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Introduction

The Information Communication Technologies (ICTs)[1] discourse has focused on new ICTs and marginalized the old. Specifically in the past decade, the importance of traditional mass media (radio, television and print media) as a communication tool for development has received less attention in the communication and development field (Ogan et al,2009). In the ICTs for Development (ICT4D) literature[2], new technologies such as the Internet have been touted to address gender issues in the developing world; as a significant medium for leapfrogging development (Knight, 1995), and as an important mechanism for achieving the targets for the United Nation's Millennium Development Goals (MDGs)[3]. I make two major arguments in this paper: a theoretical and an empirical one. The ICT4D discourse has adopted the modernization paradigm in its analysis of ICTs as a panacea for development. For countries in sub-Saharan Africa (SSA), the focus has been on women who are mostly marginalized by ICTs because they tend to be non-literate, poor and live in rural areas. The ICT4D discourse uses the language of empowerment as the goal for development; however, the discourse depicts women in SSA, as passive recipients of ICTs. I argue that although majority of women experience barriers to using new ICTs, to make these technologies effective and relevant, the goal should center on its active use by women, not just on access. Indeed when we take an old communication technology, such as radio, there have been numerous case studies and historical accounts of it being actively used by non-literate, poor and rural women in SSA. The introduction of ICTs to women in SSA, mainly through Telecenters[4], has focused on ICT access as the definition of empowerment. I critique this rhetoric and call for a postcolonial approach that views the disadvantaged in society, as active agents for change. The push for radio in this paper reiterates the significance of using media to create indigenous knowledge, and in the process empower local communities to

actively frame their own messages in development agendas. By drawing on the postcolonial paradigm with its emphasis on multiplicity, and not a single message from the top, this paper advocates for the use of communication technologies to achieve bottom-up development.

The second argument relates to the empirical evidence which shows that ICT use is low in SSA. For the few that access them they tend to be from a relatively small group: the educated, middle-class and those who reside in urban areas. Data provided in this paper show that majority of women in SSA live in rural areas, are non-literate and poor and have limited access to ICTs. On the other hand, radio, an alternative and older form of communication is widely used in SSA by majority of women. There are several reasons why radio is widely used. First, it is an oral medium, which is amenable to cultures of SSA, that tend to be oral cultures and where majority of the population is non-literate. The data provided in this paper shows a low level of literacy among women in SSA. Second, radio is aimed at local audiences and therefore broadcast in local languages. Language on the Internet tends to be European languages, and require some formal education for women to access. This also serves as a barrier to the use of ICTs since a substantial percentage of women in SSA cannot read or write a sentence in English. Finally, content on the radio is developed within local communities in contrast to ICTs where content is developed globally and tend to be less relevant to the needs of local communities. Consequently, radio has been utilized as a bottom-up approach to addressing development needs, while ICTs have been utilized in a top-bottom manner. In addition, as a non-disruptive medium (it doesn't disrupt women's daily tasks at home and at the workplace), radio can be listened to as a secondary activity, while engaged in other activities, and it is also relatively cheap. Even among traditional technologies, the most attractive features of radio outlined earlier are lacking in television and

print media. It is therefore not surprising that radio remains the most dominant medium among all traditional media in SSA.

In this paper, I make the case for radio, by providing both theoretical and empirical arguments to support my assertion. I further note that even if ICT usage increases and reaches majority of the population, it is unlikely to undercut the advantages that radio provides. Thus, even if access is less of an issue, the challenge of adopting and actively using ICT remains, if local communities are not involved in content production. However, I do not call for ICTs to be overlooked either. One reason is that the new technologies have some advantages that radio lacks— for example radio lacks the global reach provided by the Internet. This suggests that a communication tool that incorporates the attractive features of the two technologies (blending of old and new) will be an effective communication development tool for SSA. Radio's importance in SSA is precisely the reason for finding innovative ways of introducing ICTs through this popular medium. The rest of the paper is as follows: The next section provides the background to the study, by examining the justification for research. Section three analyzes the theoretical arguments, section four examines the empirical data, and the final section concludes the paper.

