Women and Information Technology in Sub-Saharan Africa

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ABSTRACT

"ICTs are important tools that provide the [Sub-Saharan Africa] woman 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 the role of the Sub-Saharan Africa woman as both housewife and subsistence farmer are recognized worldwide as priceless (Obbe, 1980), 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 globally, giving much access to computers, the Internet and other related technologies. This paper examines the integration of women in Information and Communications Technologies in Sub-Saharan Africa by examining major bottlenecks to such integration from historical and contemporary perspectives. Using multiple case studies, we demonstrate that these bottlenecks are being addressed through gender initiatives in the region and that Sub-Saharan Africa women are getting integrated into the information technology age and becoming contributors to their countries' socio-economic development strategies.

'TRADITIONAL' BOTTLENECKS

Many regions of the world, both developed and developing, suffer from major gender inequalities in the work place in many disciplines (Huyer, 1997). One particular discipline that has this problem is the Information and Communication Technologies (ICT) area. Even though ICT has become a global industry whose development is necessary in third world countries such as those of SSA, there are certain traditional bottlenecks that have hindered the SSA woman from participating effectively in that discipline.

Because the women in this region have always been active in agriculture, local trade, and other economic pursuits a large majority of them is found in the informal sector of the labor force. SSA women grow 80 per cent 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 (Odedra, 1992). Most 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 and provide other relevant services to women (Mukenge, 2003; Alloo, 1991).

A second 'historical' bottleneck to integration of the SSA woman in ICT is education. 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 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, 2003). 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, 2003). As a result, one of every two women in the region is illiterate (see table 1). Even within the last decade, technical education necessary to gain computer and related IT skills still remain elusive for many SSA women. Moreover, there is a very negative attitude towards schoolgirls in scientific and mathematical fields (World Bank, 1988). But there is evidence that girls may have developed attitudes that do not allow them to pursue technical careers such as IT (Ndede-Amadi, 2003). Therefore it comes as no surprise that 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.

Technical education is a significant determining factor in who acquires the right 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, on the other hand, are often trained in more economically productive fields such as mechanics and electrical and civil engineering. For example, according

Table 1: Projected 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. 2

to a UNESCO report, in Namibia girls account for only 11.8 percent of the total enrollment in secondary technical and vocational education institutions. 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).

WOMEN AND IT EDUCATION: A CASE STUDY

In a class that one of the authors taught at Jomo Kenyatta University of Agriculture and Technology (JKUAT) in Kenya in the fall of 2003, called Selected/Advanced Topics in Information Technology, that pooled together Computer Science (CS) and Mathematics (Math) students, only 3 of the sixty students were women – one CS specialization and two Math specializations. On opening up this issue for discussion, the students made the following observations:

- Getting admission into such programs as CS is a performance issue because all high passes receive admission into government universities first then specializations are selected subsequently - so anyone with the requisite qualifications, whether male or female, has the opportunity to choose (or not to choose) CS as a specialization at JKUAT or any other government university offering that specialization. Those with poor passes do not have that option.
- Performance is a major factor in the selection process that left women out of these programs. For example the Math students observed that 119 students were admitted into the Math specialization 3½ years prior, 50 of who were female. Students were not required to declare a specialization until the end of their second year in the program. At that point an exam administered to reduce the intake through a process of elimination allowed only two of the 50 female students to stay on in the Math specialization.
- The students argued very strongly that the girls are not academically inferior, quite to the contrary many girls may in fact be superior academically to boys. They attributed such poor performance on factors such as lack of motivation. Many girls, they argued, do not feel the pressure to perform well in higher education and generally nurture the attitude that they do not need to work hard because they are not the potential sole providers for their families.
- Most girls are misguided with respect to the realities of careers and need much counseling from mentors, other women who have joined the work world.

The author learnt many things from these students, including that when it comes to the IT related field, traditional/customary norms may be responsible for weeding women out – such as choosing Biology over Physics because of orientation away from hard sciences. Because CS/IT is a relatively new discipline, many students entering the university over the last few years may not have considered preparing for it by taking the prerequisite courses such as Physics (Ndede-Amadi, 2003).

PARTING WITH TRADITION

Breaking the traditional role of the SSA woman presents a challenge. The male-dominated ICT field faces this formidable task 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 (Alloo, 1988). While the dissemination of information has become a necessity in development throughout the world, the positive aspects of IT have bypassed SSA women. The few that have access to IT 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 who have reached these ranks are likely to have been trained privately by their employers in various areas of IT while a few privileged ones have obtained their "computing" qualifications abroad, mainly in the USA, Canada, and UK (Odedra, 1992). It is apparent that the impact of IT on women and the role women are playing in the IT area 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 IT sector because of the advantages associated with IT. For example, IT can facilitate access to education and health care, minimize isolation, facilitate economic growth, alleviate poverty, and provide empowerment. Training women in IT can help alleviate the acute shortage of IT skills 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 (Alloo, 1988; 1991; 1994).

Although the level of integration of women and IT in SSA appears to be among the worst in the world, there have been major efforts to address this dilemma. Several international development agencies and women organizations have made strides in empowering 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. The next section of our study looks at some case studies on such efforts.

THE INTEGRATION OF WOMEN IN ICT IN SUB-SAHARAN AFRICA - CASES

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

Cisco Systems, Inc. is the worldwide networking leader of the Internet. Of the many initiatives in which Cisco Systems is involved, one in particular targets women worldwide. Cisco Learning Institute (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 IT. The Gender Initiative was established in 2000 by the CLI and the Cisco Systems, Inc.

The goal of the Gender Initiative is to increase women's participation in the field of information technology by making IT training and career opportunities more accessible, or to advance their 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 (CNA) and the Certified Networking Professionals (CNP), both of which are widely recognized in the IT industry (Activities 2003).

