

Towards Evidence-based ICT Policy and Regulation

# Gender Assessment of ICT Access and Usage in Africa

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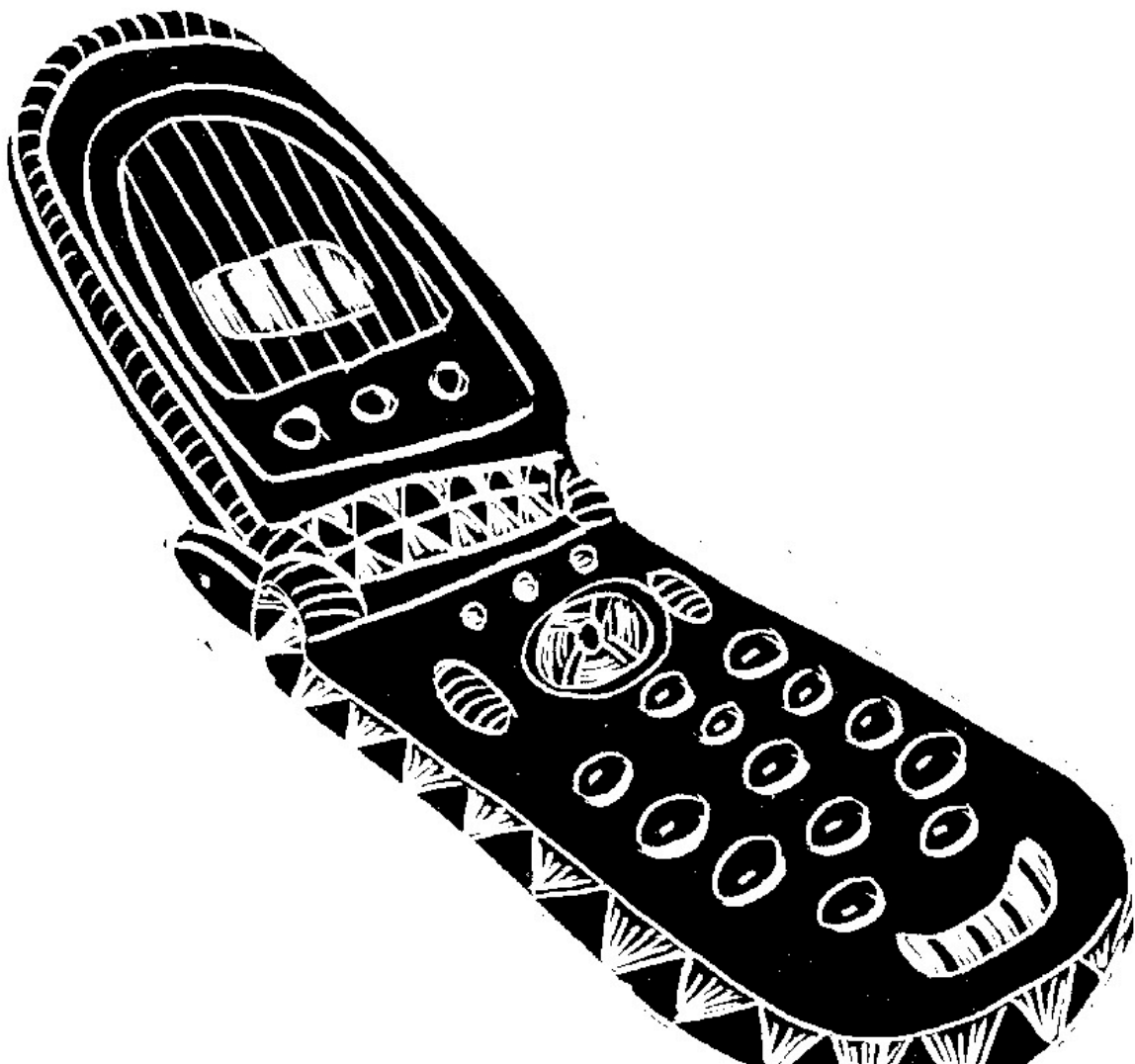
## Research ICT Africa