Rationale for Research

The importance of traditional media (also known as mass media) as a communication tool for development has received less attention among communication and development researchers. Ogan et al (2009) reviewed published journal articles that addressed the topic of communication and development from 1998-2007, and noted that 'published studies have moved away from mass communication and toward ICT's role in development' (2009: 655). According to Ogan et al (2009), more than 50% of research articles published in communication and development journals between 2004-2007 highlighted ICTs as the media focus. The literature review also

found that among traditional media, researchers placed more emphasis on television and print media than radio. Specifically, only 1.8 % of the 164 articles reviewed (i.e., 3 articles) considered radio as the prime mover of the development process. This contrasts with 48.2 % (i.e., 79 papers) for ICT, 7.3 % (i.e., 12 studies) for television and 6.7% (i.e., 11 papers) for print media. This observation is consistent with the results of a survey conducted by the World Summit on the Information Society (WSIS) about the relative importance of the 10 targets for ICT connectivity[5], where majority of respondents ranked traditional media last (Minges, 2006). The decline of traditional media in the development and communication field has implications for SSA, because the majority of the people do not have access to ICTs, and traditional media is the dominant form of communication. In SSA, in particular, radio remains the most dominant form of communication. The accessibility and importance of radio in SSA is well articulated in the 2010 monitoring report of the WSIS which notes that:

> TVs tend to be more popular and available than radios in many developing countries and regions, except Africa... Africa stands out since, on average, only 28 per cent of households possess a TV. As we show in the household ownership is even much lower in rural areas, the place where the most marginalized populations, in particular, women live. (WSIS, 2010).

By focusing on radio, a traditional media, this paper addresses the gap in the communication and development literature.

The regional focus of this paper is important for several reasons. First, many of the poorest nations in the world are located in SSA, and the region has been the center of many development organizations' projects aimed at alleviating poverty and creating sustainable development. Second, SSA has the lowest ICT access rate compared to other regions of the world. For example, data from the International Telecommunication Union (ITU) in 2006 reveal that, the SSA lags behind other regions of the world in terms of access to ICTs. Africa had about

22 million Internet users in 2004, for an Internet penetration of just 3%. Europe's Internet penetration is 11 times higher. Africa has an average of 3 fixed lines per 100 people compared to Americas and Europe with an average of 34 fixed lines and 40 fixed lines per 100 people respectively (ITU, 2006). This translates to Internet use in Africa, where only 5% of the population is online, compared to over 40% in Europe, the Americas, and Oceania. These statistics clearly show that although new ICTs are reaching people in Africa, they represent a tiny portion of the overall population. Even in South Africa that has the highest usage of ICT diffusion and utilization in Africa, it is limited to a small segment of the population, mainly the educated and middle class in urban areas (Brown et al, 2008). Another reason for focusing on SSA pertains to language. Specifically, the bulk of the information on the Internet is in European languages, in particular English (Gunkel, 2000). As a consequence, others act as experts, by selecting information and repackaging them into culturally appropriate forms. ICTs therefore serve as channels for transmitting information in Africa, rather than creating information and make appropriation of ICTs by local communities challenging. Finally, radio has been identified as an important communication tool for development in poor countries, including those in SSA (Contreras, 2003; Girard, 2001; Primo, 2003; Riano, 1994). It has been traditionally linked with empowering women, by communicating information about health and human rights issues (Riano, 1994; Primo, 2003). In many African countries, the radio station is the de facto local telephone that announces births, deaths, marriages and local pricing information.

Historically, radios, especially rural radios were not local in Africa (Girard, 2001). It was a state-controlled media that created content to broadcast to audiences in rural areas. It also utilized the top-down model, whereby rural people had no participation in the programming of information, because the language used was mostly foreign languages. Over the years, radio

became local, in the sense that it was controlled by local voices, with content relevant to the respective communities. It also became interactive, which brought about active participants involved in knowledge production (Girard, 2001). As shown by McKay (2005) in her study of community radio among women fishmongers in Ghana, women expressed a source of empowerment, for being able to actively participate in radio programming, because they could speak in their local languages and understand what was being said, without making use of translators. McKay (2005) observed that 'Radio Ada' had become a source of culture, identity and a mechanism whereby the community could come together to address issues affecting them. In some ways, it could be said that the introduction of radio with local programming, content and interactivity, had led to a bottom-up approach to addressing development needs, instead of the top-down approach, used historically in most of Africa. This bottom-up approach represents a community approach to communication, by making it possible for citizens to represent themselves and their communities (Milan, 2009). Also, focusing on communities rather than individuals, empower and reach more people (Wilkins and Chae, 2007).

