT so that I run my own IT firm in future. If I do not take this chance to learn IT, then my dream will not be accomplished"*.

However, the majority of the women (23) were motivated to attend the ICT programs for more intrinsic and political reasons. Fifteen women cited reasons of personal challenge. *"It is a challenge that they believe they can meet and it is a field that greatly stimulates the intellect."* Nine were simply motivated by interest. *"I chose to do this course because I had an interest in IT, which started to develop when I was in high school."*

Thirteen women were motivated by perceived gender inequalities. For them, ICT offered an opportunity for overcoming oppression and achieving parity with men. *"Gone are the days when there were specific jobs/careers for men and women. Women now want the challenge."* *"More and more women want to play an active role in their society and in the world...women want to be involved in the ICT sector (not to be left behind by*

their male counterpart)". ICT represented a vehicle which would enable them to engage in an activity which has been historically perceived as a male domain. *"The simple reason why women participate in this IT program is because men do the same thing. Equality is something that women have all been fighting for and have accomplished their goal. If a man can participate in IT, why shouldn't a woman do the same thing?"* Women not only want to do the same thing as men, they want to adopt ICT *"because it is beneficial to them too as much as it is to men... it will enable us as women to compete fully with men in jobs"*. There was also the belief that women in ICT-related professions are *"able to successfully represent other women in our country"* and *"able to adapt to contribute to society by raising awareness about what IT can do for a nation"*. Thus the training provided immediate benefits to the recipient, but also external benefits to other women and the entire nation. These were pioneering women who were not content to *"stick to the stereo type that certain jobs are for women"* . They wanted to demonstrate that *"they are clever enough to prove that they can master a tough course like IT and do well"*.

Expectations

All of the women that we interviewed had expectations for the program which centered on very practical and production oriented uses of ICT and hands on training. Theory was greatly devalued while practical experience was prized. *"More exposure to IT. More of practical and less of theory"*. The women desired a strong technical competency in a wide variety of skills. *"I expected to emerge as an IT expert with knowledge of the foundations and development of technology. I expected to be up-to-date on the technology trend and be able to manage information systems, develop*

them, code, implement, manage and have ICT at my fingertips". *"I also expected that I would have acquired managerial skills to be able to manage an assigned project in IT field."* However, the expectations reached beyond the scope of the training. For instance one woman remarked, *"I had imagined that at the end of it all, I would actually be able to create a computer myself"*.

The practical orientation extended beyond the notion of skills. Overall, a dozen women stated that they expected to easily gain employment upon completion of their training. *"It will guarantee an instant job."* Others were a tad more conservative, and discussed their desire to apply their skills in the service of an employer. *"When I enrolled for it I hoped that by the time I would be graduating, I would be a competent professional able to integrate my IT knowledge into a business environment"*. The women, however, were not totally devoted to their employers needs. They also saw a space to meet their own personal needs. For instance, one woman discussed *"how I could use them (various concepts of IT) in the future to accomplish various goals both personally and for whichever organization I may find myself working in."*

In terms of the actual course content, women tended to focus on the technical skills such as programming. *"I expected ...more in-depth coverage in areas such as programming, system development and web design, etc."* Two women noted that they expected the courses to be difficult. *"My expectations were that it would a challenging course."* *"I expected it to be very difficult and demanding."*

Degree to which Actual Training Met Expectations

The women were overwhelming positive in their assessment of the training they received. *"The training met my expectations in terms of improving my IT skills and also*

my management ones.” The two most positive aspects were the practical lessons (“*I would not change the practical lessons, lab sessions, projects*”) and the industry and community internships (“*Attachments (industrial attachment), give us chances of employment after completion of the course.*”) The managerial focus was also appreciated. (“*I would not change*) *the business aspects of it, the management part.*” Women also valued the technical skills they acquired, “*It met the expectations where different units touched on different area of IT like networking, programming, web design.*” Ethics and humanities helped women to develop a well rounded appreciation for the role of ICT in organizations. (“*the aspects I would not change are*) *the humanity electives and ethics classes.*”