Research ICT Africa fills a strategic gap in the development of a sustainable information society and network knowledge economy by building the ICT policy and regulatory research capacity needed to inform effective ICT governance in Africa. The network was launched with seed funding from the IDRC and seeks to extend its activities through national, regional and continental partnerships. The establishment of the Research ICT Africa (RIA) network emanates from the growing demand for data and analysis necessary for the appropriate and visionary policy required to catapult the continent into the information age. Through network development RIA seeks to build an African knowledge base in support of ICT policy and regulatory design processes, and to monitor and review policy and regulatory developments on the continent. The research arising from a public interest agenda is made available in the public domain, and individuals and entities from the public and private sector and civil society are encouraged to use it for teaching, further research or to enable them to participate more effectively in national, regional and global ICT policy formulation and governance. This research is made possible by the significant funding received from the International Development Research Centre (IDRC) Ottawa, Canada. The network members express their gratitude to the IDRC for its support. The network is under the directorship of Alison Gillwald.

This policy paper draws on a rich data set arising from the household and individual access and usage survey conducted across 17 African countries under the project leadership of Dr Christoph Stork and, at the country level: Dr. Augustin Chabossou (Benin), Dr. Sebusang Sebusang (Botswana), Dr. Pam Zahonogo (Burkina Faso), Dr. Olivier Nana Nzèpa (Cameroon), Prof. Dr. Arsene Kouadio (Cote d'Ivoire), Dr. Lishan Adam (Ethiopia), Dr. Godfred Frempong (Ghana), Dr. Tim Waema (Kenya), Francisco Mabila (Mozambique), Dr. Christoph Stork (Namibia and South Africa), Prof. Dr. Ike Mowete (Nigeria), Albert Nsengiyumva (Rwanda), Prof. Dr. Abdoulaye Diagne (Senegal), Dr. Ray Mfungahema (Tanzania), Dr. F. F. Tusubira and Dr. Nora Mulira (Uganda), Sikaaba Mulavu (Zambia).

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# Executive Summary

Information Communication Technologies (ICTs) are widely seen as having the potential to contribute positively to economic growth and development and to improve the livelihoods and quality of life of individuals and households. Several studies have sought to demonstrate the correlations between economic growth and the penetration of telephones and now Internet. Although this is acknowledged to be something that starts in the high end of the market, the speed with which new, rapidly deployable wireless technologies have diffused across even developing countries, has been their most distinguishing characteristic.

What is clear from the *Research ICT Africa (RIA) Household and Individual Access and Usage Survey* is that the diffusion of ICT is highly uneven concentrating in urban areas and leaving some rural areas almost untouched. Access to these technologies is constrained by income as is usage, and as they become more complex, they are increasingly constrained by literacy and education. This analysis explores the inequities of access and usage further, by viewing them through a gender lens.

Of the limited demand-side data on Africa that exists, very little is disaggregated on gender lines. This study provides a descriptive statistical overview of access to ICTs by women and men and their usage of them. This is supported by focus groups that were undertaken in five of the 17 countries surveyed in East, Central, South and West Africa.

The survey reveals some surprising instances where more women than men own mobile phones, such as in South Africa and Mozambique, or where women have greater knowledge of the Internet such as in Cameroon. More generally however, the study confirms the differences in access by men and women to ICTs especially where they depend on public access.

With regard to mobile access, if factors other than gender are held constant no significant gender effect for mobile phone ownership can be found. This means that women with similar income, education and employment status are as likely as men to own a mobile phone. But, as women generally have less access to employment, education and other factors that increase the likelihood of ownership; access to mobile phones is clearly not equal between men and women. The survey also found that although men spend more on mobile phones in absolute terms, women spend a greater share of their monthly income on mobile usage.

The radio is the most commonly used electronic communication device, but even access to it is influenced by financial considerations due to absence of power in rural areas and the high cost of batteries. For some, however, particularly because of the absence of power and the income play a significant role. There are significant differences across countries around radio access by men and women and differences in their favourite programmes. Although women may be at home more they tend to listen to the radio less than men, even though they might have a similar education and income. This is often due to the nature of their work or to not having access to a radio or not being able to select which programmes to listen to if male members of the household are present.

Both the quantitative data and the focus groups highlight some issues pertinent to gender differences in ICT access and usage that are similar to findings in early studies and literature. It is clear from the evidence that although there is gender inequity, poorer men and women may have more in common when it comes to ICT access and usage than women and men across income, and urban and rural divides. This study highlights once more the necessity of communication irrespective of ones income level, gender or location. People devised multiple strategies to communicate – from using neighbours' and friends' phones, to owning SIMS only where they cannot afford a phone, to the use of public access centres or 'please call me' or 'beeping' to alert the other party. Interestingly, a large number of social norms and behaviour towards gender have spilled over into the ICT world.