Finally, this research is important because it contributes significantly to the ICT4D literature. Ogan et al (2009) reviewed the field of development and communication and revealed the lack of theory in the analysis of field experiences of researchers. This was particularly the case in the ICT4D literature. Most authors in this field utilized the empirical approach without situating results of their studies in a theoretical framework. This paper fills the gap in the literature by combining theory with empirical data. Another contribution of this research is the use of the postcolonial perspective. Majority of studies have employed the modernization approach to explain the benefits of ICT4D (Ogan et al, 2009). Using the modernization approach, ICTs are viewed as a panacea for development; as playing a crucial role in

disseminating human rights abuses faced by women (Tandon, 1999; Hicks et al, 2000), and enhancing the overall participation of women in the development process (Gitler, 1996; Hafkin and Taggart, 2001). This modernist explanation of empowerment is defined as mainly access to technologies, ignoring the significance of active appropriation of technology to ensure its relevance in the everyday lives of people (James, 2005). Underlying the modernization paradigm is the assumption that once access is achieved there will be empowerment. Therefore ICT projects including telecenters and cybercafés in Africa have focused on the provision of access to computers. Mansell and When note that 'the capacity to generate, distribute, and share information about local resources and activities is as important as access to distant digital information' (1998: 100). The postcolonial approach to development is useful because it emphasizes local voices (bottom up approach to development) and the active appropriation of communication tools to effectively empower those marginalized in society to create indigenous knowledge. Without this active involvement, which comes about when local voices are involved in the use of communication tools, effective development that addresses the real needs of communities cannot be achieved.

The push for radio (which has been actively appropriated by local communities) in this paper is informed by the postcolonial paradigm and the empirical data provided. Radio as a community media offer marginalized communities a means for empowerment. I do not however, advocate for ignoring the importance of ICTs in marginalized communities. By highlighting the importance of radio, I argue that there should be creative ways of appropriating ICTs (as radio has been), by allowing the transmission of locally produced content. As noted by Batchelor, 'foreign content (ICT content) must be matched by the expression and communication of local knowledge relevant to local situations' (2002:4). This could be challenging, but would ensure an

effective way of empowering marginalized communities, especially women. Some (Minges, 2006; James, 2005; Girard, 2003) have called for the blending of old and new media (such as radio and the Internet) to widen the reach of ICTs, and to ensure that there is active local participation of new technologies. Indeed, Target 8 of the WSIS Goals calls for 'the support of projects combining the use of traditional media and new technologies for their role in facilitating the use of local languages…' In light of this, I provide case studies of projects dealing with technological blending, and argue for more research in this area.

Development, Communication, Gender, and Empowerment

To further highlight the theoretical underpinnings of the communication and development discourse, and to make the case for traditional media technologies, I examine the links between the concepts above. Development theory is based on the assumption that mass media would help transform traditional societies. According to Escobar, 'Development was conceived not as a cultural process but instead as a system of more or less universally applicable technical interventions intended to deliver some "badly needed" goods to a "target" population…' (Escobar, 1995a: 44). As noted by the quote above, an important aspect of development is technological transfer to a target population. One effective way of reaching this target population has been the mass media (Thussu, 2000). The promises of new technologies for developing countries are formulated within a broader discourse of modernization and development, which is based on the assumption that a deficiency in western knowledge is partly responsible for underdevelopment (Schech, 2002). This has been the modernization paradigm, which suggests that developmental problems could be reduced to technical "solvable" problems, including the transfer of western technical expertise to the developing world (Escobar, 1995; Manzo, 1995; Nandy, 1989).

The modernization paradigm has been critiqued by postcolonial theorists such as Escobar (1995) and Mohanty (1988, 1991), who argue that the representation of third world realities has provided the rationale for development experts' belief in modernization, which has discredited and subordinated local techniques, knowledges and practices. Furthermore, postcolonial feminists (Ong, 1988; Mohanty, 1988; Escobar, 1990; Moore, 1995 and Parpart, 1995), have rejected the universal application of technologies, by showing how the discourse of technologies link former colonies with their colonizers and privileges western science and technology over indigenous or non-western ones (Harding, 1986). Also, much of the discourse and practice of development has exaggerated western knowledge claims, dismissed and silenced knowledge from the south, and perpetuated dependence on northern expertise. Consequently, they argue for a postcolonial paradigm that calls for a new approach to development, by acknowledging differences and welcoming multiple interpretations and solutions to developmental problems.

In the mass media for development field, there has been the tendency to utilize the diffusion (top down approach) model in disseminating information. This model, informed by the modernization paradigm, has been used as a communication tool for disseminating information to women in the developing world (Servaes, 2007). Here, the process of disseminating information is about experts transmitting knowledge to the masses, without an active participation of the people receiving those messages. The emphasis on expert knowledge in communication and development practices has been acknowledged by postcolonialists as inherently disempowering. This mirrors the ICT4D discourse that assumes that third world people are powerless by establishing them as consumers of communication technologies instead of active participants in the development process (Robbins, 2002). The role of private corporations in ICT projects further complicates the question about whether ICTs could truly

empower women or rather turn them into consumers of technology by advancing the agendas of private and transnational corporations. The participatory model (bottom-up approach) on the other hand, adopts the framework of multiplicity (Servaes, 2007) and not messages from the top. By focusing on local communities and participation, this model mimics the postcolonial approach argued in this paper. It points to women at the grassroots levels, utilizing traditional media to express their multiple and diverse experiences as individuals and members of oppressed groups (Riano, 1994).