Eleven women commented on the learning environment. They felt a sense of community in the classroom and enjoyed “*the way the class members all contribute ideas*”. Tutors were included in their learning community. “*I would not change the tutorial system where a student gets to talk to a personal tutor. It’s quite good.*” “*The school has been able to adequately provide the necessary things especially the software and hardware*”, so the women had sufficient access to technology resources. The one area, however, that the women most wanted to change was the theoretical basis of the training. These were women looking for a career, and had little time revel in theoretical discussions; they wanted the bottom line. “*I think the training is too theoretical and applications of it in an actual working environment is difficult.*” They wanted hands on training in which they would learn about some of the intricacies of the computer. “*I would introduce a technical class not examinable but a period where students go to the lab and open up a computer*”. The training was also perceived to be

broad but shallow. *“It is so wide that it only gave basics of the IT world which proved to be disastrous out in the field.”* The women desired very specialized, in depth knowledge of ICT. *“Introduce specialization in later years, say if one likes the field of networking, then they can specialize in it.”* Some women so privileged the technical aspects, that they saw ethics and the more interpersonal aspects as unnecessary. *“Reduce workload by getting rid of subjects such as ethics where we learnt about the mind and soul and the will.”* *“I didn’t expect to learn courses such as Ethics. In my opinion, this time should have been allocated to programming practice.”*

Finally, the women provided their observations on the administrative components of the program. The fee structures were perceived as being too high, especially when the university was receiving donations from firms. *“Lots of financing in seeking attachments yet a lot of fee. Actually a very high fee is charged in the process.”* The course size was seen as large, and inhibiting for personalized attention. *“Reduce the number of students in one class to about 30 for more personalized service, as compared to 80 students each lesson.”* The quality of lecturers was also scrutinized. *“Get lecturers who are able to give real life examples from something they have experienced out there in the field and not just something they have learnt from a textbook.”* One woman had an incompetent instructor who was terminated in the middle of the term. *“Termination of lecturers in the middle of a semester. Very very bad!”*

Analysis and Discussion

Women in developing countries are far behind compared to women in developed countries with respect to ICT. More than fifty percent of women in SSA countries are illiterate. Although educational opportunities are becoming increasingly available, only those from privileged families are able to take advantage of these opportunities. This trend is likely to continue as long as the women are not receiving the education and higher paying jobs comparable to their male counterparts.

Although the number of computers in the region has increased dramatically since 1990, just a small percentage of women (and men) have the skills to use them effectively. In many instances, organizations using technology hire foreign workers, who lack the basic understanding of the cultures of the region and therefore cannot design useful systems. The time is now for women to become involved in the ICT sector of the various countries of SSA. Just as technology has found its way into the SSA region, so have educational opportunities for women, as described in the projects presented. Several organizations have recognized that women in particular are at a greater risk of being left out of the economic and social opportunities that technology can offer, a situation even more pronounced in countries where women already fall behind in social and economic prosperity. In response to this need, Cisco, the World Bank, and other organizations have made valuable contributions in the region. While these programs have been successful in raising ICT awareness in SSA, these endeavors are far from reaching women in critical masses. To help achieve this goal, these initiatives must take advantage of training modules such as “train the trainer” so that women who complete the available training can return home to teach women in their home countries who cannot travel.

While much is being done to improve the skills and awareness of women, this knowledge will have limited impact without complementary structural changes in employment practices. The women in the study noted severe limitations in leveraging their ICT skills in the labor market. Through policies such as financial incentives and gender sensitivity training, employers in the region should be encouraged to hire female graduates of these ICT programs. Given a leveled play field, women in the SSA region will have increased opportunities at entering ICT careers.