The cost of communications remains a major challenge to Africa and in all the focus groups conducted men and women across the board have highlighted call costs as a constraint on communication. Women who have fewer opportunities for personal contact as a result of being housewives, doing unpaid work or generally earning less than their male counterparts, seem particularly disadvantaged by the high cost of communication. This has an impact on their capacity to access and use ICTs. To get around the issue of financial constraints, many women have relied on others to get their mobile phones or SIMs, or to cover their mobile expenses, and economise on calls by making missed calls. The situation is worse for low-income rural woman than it is for urban women, who tend to be employed more, even if only informally. Due to differences in mobility and access to income, rural women are more likely to be deprived of access to any ICTs than rural men.

From this evidence we conclude that, to a large extent, gender inequities in access to and usage of ICTs cannot be addressed through ICT policies per se. They require policy interventions in other areas that would allow women and girls to enjoy the benefits of ICTs equally. This would include policies and programmes that incentivise the education of girls – and particularly their participation in mathematics, science and engineering if they are to work in this sector in the same numbers as men. Increased educational opportunities are likely to address some of the issues relating to their relatively low levels of employment. This in turn will increase the income that women have to spend on ICT services allowing them to participate more effectively in society and the economy. Many of the barriers for women, however, relate to cultural norms and practices that are difficult to legislate away.

As large number of women are among those most marginalised from ICTs they are likely to benefit from any more general sectoral interventions that extend services to lower income groups through low-cost business models or targeted universal service fund allocations or effective price regulation. For Internet services to catch up with other developing regions African governments will need to undertake specific demand stimulation efforts and this is another area where they could actively pursue inclusion of women and girls through targeted stimulation programmes.



# Table of Contents

<b>Introduction</b>	<b>1</b>
<b>Background</b>	<b>2</b>
<b>Methodology</b>	<b>6</b>
<b>Mobile Phone</b>	<b>12</b>
<b>Internet</b>	<b>18</b>
<b>Radio &amp; TV</b>	<b>23</b>
<b>Conclusion</b>	<b>29</b>
<b>References</b>	<b>30</b>
<b>Appendix</b>	<b>32</b>
Focus group discussions	32
Probit Results Internet	33
Probit Results Radio & TV	38



# Introduction

The greatest challenge facing developing countries is the development of the human capital required to operate a modern economy and society effectively. Harnessing all their human potential, from both men and women, is the only route to meeting the developmental needs of countries, and ensuring their competitiveness in the global economy. Benchmarking participation and use of ICT in the sector, almost absent until recently across Africa, is critical to establishing the status and progress of ICT access and usage and ultimately the success and failure of ICT policies aimed at promoting ICT uptake.

That ICTs play an important role in African development is now well documented. The use of wider access to telephone services to enable social inclusion through employment generation and improvements in social services, and in fishing and farming practices has been documented (de Silva, Ratnadiwakara and Soysa 2009, Jensen 2007). Evidence can be found that access to ICTs (such as telephones) can break down the isolation of individuals, enhance their chance of economic inclusion and thus 'provide diverse avenues for women's social, political and economic empowerment' (UNDAW 2003). Also widely studied is the uneven nature of the benefits that accrue to men and women from social engagement and economic participation, particularly to those living in remote rural areas in developing countries (Mottin-Sylla, 2005). This information has tended often to be anecdotal or amongst smaller communities. The gender disaggregated, nationally representative data on ICT access and usage presented in this paper is extremely limited but essential to verifying or challenging underlying assumptions about ICTs, gender equity and development. Most of the studies in recent years on women's access to and usage of ICTs argue that there is a significant gender divide in ICT access and usage, particularly in developing countries. A study carried out in 2005 by the Gender and ICT Network (Reseau Genre et TIC), reveals that, globally, women's chances to benefit from the advantages of the information society are one third less than men's (Mottin-Sylla 2005).

A project that has specifically targeted women such as the now renowned Grameen Telephone Scheme in Bangladesh has demonstrated how ICTs can be deployed to improve their lives. In 2003, Grameen Phone and MTN Uganda introduced the scheme in Uganda, the first successful replication outside Bangladesh.