In addition to the training provided by the Cisco Networking Academy Program, CLI conducts extensive research in the development of strategies and best-practice profiles that focus on the training of women. Special recruitment and retention strategies have been developed to promote successful integration of women in the classroom and beyond. Some of these strategies include establishing all-female classes, identifying female instructors and mentors for participants, and offering reduced fees for women who enroll in the program. Countries that have made impressive gains in this realm include Botswana, Lesotho, Namibia, Congo, and Zimbabwe, while other countries such as Nigeria, Rwanda, and Uganda are only now beginning to make progress in that direction. Unfortunately countries like Chad, Niger, and Bukina Faso

are not progressing much at all in the advancement of women's education (Gender 2003). 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 IT initiatives within their own communities.

Case 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.   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 2003).

The World Bank and InfoDev, along with other international organizations, partnered with Cisco to establish the Cisco Networking Academy Program (Initiative 2003). The course awards the participant the Certified Networking Associates certification on graduating (Cisco 2003). 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   (Success 2003).

The World Bank has provided funding to a myriad of organizations whose focus is the establishment of a core group of women in the SSA region with the objective of integrating IT into the lives of women in the region, including the prioritization of IT development. When successful, such projects give the women access to Internet technology, which enable them to exchange ideas, explore international women issues and advocate on their own behalf based on information and ideas obtained through connections with other women around the world.

A further focus of this academy is to train women who, upon establishment of academies in their own country, will already be prepared to become trainers to other women (Success 2003). A case in point is that of Naula Kebba, a 37-year-old Ugandan native who gave up her career as an accountant to explore the world of information technology. She attended training at the Uganda Communications Institute, and then returned to her home to begin a technology consulting business.

The availability of training at both the local and regional levels allows participants to meet others from different areas of the region and opens up forums for discussion of development issues specific to women from across the region. These opportunities have enabled women like Kebba and others to become role models for aspiring females in their countries (Hermida 2003).

On the World Bank website, there is information available to guide project developers in successfully incorporating gender issues in their project plans. Practical examples of projects that have included gender components and achieved relative success are also available. For example, there are techniques suggested for making gender a priority in a project, as well as ways to measure the inclusion of gender in project data. For any organization wanting to submit a project to the World Bank for potential funding, these techniques are an excellent tool for helping to secure funds dedicated to helping women in impoverished areas of the world (Practical 2003).

Case 3: The Zimbabwe Women's Resource Centre and Network (ZWRCN)

The Zimbabwe Women's Resource Centre 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). 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 Centre, 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.

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 Centre, 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 (Internet 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 the themes and the latest news (Information 2003).

Case 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 (About 2003). 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. For this purpose the women

are given training in email, Internet access to download health information that meet their particular needs (About 2003). 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 IT 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 IT. Eight projects focused on email, Internet and IT 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, sexually transmitted diseases (STDs), and safe sex. (Small 2003).

CONCLUSION

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 (World Bank, 1988; 1989). Although educational opportunities are becoming increasingly available, only those from privileged families are able to take advantage of these opportunities. The low social status of the majority of these women interprets into a lowered economic status as well. This trend is likely to continue as long as the women are not trained for higher paying jobs comparable to their male counterparts.

Although the number of computers in the region has increased dramatically since 1990, very few women 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 IT 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 case studies presented. Several organizations have recognized that women in particular are at a greater risk of being left behind and 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. Cisco Systems has partnered with several organizations such as the World Bank Group in an attempt to bring technology to the LDCs of the world.   The implementation and spread of the Cisco Networking Academy Program has been successful. However 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.

Given a leveled play field, women in the SSA region will have increased opportunities at entering IT careers. It is 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.

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 23½° N) .

Figure 1. Map of Africa
Sub-Saharan Africa is south of the Tropic of Cancer (23½° N)
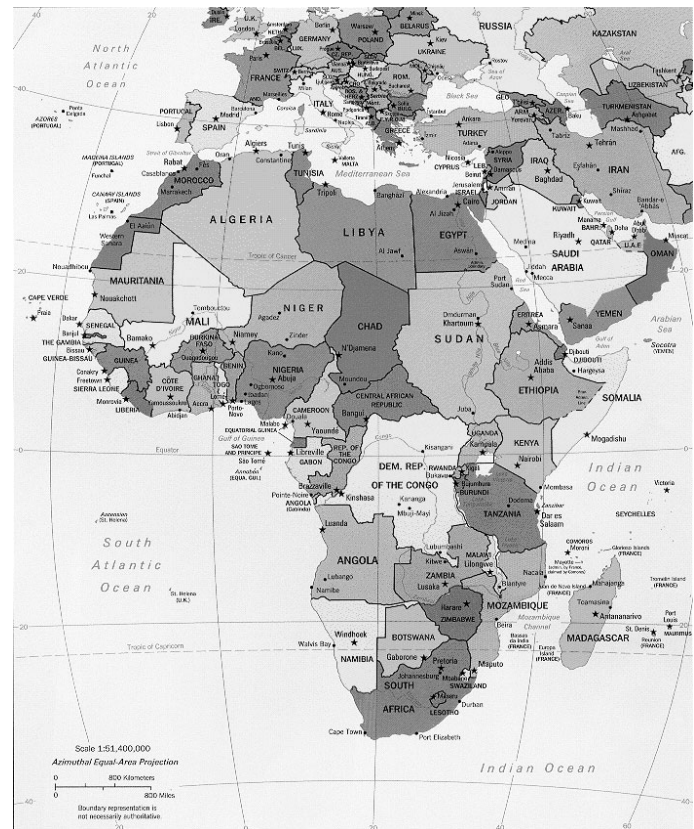
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FOOTNOTES

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Related Content

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