Empowerment

The participatory model of communication has utilized the empowerment approach, since it has been seen as the key to long-term sustainable development. Although women's empowerment has become a hegemonic concept in the communication and development literature, there is no consensus however, on the meaning of empowerment. Neoliberals define the concept in an instrumental way (as a means to an end) of ensuring women's participation in the development process. Marxist Socialists on the other hand define empowerment in a transformative way – it is perceived as transforming unequal power structures based on male dominance, those that would lead to women's emancipation and gender equality (Huyer and Sikoska, 2003). Postmodernists and postcolonialists characterize empowerment as a tool for women (especially grassroots women) to not only participate in the development process but also to be active agents, and to play a key role in the decision-making process.

The literature stating the benefits of ICTs especially to women in developing countries, often take the empowerment approach. Women's empowerment features largely in the rationale for creating access to ICTs for gender and development. Hicks et al (2000) point to ICTs contribution to the political empowerment of women and how the Internet has played a crucial

role in disseminating human rights abuses faced by women all over the world. Others (Gitler, 1996; Hafkin and Taggart, 2001, Nath, 2001) focus on how ICT enhances women's participation in the development process and empowers them economically. The United Nations has identified women's access to ICTs as the third most important issue facing women, apart from poverty and violence (Hafkin, 2000). According to Nath (2001), ICT opens up a direct window for women to the outside world. Information now flows to them without distortion or any form of censoring, and they have access to the same information as their male counterparts. ICTs have therefore been credited with using the horizontal approach to communication (Castells, 2000). Access to information makes it possible for women to seek alternate forms of communication to those countered by the conventional or the government controlled media sources, which in turn, empowers them. In the developed world, the horizontal nature of ICT is evident in ordinary people acting as their own experts in information dissemination, in electronic spaces such as Wikipedia and blogging online. In SSA, however, the people making use of the horizontal form of communication with ICTs comprise a small percentage of the population, who tend to educated and middle class people who reside in urban areas. Majority of the population in SSA however, are subjected to the vertical diffusion model, where information flows from the top, largely because of lack of access to content. Others act as experts by selecting information and repackaging them into culturally appropriate forms. Therefore the rhetoric of empowerment as liberating in this context, does not serve as effective participatory tools for the marginalized, mostly women in the region. It however exacerbates the existing gaps between the haves and have-nots in society (Alzouma, 2005).

One key issue closely related to empowerment is that of individual versus group/collective empowerment. Authors such as Kabeer (1994) and Martinez and Reily (2002)

call for collective empowerment, noting the fragility of individual efforts. With regards to ICTs, Martinez and Reily (2002) maintain that the capacity for ICTs to empower women to be actively involved in their information needs would depend on a collective and not on individual empowerment. Group or collective empowerment reach more people and ensures that women are not just users, recipients and consumers of ICTs, but also social and political actors seeking to participate in policy and decision-making. When there is collective empowerment, women are organized and would better articulate the type of information they need (Martinez and Reily, 2002). Radio, particularly community radio, has been an important tool for group empowerment for women. By examining these concepts, I have provided a critical analysis of the theoretical underpinnings of the communication and development discourse. The next section uses empirical data to make the case for radio in SSA.

Empirical Data

In this section, my major argument relates to the lack of exposure to ICTs (although heavily promoted) in SSA on one hand, and the dominance of traditional media (particularly radio) on the other hand. This argument is supported by data provided that measure personal computer ownership, access to ICTs, and the quality of ICTs in selected African countries. It also includes data on literacy rates, the ownership of traditional media (radio and television), access to traditional media (radio, Television and newspaper), and the effectiveness of radio as an important tool for communicating development projects (namely family planning messages to women). The data on ICTs are from the World Development Indicators (WDI) and the data are averaged from 2005-2009. The WDI is produced by the World Bank, and it has data on close to 800 socioeconomic indicators from 1960. It covers about209 countries. The data on literacy rates and traditional media are from the Demographic Health Surveys (DHS). The DHS is a

nationally-representative survey, and it has information on about 150 socioeconomic and demographic variables for 5,000-30,000 households in 82 countries. Countries in SSA are mainly divided into Anglophone and Francophone countries. In order to effectively interpret the data, I selected only English-speaking countries where data was available. The countries are: Ghana, Kenya, Lesotho, Liberia, Malawi, Namibia, Nigeria, Sierra Leone, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe. I make three major arguments backed by data.