The approach adopted in this paper therefore assumes that ICTs have the potential to improve the social and economic well-being of the poor; however, this also depends on a range of other equity measures aimed at those currently marginalised. It also draws on a wide range of global indices and evidence that indicate that, for a range of factors, those marginalised from the economy and society are to different degrees in different countries, disproportionately women.<sup>1</sup> There is also considerable evidence to support the view, that women's ability to contribute to their own development and to that of their children, communities and the wider economy is dependent on the achievement of more equitable power relations in society; and that current inequities inhibit the development of nations and the potential of women to deploy ICTs towards these ends (Todaro and Smith 2007).

This paper aims to provide the kind of disaggregated data required to identify areas of inequity in access to ICTs between men and women and any differences in their usage at the national level and comparatively across countries. This should provide a basis for policy makers to develop interventions aimed at ensuring greater gender equity in relation to access and usage of ICTs. The analysis of the data also reveals other, perhaps overriding, inequities that point to the fact that poor women may have more in common with poor men in their own and other countries than with less marginalised women in their own and other countries. The paper is based on the Research ICT Africa (RIA) Household and Individual Access and Usage survey conducted in 17 African countries during 2007 and 2008, and on focus group studies that were conducted across five African countries to gain a greater qualitative understanding of access to and usage of ICTs from a gender perspective. The papers start with a review of the existing evidence and theory on the topic of ICT and gender. Next, the methodology and dataset on which the paper is based is introduced. The third section will discuss the results for general descriptive sample findings on the different ICTs – mobile phones, Internet, radio and TV. The paper concludes with a consolidated analysis of the findings and draws practical implications for policy and decision making.

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<sup>1</sup> The United Nations World Development Report has over decades demonstrated the unequal access of women to education, employment, loans and other developmental indicators.

# Background

There is a wide body of theoretical literature focusing on ICTs in the context of various development debates. Within the context of modernisation debates the focus on women emerged in what is now known as the women in development (WID) debate followed by the women and development debates (WAD) which challenged the notion of women as automatic beneficiaries of economic development as assumed in WID discourse. This was followed by the gender and development (GAD) debate which acknowledged the common suffering of poor men and of other marginalised people, not just of women. In terms of its proposed strategies for change, the latter argues for widespread social and economic transformation that will result in equitable and sustainable development, and this view resonates with the findings and resulting recommendations of this research. There is also a body of literature, not specifically within the development debate, which focuses on women and technology. This is concerned with the problems faced by women at work as a result of new technologies and the dominance of men in the ICT design professions. Over time this has shifted to 'gender in technology' which acknowledges the more fluid nature of the relationship between gender and technology (Sorensen 2002). For a long time the empirical scope of these debates was largely anecdotal and focused on small groups or individual accounts.

With the global debates on measuring the information society within the context of the World Summits on the Information Society (WSIS), in recent years there have been more serious attempts to quantify the digital divide. Paragraph 28a of the WSIS Geneva Plan of Action calls for performance evaluation and benchmarking, including gender analysis.<sup>2</sup> As a result there have been a number of efforts to include gender dimensions to such initiatives.<sup>3</sup> Most notable of these are the ITU ICT-Opportunity Index<sup>4</sup> which measures the digital divide by revealing the relative difference in ICT opportunity levels among economies and over time. The different sub-indices allow countries to further identify their specific weaknesses and strengths.

The Digital Opportunity Index is an e-index which seeks to measure the digital divide and compare ICT performance within and across countries by benchmarking countries based on a set of internationally agreed ICT indicators.<sup>5</sup> But as Jensen and Mahan (2007) point out: 'Gendered indicators ostensibly continue to be at the top of everyone's agendas.'<sup>6</sup> But, as Huyer and Hafkin emphasise, none of the major ICT or science and technology frameworks disaggregates data and indicators on grounds of gender. Likewise, none of the major gender equality indexes incorporate ICT and science and technology (2007).

So within these studies there is very little disaggregation of either access or usage on the basis of gender. This is largely because fixed line or home phones are assumed to be equally accessible to different members of the household, which the 2008 RIA demand side survey does not unequivocally confirm. Secondly, supply side fixed and mobile subscriber numbers are generally unable to provide accurate gender breakdowns in the way the demand side surveys can.

Available indices suggest that, although there is a gender gap in all countries, with the significant growth in access to and usage of ICTs, most particularly mobile phones, the relative difference between men and women is diminishing (Sorenson 2002).