It is also imperative that the health and social welfare of women are included in these initiatives, such as those incorporated by the Gender Initiatives by Cisco Systems, World Bank, the ZWRCN, and Women Connect. Although they are off to a positive start, the women in these countries need both more support and more action. Much of this support will come in the way of public policy, national infrastructure and education beyond narrow definitions of ICT access (Payton, 2003) in the developing countries' context where such access is still limited to the urban areas (for the urban "elites"). Some African countries have started to address this dilemma by granting tax relief for investors that establish businesses in rural areas. Other African countries such as Cameroon have enacted a duty-free policy on all computer imports. Such a move has and will continue improve the numbers of women that acquire and use ICTs. Further, special incentives are provided for women to establish public Internet cafés. In fact, in some African countries like Tanzania, most of the Internet Café owners are female (Mbarika et al., 2004).

Conclusion

Gone are those days when the Sub-Saharan African woman was only good for cooking, cleaning, and child bearing. With the penetration of cable and satellite TV, in addition to ICTs as discussed in this study, African women have become a strong part of the social, political, and economic structure of the region. In fact there are now many female government ministers and many female CEOs in several African countries. Many African women are entrepreneurs and have access to just any profession that was historically reserved for men. Even more, many African countries have governmental ministries dedicated to women affairs and that consistently address issues of gender equality. Therefore, the old stereotype the West keeps portraying about African women being treated as “second class citizens” is just not true. African countries have gone a long way to create a platform for women to “be what they want to be.”

Based on this platform, our paper examined the integration of women in ICT in Sub-Saharan Africa using both primary and secondary data sources. We used multiple projects to demonstrate that the previously mentioned African gender stereotypes have been and continue to be addressed through ICT initiatives in the region. We further illustrate how Sub-Saharan Africa women are getting integrated into the information age and becoming contributors to their countries’ socio-economic development strategies. Based on field studies that involved interviews we illustrate that women were highly optimistic, embracing ICT as a practical mechanism for achieving entrée into the labor force. As countries within the region continue to encourage such initiatives the African information society will only continue to grow and will tremendously contribute to narrow

the North-South digital divide, and provide an even better platform for sustainable socio-economic development of the region.

Appendix A

Sub-Saharan African countries are located south of the Sahara Desert in Africa. In the map below (Figure 1), Sub-Saharan Africa consists of all those countries south of the Tropic of Cancer (latitude $23\frac{1}{2}^{\circ}$ N).



Figure 1. Map of Africa
Sub-Saharan Africa is south of the Tropic of Cancer ($23\frac{1}{2}^{\circ}$ N)

Works Cited

Atchoarena, D. and Delluc, A. (1999). *Revisiting Technical and Vocational Education in Sub-Saharan Africa: an Update on Trends, Innovations and Challenges*. UNESCO: International Institute for Educational Planning.

Cameron, D. (1992). "Respect, please!": Investigating Race, Power, and Language." In Cameron, D, Frazer, E., Harvey, P., Rampton, M.; and Richardson, K. (eds.), *Researching Language: Issues of Power and Method*. London: Routledge, pp. 113-130.

CISCO (2004). Retrieved from the World Wide Web (November 2004). <http://gender.ciscolearning.org/>.

CISCO Academy Connection (2003). Retrieved from the World Wide Web (April 2003). http://cisco.netacad.net/public/news/success_stories.

CISCO (2003) Retrieved from the World Wide Web (April 2003). <http://www.uneca.org/itcz/cnra/index.htm>.

Daly, J. (2003). "ICT, Gender Equality, and Empowering Women", Essay prepared for the Development Gateway. Retrieved from the World Wide Web (November 2004). <http://www.developmentgateway.com/node/133831/sdm/blob?pid=5233>.

Glaser, B.G. and Strauss, A.L. (1967) *The Discovery of Grounded Theory*, New York, Aldine.

Global Information and Communication Technologies Department (2003). Retrieved from the World Wide Web (November 2004). <http://info.worldbank.org/ICT/index.cfm>.