First, ICT accessibility is low in SSA and in countries within the region. Table 1 shows the extent of the technology divide between SSA and the rest of the World. The data on internet users' ownership of personal computers and fixed broad band subscribers are rough measures of the availability of ICTs. The internet bandwidth measures the transmission speed of data and therefore can be used as a proxy for the quality of internet service. The quality of internet service is important, because it affects the utilization of ICTs. For instance, SSA ranks last for all the measures. In addition, the averages for SSA are significantly less than the averages for developing countries. For example, the number of internet users in SSA is about 30% of the number of users in developing countries and 15% the number of users in Latin America.

Table 1: The Availability and Quality of ICTs by Income and Region

Income/Region	Internet users (per 1000 people)	Personal computers (per 1000 people)	Broadband subscribers (per 100,000 people)	Internet bandwidth (bits per person)
By Income				
Developed Countries	6477	6653	197843	19343
Developing Countries	1026	485	16447	186
By Region				
Europe & Central Asia	1946	969	26790	713
East Asia & Pacific	1142	516	28607	164
Latin America & Caribbean	2173	1134	26294	718
Middle East & North Africa	1171	467	6001	109
South Asia	542	250	1631	22
Sub-Saharan Africa (SSA)	311	183	293	21

Notes: The data are from The World Development Indicators, 2009. The data are averaged from 2005-2009.

Data on country averages however, mask differences in the variation across countries. Thus to provide a better understanding of the availability and quality of ICTs in SSA countries, I also report the data for thirteen countries in the region. As shown in Table 2, there is wide variation across the countries, and the numbers for several of the countries differ significantly from the average for SSA. For example, the number of internet users per 1000 people ranges from as low as 23 for Sierra Leone, to a high of 955 for Zimbabwe. Thus, the number of internet users in Sierra Leone is about one-fifth of the number in Zimbabwe, and about one quarter the average number for SSA.

Table 2: The Availability and Quality of ICTs for Selected Countries in Sub-Saharan Africa

Country	Internet users (per 1000 people)	Personal computers (per 1000 people)	Broadband subscribers (per 100,000 people)	Internet bandwidth (bits per person)
Ghana	280	58	455	14.71
Kenya	623	138	370	10.08
Lesotho	303	25	23	2.16
Liberia	55	NA	0	NA
Malawi	61	19	72	3.14
Namibia	442	1,864	95	22.41
Nigeria	527	85	4	2.87
Sierra Leone	23	NA	NA	NA
Swaziland	383	372	NA	0.89
Tanzania	98	91	NA	2.56
Uganda	265	137	44	5.95
Zambia	396	112	108	2.44
Zimbabwe	955	688	952	4.47

Notes: The data are from The World Development Indicators, 2009. The data are averaged from 2005-2009. NA means that the data are not available.

Second, with regards to accessibility of ICTs to the marginalized in society, this study focuses on women. The reason as stated earlier, is because majority of women are poor, non-literate and live in rural areas. This is important in terms of access to ICTs because as noted in the literature, the characteristics of majority of women in SSA present barriers to the effective use of ICTs. Rural populations lack the required infrastructure to ICT access. The data provided in Table 3 show that in SSA, majority of women reside in rural than urban areas. Again, this presents challenges to using ICTs for gender and development.

Table 3: Geographical Distribution of Areas of Residence of Women.

Country	Rural	Urban
Ghana (2008)	55	45
Kenya (2009)	80	20
Lesotho (2009)	74	26
Liberia (2007)	61	39
Malawi (2004)	85	15
Namibia (2006)	60	40
Nigeria (2008)	67	33
Sierra Leone (2008)	67	33
Swaziland (2006)	79	21
Tanzania (2005)	76	24
Uganda (2006)	87	13
Zambia (2007)	65	35
Zimbabwe (2006)	69	31

Notes: The data are from the Demographic Health Surveys, for women aged 15-49. The survey years are in parenthesis.

Table 3 shows that in seven out of the thirteen countries, at least 70% of women live in rural areas and in twelve countries, at least 65% of women reside in rural areas.