Zainudeen et al. (2008) conducted studies on mobile phone usage at the bottom of the income pyramid in Asia and concluded that, while there is a gender divide in access to ICTs in Pakistan and India, there is less of a divide in Sri Lanka, and none in the Philippines and Thailand, where mobiles are most pervasive. The Zainudeen et al. (2008) study

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2 ITU Resolutions on Gender <<http://www.itu.int/ITU-D/gender/background/>>:

Plenipotentiary Conference of the International Telecommunication Union - Resolution 70 (Rev.

Antalya 2006) - Gender mainstreaming in ITU and promotion of gender.

3 The OECD's Working Party on the Information Economy (WPIE) provides an overview of the gender distribution of ICT and ICT-related employment in OECD countries, and compares these to the gender distribution of total employment. Participation in ICT related education and training, and differences in ICT access and use by gender are also investigated ([www.oecd.org/sti/ICT-employment](http://www.oecd.org/sti/ICT-employment)). (<http://www.itu.int/ITU-D/ict/doi/index.html>).

4 <http://www.itu.int/ITU-D/ict/publications/ict-oi/2007/index.html>

5 (<http://www.itu.int/ITU-D/ict/doi/index.html>)

6 Toward a Single ICT Index - Recommendations on the Formulation of a Flagship.

supports the view that there is a link between the magnitude of the gender divide and overall penetration levels. They assert that 'the gender divide, as with the digital divide, has been found to be especially large in low income countries, where ICT penetration levels are also low'. It is intuitive, they argue, that as income and development improve, overall penetration levels increase. As income increases, households will be able to afford more phones, providing more women with access. Chabossou et al. (2008) have already shown that higher personal income results in higher probability of having a mobile phone.

Contradicting this assumption, however, Zainudeen and Iqbal (2007) make the important comment that there is evidence of a digital divide of the same magnitude in high socio-economic groups in the countries surveyed, which show an overall disparity between male and female access, and their paper identifies the need for policy intervention to remedy this. Specifically, the authors state in a footnote that women's rate of Internet access does not increase in tandem with increases in national rates of Internet penetration.<sup>7</sup>

Other research has even more fundamentally challenged the notion that access to ICTs will lead to the empowerment of women, the poor or the marginalised. Casal de Vela and Ofreneo (2007) argue that despite the lack of data to support the contribution of ICTs to the development of women, an 'ICT-centric development framework' has emerged that privileges new ICTs over traditional communication tools.

Prior analyses of the RIA e-Access & Usage Household Survey data conducted by Schmidt & Stork (2009) for instance revealed that in 9 out of 17 countries, being female negatively affected the probability of someone having e-skills. These results support the findings that men and women may differ in their usage of ICTs, especially since the model used to analyse the relationship between gender and e-skills controlled for other relevant factors such as level of education and income.

A number of studies in recent years have sought to understand gender similarities and differences in access and usage. Gender and technology studies have found that men and women adopt and use technology differently (Gefen & Straub, 1997; Venkatesh & Morris, 2000). Men's decisions to use technology are more strongly influenced by their perception of usefulness, while women's decisions are based more on perceptions of the technology's ease of use (Venkatesh & Morris, 2000). Further, men and women may view the same mode of communication differently:<sup>8</sup>

Women are said to use the phone mainly for social reasons like maintaining relationships while men use it for maintaining employment contacts, professional and other work related issues. More pertinent to this study is the usage of and access to phones in developing countries. A study by Souter et al., (2005) conducted in rural Gujarat, India on the impact of ICTs on rural livelihoods, found that men used mobile phones, both personal and kiosks, more frequently than women. This is likely to be a function of social norms and financial considerations that correlate with unequal gendered access, though the study by Zainudeen and Iqbal (2007) found little difference in the purposes for which phones were used.

Another dimension to gendered access that was found in a study by the Gender and ICT Network (Regentic) in West Africa<sup>9</sup> was that women faced other issues, like crime and security in accessing public kiosks and were often intimidated by the technology itself. This is confirmed by the BOP mobile studies in Asia: 'Interestingly, men frequently felt threatened by women's use of cell phones and the Internet; the new freedoms afforded to women were perceived as destabilizing to relationships. In many cases men monitored the cell phone and Internet use of their partners.' (Huyer, et al. 2006)

Sophia Huyer and Nancy Hafkin (2007) state: 'A range of socio-economic and political factors affect and frame the gender divide, including social and cultural barriers to technology use; education and skills levels; employment and income trends; media and content; privacy and security and location/mode of access' (2007:1).