Hafkin, N. and N. Taggart (2001). "Gender, Information Technology and Developing Countries: An Analytic Study", Academy for Education Development for the Office of Women in Development, U.S. Agency for International Development.

Hermida, A. (2003). *Africa's Tech Warriors*. Retrieved from the World Wide Web (April 2003). <http://news.bbc.co.uk/2/hi/technology/2539327.stm>.

Herring, S. (1996). Linguistic and Critical Analysis of Computer-Mediated Communication: Some Ethical and Scholarly Considerations. *The Information Society*, 12(2), pp. 153-168.

Isaacs, S. (2003). "IT's Hot for Girls! The Impact of ICT on Women and Girls in Africa", United Nations, Division of the Advancement of Women, Expert Group Meeting on Information and Communication Technologies and their Impact on and Use as an Instrument for the Advancement and Empowerment of Women", Seoul, Republic of Korea. Retrieved (November 2004) from the World Wide Web.

<http://www.un.org/womenwatch/daw/egm/ict2002/reports/Paper%20by%20Isaaks2.PDF>

Information Technology Association of America (2003). Retrieved from the World Wide Web (May 2004). <http://www.itaa.org/>.

ITU- International Telecommunications Union (2003). *Preparing the Way Gender in the Summit*. ITU Telecommunication Development Bureau, Geneva: ITU.

Kvasny, L. (forthcoming) "Let the Sisters Speak: Understanding the Information Technology from the Standpoint of the 'Other'", *Data Base Advances in Information Systems*.

LDC Partners (2004). Retrieved (November 2004) from the World Wide Web. <http://cisco.netacad.net/public/index.html>.

Lewis, S. G. (1999). Education in Africa, in *Encarta Africana*. <http://www.africana.com>

Liu, J. and D. Wilson, (2001). Developing Women in a Digital World. *Women in Management Review*, 16(8), pp. 405-416.

Mbarika, V. (2004). TeleEducation in Sub-Saharan Africa: A Breakout Approach to Sub-Saharan Africa's Education Dilemma. *IEEE Technology and Society*, 22(4), pp. 20-26.

Mbarika, V., Kah, M., and Kieta, M. (2004). The Diffusion of Cyber Cafés in Sub-Saharan Africa: Country Case Studies. *Proceedings of the Information Resource Management Association (IRMA) International Conference*, New Orleans, LA, May 2004.

Mbarika, V., Raymond, J., Byrd, T. A. (2002). Growth of Teledensity in Least Developed Countries: Need for a Mitigated Euphoria. *Journal of Global Information Management*, 10(2), pp. 14-27.

Miles, M. B., and Huberman, A. M. (1994). *Qualitative Data Analysis: A Sourcebook of New Methods* (2nd edition). Thousand Oaks, CA: Sage.

Mukenge, M. (2002). *Women Connect! – Eastern and Southern Africa*. The Pacific Institute for Women's Health (PIWH), June 12 2002.

Payton, F. (2003). "Rethinking the Digital Divide", *Communications of the ACM*, 46(6), pp. 89-92.

Sahay, S., and Avgerou, C. (2002). "Introducing the Special Issue on Information and Communication Technologies in Developing Countries". *The Information Society*, 18(2), pp. 73-76.

Women Connect (2003a). Retrieved from the World Wide Web (November 2004).
<http://www.women-connect.org/about-t.htm>.

Women Connect (2003b). Retrieved from the World Wide Web (November 2004).
<http://www.women-connect.org/smallgrants.htm>.

World Bank, 2004, "Gender and Development". Retrieved from the World Wide Web (November 2004).
<http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTGENDER/0,,menuPK:336874~pagePK:149018~piPK:149093~theSitePK:336868,00.html>.

ZWRCN (2003). Retrieved from the World Wide Web (November 2004).
<http://www.zwrcn.org.zw/about.html>

ZWRCN Documentation Center (2003). Retrieved from the World Wide Web (November 2004). <http://www.zwrcn.org.zw/docentre.html>.