Another area of challenge to the use of ICTs is literacy and education. To be able to access ICTs, majority of the content is in English. It is also written. Even for women who are literate in local languages, without a formal education, they cannot read or write English. Bicheler (2008) notes that in Malawi, 99% of study participants used internet services in English, although Chichewa is the dominant local language. Table 4 presents data on the percentage of women who have never been to school or who have had some elementary education but cannot read a full sentence in English. Sierra Leone has the highest female illiteracy rate—93% in the rural areas, 53% in urban areas and about 78% for the country. One notable point in Table 4 is that in four Southern African countries, Lesotho, Namibia, Swaziland and Zimbabwe, the female illiteracy rate is quite low, especially the rate for urban women. Thus, in these countries illiteracy

as a barrier to the utilization of ICT may be less of an issue. However, other barriers to ICT discussed previously, such as the adoption and access to ICT are still pertinent.

Table 4: Percentage of Women without Education or Cannot Read a full Sentence.

Country	Rural	Urban	Rural & Urban
Ghana (2008)	54	23	40
Kenya (2009)	31	7	27
Lesotho (2009)	13	1	11
Liberia (2007)	86	38	70
Malawi (2004)	51	16	46
Namibia (2006)	22	4	16
Nigeria (2008)	65	22	53
Sierra Leone (2008)	93	53	78
Swaziland (2006)	17	10	15
Tanzania (2005)	40	15	40
Uganda (2006)	44	15	44
Zambia (2007)	60	27	46
Zimbabwe (2006)	27	7	19

Notes: The data are from the Demographic Health Surveys, for women aged 15-49. The survey years are in parenthesis.

The third major argument deals with exposure to traditional media (also known as mass media). I adopt a broad definition of exposure to include ownership, access and the utilization of traditional media. The issue of ownership is important in explaining the prevalent use of radio. Table 5 shows the share of households that own radio and television. The data reveals that radio ownership is quite high—the share of households that own radios range from 48% in Zimbabwe to about 77% in Swaziland (see Column (3)). In addition, radio ownership is much higher than television ownership, in both rural and urban areas, and the difference in rates is higher in rural areas. For example, only 1 percent of rural households in Tanzania own television, compared with radio ownership of 52% (see Columns 1 and 4). This data is consistent with the WSIS data described earlier about ownership of radio in SSA.

Table 5: The Percentage of Households that own Radio and Television

Country	Radio			Television		
	(1) Rural	(2) Urban	(3) Rural & Urban	(4) Rural	(5) Urban	(6) Rural & Urban
Ghana (2008)	69	79	74	21	67	43
Kenya (2009)	71	82	74	18	57	28
Lesotho (2009)	55	78	62	10	40	19
Liberia (2007)	39	73	52	1	15	7
Malawi (2004)	59	79	62	2	21	5
Namibia (2006)	70	82	75	12	66	37
Nigeria (2008)	69	84	74	23	69	39
Sierra Leone (2008)	43	78	55	1	28	10
Swaziland (2006)	74	82	77	26	54	35
Tanzania (2005)	52	76	58	1	20	6
Uganda (2006)	58	75	61	3	26	6
Zambia (2007)	50	71	58	7	57	24
Zimbabwe (2006)	33	78	48	10	70	31

Notes: The data are from the Demographic Health Surveys. The survey years are in parenthesis.

I next discuss media exposure in terms of the frequency at which a specific type of media is utilized by women. Specifically, I use data from the DHS that measure the percentage of women who listen to the radio, watch TV or read Newspaper at least once a week, to gauge the extent to which each type of media is utilized. The data are provided in Table 6. For all the countries in the study, a higher proportion of women are exposed to radio than any other media, in both rural and urban areas. Overall, women in urban areas have 81% of access to radio compared to 68% for women (this is true for other types of media). It is important to note though, that the variation between the rate of radio and other traditional media is much higher in rural than in urban areas. The data thus support the point made earlier about the dominance of radio among traditional media.

Table 6: The Percentage of Women who listen to the radio, watch TV or read Newspaper at least once a week.

Country	Rural			Urban			Rural & Urban		
	Radio	TV	Print	Radio	TV	Print	Radio	TV	Print
Ghana (2008)	72	35	7	81	74	23	76	54	15
Kenya (2009)	75	22	16	83	69	49	77	34	24
Lesotho (2009)	59	13	12	78	50	30	66	25	18
Liberia (2007)	32	13	5	71	51	29	49	29	15
Malawi (2004)	64	4	8	79	31	36	67	9	13
Namibia (2006)	76	17	31	85	74	68	81	45	49
Nigeria (2008)	46	23	6	69	69	22	54	40	12
Sierra Leone (2008)	35	3	2	65	25	16	46	11	7
Swaziland (2006)	74	30	47	76	57	64	75	38	52
Tanzania (2005)	55	6	12	80	46	43	65	17	21
Uganda (2006)	70	5	10	90	39	40	74	11	15
Zambia (2007)	50	9	13	71	61	35	59	31	22
Zimbabwe (2006)	29	9	9	77	78	49	48	36	25

Notes: The data are from the Demographic Health Surveys, for women aged 15-49. The survey years are in parenthesis.