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<sup>7</sup> Zainudeen and Iqbal's findings (2007) that suggest exceptions to the link between the size of the gender divide and overall penetration levels in a country could not be addressed in this cross-sectional study. Further research using time-series data is needed to confirm this hypothesis.

<sup>8</sup> See Gefen & Straub (1997); Ono (2003)

<sup>9</sup> Gender digital divide in six African countries, as part of a wider study, Gender digital divide in Francophone Africa: data and indicators.

From this perspective Huyer & Hafkin (2007, 2008) seek to identify policy interventions to improve gender equity. They provide a framework for policy makers to determine what sectors of the economy and society are the most strategically significant to achieving women's development goals. While they have sought to measure women's participation in the knowledge society using a wider set of indicators than traditional digital divide measures – which focus primarily on access to ICTs – they go beyond by including other indicators. They include wider factors that affect the participation of women in the knowledge economy such as health, social and economic status; access to resources such as housing, electricity and loans; the percentage of women in parliaments and ministries, professional associations and NGOs; engendering of policy, women in science and technology.

Their report assumes that if women are able to contribute actively to the knowledge society, societies will better be able to fulfill their full potential. Yet little is known about current rates of participation in the knowledge society and economy. As Huyer and Hafkin point out without this information it is impossible to set national targets.

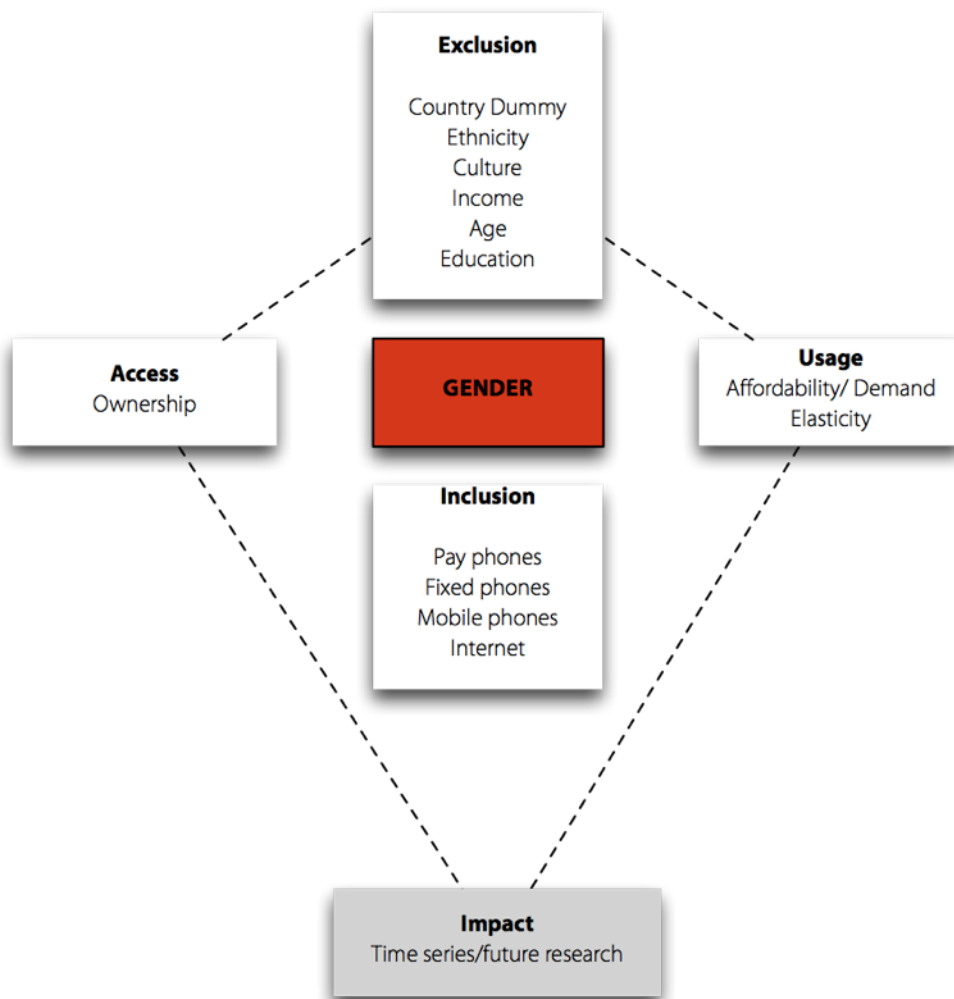
As access to ICTs is so closely linked to economic activity and social and cultural factors, it is difficult to ascertain changes in access to ICTs as a direct result of policy. Despite this challenge research should address the linkage between access to and usage of ICTs and other connected factors (e.g. gender, age) to deepen the understanding of underlying mechanisms.

The RIA 2007 household survey takes this into consideration and specifically addresses the issue of disaggregation by integrating gender splits into the design of the study and methodology to allow for analysis by gender. Thus, it presents one of the few bodies of work with disaggregated data on African ICT access and use on the individual and household level.

Conceptually, digital divide gender studies are concerned with the differential exclusion and inclusion of women and men from the world of information and communication technology. Yet, exclusion is conceptualised far more extensively than inclusion. In fact inclusion is generally only operationalised in terms of exclusion mechanisms, making it an epiphenomenon as Sorensen (2002) points out. Excluding processes seem to be apparent especially in advanced technologies. Computer design, technology science or engineering are male dominated professions less taken by women. Girls are already seriously lagging behind boys when it comes to computer skills. But as Sorensen (2002) asked: 'Why are women seemingly less interested in the technology, and why do many exemplars of new ICT artifacts seem to reflect masculine rather than feminine interests?'

To approach an answer to that question and develop strategies to include women into ICT the relationship between technology and gender has to be (empirically) explored. Sorensen describes the relationship between gender and ICT 'as an issue of their mutual shaping or co-construction' (2002). For our study we also adopt this perspective: It is not assumed that gender has a causal influence on ICT or vice versa, but rather the dynamic interplay between them becomes the matter of interest.

Generally quantitative studies of gender are more optimistic about the palliative effects of ICT on gender inequity while qualitative research on the subject tends to be pessimistic, pointing to the more intractable dimensions of gender inequity that underlie inequitable access to and usage of ICTs. Sorensen (2002) states that inclusion into ICT is most commonly understood as a process of diffusion with Rogers (1995) inimitable S-curve as its standard outcome. But as she points out, this overlooks a range of other factors than access to ICT that influence the differential uptake between men and women. Factors like income, level of education and ethnicity (Oost, 2002; Faulkner, 2002, MacKeogh, 2002; Fortunati & Manganelli, 2002) that verifiably affect the relationship between gender and ICT also need to be taken into account to provide a better insight into exclusion and inclusion processes. Studies support that age also interacts with gender and the access to and use of ICT. Although there is a gender gap reported in most of the studies concerning ICT, evidence can be found that cross-cultural differences need to be considered as well (e.g. Schnitzel 1999; Hersh, 2000; Fortunati & Manganelli, 2002).



According to Sorenson (2002) inclusion strategies should be defined as 'conscious activities or sets of activities aimed to recruit people into and keep them within some system, like women into and in the information society'. Inclusion measures will need to focus not only on the transformation of ICT practices at different levels from access, to use, to design and production but on gendered relations more widely in society. Studies, that seek to establish instances and patterns of exclusion and inclusion, Sorenson points out, only tell us if women are included or excluded from ICT and nothing about equity in society more generally. Widespread (physical) access to and use of ICTs does not necessarily give women a position equal to that of men (Sorenson, 2002, see also Huyer & Hafkin, 2007). A challenge remains in converting ICT access and use into sustained female ICT participation.

# Methodology

This study contributes to the debates discussed above by providing an empirical basis for assessing gender dimensions of access and usage across 17 African countries – Benin, Botswana, Burkina Faso, Cameroon, Cote d'Ivoire, Ethiopia, Ghana, Kenya, Mozambique, Namibia, Nigeria, Rwanda, Senegal, South Africa, Tanzania, Uganda and Zambia. The data that is used for analysis stems from surveys conducted by Research ICT Africa (RIA) from late in 2007 to the beginning of 2008. The data is nationally representative on a household level<sup>10</sup> and for individuals 16 years or older. It builds on the 2004 RIA Household Survey of 10 African countries. The 2007/8 survey allows for a far more focused examination of areas of difference and similarity among men and women. The questionnaire, administered across the 17 African countries, was developed in a way that enables the disaggregation of data across a number of cross-cutting variables such as age, income, education and access to a range of ICTs. It therefore will enable the verification of certain assumptions in the literature about ICT and development in relation to gender.