Finally, one of the important issues in development communication is finding ways to disseminate information about health related issues (e.g., family planning and children's health) to women. I employ data on the percentage of women who heard family planning message on various media sources, as a measure of the effectiveness of specific type of media. The data are from the DHS and are reported in Table 7. The table shows that radio is the most common source of family planning messages. This is the case for both rural and urban audiences. Although overall, traditional media exposure is higher in urban than in rural areas, the difference

between exposure rates for radio and other media is higher in rural areas. Thus, the dominance of

radio's use for communicating family planning messages, especially in rural areas, reinforces the

role of radio as an important tool for gender and development.

Table 7: The percentage of women who heard family planning message on various media sources.

Country	Rural			Urban			Rural & Urban		
	Radio	TV	Print	Radio	TV	Print	Radio	TV	Print
Ghana (2008)	55	27	6	66	65	16	60	45	11
Kenya (2009)	66	29	27	78	64	55	69	38	34
Lesotho (2009)	18	3	6	25	12	16	69	38	34
Liberia (2007)	24	1	2	51	8	12	35	4	6
Malawi (2004)	65	4	10	78	26	31	67	8	14
Namibia (2006)	48	11	17	57	46	44	52	28	30
Nigeria (2008)	31	14	5	54	44	18	40	25	9
Sierra Leone (2008)	48	6	16	75	42	47	55	16	25
Swaziland (2006)	56	2	6	71	16	22	59	5	9
Tanzania (2005)	30	5	4	52	43	24	39	21	12
Uganda (2006)	16	6	6	42	39	30	26	19	15
Zambia (2007)	36	1	1	64	15	15	46	6	6
Zimbabwe (2006)	67	22	27	73	46	49	69	28	33

Notes: The data are from the Demographic Health Surveys, for women aged 15-49. The survey years are

in parenthesis.

In sum, the data reveal that radio is the most utilized media source in English-speaking

countries in SSA. The oral tradition in Africa makes radio a more attractive communication tool

even for the educated and those who live in urban areas. For a long time however, radio used to

be criticized as being less interactive (IIboudo and Castello, 2003). Unlike the Internet with its

interactive ability via email and websites, radio was seen as unidirectional. However, interactivity, in the form of listener participation models, has appeared as an important characteristic of 'new' radio programming in SSA. This added interactivity has made it a popular medium even for the educated and for those who live in urban areas. Additionally, interactivity in radio has brought about active participants involved in knowledge production. Traditionally, community radio, also known as grassroots radio served as a mechanism of social cohesion, citizen participation and the defense of human rights, especially for women, whose voices get muted in the public space (Contreras, 2003). Community radio stations tend to be mostly initiatives of Non-governmental Organizations (NGOs) and are participatory in nature. They foster and facilitate community decision-making and action, and empower people to take control of local development processes (Bachelor and O'Farrell, 2003).

Conclusions: The Case for Radio & Technological Blending

One might conjecture from the data provided in section four to overlook ICTs entirely in communication and development projects targeting women. This paper does not make this argument. Rather, it reiterates the significant role of radio in SSA, and the opportunity it offers to find creative ways of making ICTs relevant to the lives of women in SSA, by incorporating important aspects of radio into ICT features. The issue of technological blending (the blending of old and new technologies) has reemerged in the discussion of ICT4D, and has been promoted by a number of scholars including James (2005), Girard (2001, 2003), and Minges (2006). As revealed by the data in section 4, ICT exposure is low in SSA. Therefore, the question to be asked is, how can technological blending effectively engage those marginalized by ICTs including rural and non-literate women? I argue that rather than introducing ICTs to marginalized communities via Telecenters, the focus should be on finding innovative ways of

incorporating attractive features of radio (a dominant communication medium) to ICTs. I present some case studies of technological blending, where rural and non-literate women have been actively engaged in content production.

An organization that has played a crucial role in the establishment of radio stations in Africa and has been at the forefront of combining old (radio) and new (Internet) technologies in the dissemination of information is the World Association of Community Radio Broadcasters (AMARC). To cater for the needs of African women in particular (especially those in the rural areas), the Women's International Network (WIN) of AMARC has developed a program aimed at building the content and technical capacities of women. This program educates women about how to use new technologies critically and creatively in community radio. It supports the training and production of radio programs with a gender orientation. The training content aims at introducing African women in community radio to their respective communities and countries to create a grassroots, and a local to national flow of information. The radio is used as a bridge to the Internet as information is exchanged between the two channels (Wanyeki, 2002).

Another significant community-led approach to combining old and new technologies in the dissemination of information is the *Development through Radio* (DTR) Project. DTR uses participatory communication processes to encourage African women to participate actively in the preparation of development-oriented programs. Although the project broadcasts to local community radio stations, it mainly targets policymakers and development actors. The issues aired on weekly broadcasts are first discussed, determined and agreed upon by communities and not by radio station producers and executives. It serves as a space for both literate and non-literate women for collective discussion and interaction on development perspectives. The content of information is developed by rural women and broadcast nationally to policymakers

and the general public. There has been an assessment of expanding the concept of DTR to a wider audience, to share content generated by women in Sierra Leone with other global communities through the Internet (an important use of technological blending). The DTR project website was set up in 2003 to broadcast the views, concerns and aspirations of women who survived the decade-long civil war in Sierra Leone. The website hosts survival stories, and development projects in text and audio format. It also includes digitized testimonies of the survivors of the civil war. Women in the program find it empowering that through the use of ICTs, their voices would transcend local boundaries, to the global arena, for the world to hear their concerns and aspirations (Wambui, 2005). Thus the use of traditional technology such as radio reduces the costs of introducing new technology to a wider audience.

Combining ICTs with radio might offer a more effective way of introducing new technologies to make it meaningful and attractive to the marginalized in society. Local appropriation of ICTs is important because it does the following: It contributes to reducing the digital divide; give a voice to the voiceless; fosters and facilitates community decision-making and action and empower people to take control of local development processes; advances community ownership of ICTs for development; and ensures that ICTs serve the purposes of local communities (Bachelor and O'Farrell, 2003). Through appropriation, communities select and transform technologies and content to fit their needs, rather than reflect the interests of external groups. There are limited numbers of cases of community-driven, locally appropriated ICT initiatives or projects. However, the few that do, receive scant attention in part because they are not donor-driven (Michiels and Crowder, 2001). Also most of the community-driven projects are relatively new and therefore it is difficult to measure the impact or sustainability of these projects. It is important to note that there would be challenges to combining these two

technologies for rural and non-literate audiences, since the barriers to using ICTs persist. It would be of interest to determine the people who are responsible for content, and whether indeed local women have active control over blended technologies. Thus, there should be studies evaluating the extent of involvement of rural and non-literate women in technological blending. Nevertheless, as the case studies indicate, (particularly the *Development Through Radio* project), rural women can be actively involved in production of content material for dissemination. What these case studies have in common is an attempt to bridge old and new technologies, and to combine the advantages inherent in these two technologies, to make it accessible to wider audiences. Implicit in the concept of the blending of old and new ICTs, is the link between the local and the global. For example, information on the Internet is seen as global, whereas radio content is mostly viewed as local. This allows for the integration of relevant global information with local information, which ensures the global-local connection needed in a globalized world.

This paper has provided a critique of the dominant theoretical model (modernization paradigm) in the ICT4D field. The ICT4D rhetoric using the modernization paradigm has marginalized radio and promoted ICTs. This critique is made in the context of empirical data that reveals that radio is the dominant media utilized in SSA, and that ICT use is low. By focusing on radio, this research has contributed to the discussion of an old technology that has been overlooked in the communication and development field. The use of the postcolonial perspective identifies with the issue of media appropriation, which is an important concept rooted in communication theory. It argues that people integrate media and make sense of it locally. This reduces the role of the expert, which imposes its agenda on the needs of the population in question. The blending of old and new media would ensure that rural, poor and

non-literate women are not only actively engaged in producing knowledge, but also "brought

into" the communication and development discourse as agents of social change.

Endnotes

[1] ICTs include the Internet and Web Publishing, Email, On-line databases and Discussion groups.
[2] The ICT4D literature emerged in the last ten years, to establish the link between ICTs and economic and social development.
[3] The MDGs were derived from the UN Millennium Declaration adopted by 189 nations. Target 18 of the MDGs states that benefits of the new ICTs should be made available to least developed countries. Available at http://www.un.org/millenniumgoals/
[4] Telecenters serve as a model for providing public access to ICT-based services around the world to address disparities in access to ICTs (Oestmann & Dymond, 2001).
[5] The WSIS outlined 10 targets to be achieved by 2015, at the Tunis meeting in 1995. Number 8 of the target is to 'Ensure that all of the world's population has access to television and radio services.' See http://www.itu.int/ITU-D/ict/publications/wtdr_10/index.html for more information.

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