The survey was stratified into metropolitan, other urban and rural areas. Enumerator areas (EAs) were sampled for each stratum using probability proportional to size (PPS) from the national census sample frame. For each country EA sample frames were constructed through listing all households within an EA. Households were then sampled using simple random sampling. The individual to be selected for each household was randomly selected from all household members and visitors that stayed at the home on the night the household was visited and that were 16 years of age or older.

The RIA questionnaire was divided in three sections. The first part, the household roster, collected information about all household members. The second part collected household related information. The head of the household or someone that manages the household answered part one and two. The third part, the individual section, was answered by a randomly selected individual 16 years of age or older that slept in the house the night of the interview and included household members and visitors.

The statistical analysis of the gender variances within the data collected quantitatively in the household survey suggested a number of areas of statistical significance. Quantitative data, however, provides limited in-depth evidence of any gender differences. Therefore, focus groups were conducted in five countries – Nigeria, South Africa, Cameroon, Uganda and Ethiopia in addition to the survey to provide in-depth understanding of gender differences in the usage, ownership and experience of ICTs in these five countries. The purpose of the focus groups was to determine some of the factors influencing ICT access and usage that cannot be determined by quantitative analysis and hopefully, shed some light on some of the results of the household survey related to gender. For the breakdown of numbers of focus groups and composition see Appendix A.

This study will provide an evidential platform for further research that will need to determine under what conditions exclusion and inclusion from ICT networks translates into better opportunities or greater inequality.

Consolidating research findings on different ICTs (radio, TV, internet, mobile phone) we expected the gender differences identified in the table below, holding those factors<sup>11</sup> constant that are assumed by the literature to be predictive for ICT access and usage.

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10 Except for Zambia and Nigeria, which are not nationally representative as a result of the way sampling was undertaken, here data are extrapolations to the national level but are not nationally representative.

11 As Sorenson (2002) points out there is still a shortage of studies analysing gender and ICT in relation to work. We try to address this by including employment status (students, housewife, part time employed, full time employed, unemployed, other e.g. occasionally working) as a reference category in the general models.

Table 1: ICT Outcomes and the expected gender relationships

ICT	Characteristics of variable	expected relationship	Comment
Mobile access	Owning a mobile phone or active SIM card = 1, otherwise = 0	♀ = ♂	Relying on findings of Chabossou et al. (2008) no gender difference for mobile access is expected
Mobile expenditure	Continuous, mobile expenditure using PPP conversion rates	♀ < ♂	Having lower individual income, women are likely to spend less than man on mobile phone usage
Knowing what the internet is	Knowing what the internet is = 1, otherwise = 0	♀ = ♂	The assumption is that there is no gender difference when it comes to knowing what the internet is
Internet usage	Using the internet = 1, otherwise = 0	♀ < ♂	Women are expected to have fewer opportunities to use the internet, since they are less often employed and more often house wives or might approach new technologies with caution. Schmidt & Stork (2008) showed that women have less e-skills in 9 out of 17 African countries surveyed.
Email address	Having an email address = 1, otherwise = 0	♀ < ♂	It is assumed that women have an email address less often than men
Radio usage	Listening to the radio = 1, otherwise = 0	♀ > ♂	Being more often at home and less often in full-time employment, it is assumed that women listen to the radio more often (at home) than men.
Radio ownership	Having access to a radio, that can be used at any time = 1, otherwise = 0	♀ = ♂	No directed assumption is being made as to whether men or women differ in owning a private radio.
Radio hours	Continuous, hours of listening to the radio	♀ > ♂	It is expected that daily radio listening habits differ between men and women.
TV usage	Watching TV = 1, otherwise = 0	♀ > ♂	Similar mechanisms to those for radio usage are expected to be found for TV usage, (assuming the household can afford a TV, which might not be the case for certain areas).

For the sake of completeness, even though not the focus of this paper, table 2 shows the expected relationships between the independent variables and the ICT outcomes. Unless otherwise indicated, similar relations between the factors and access to and usage of the different ICTs (mobile phone, internet, radio and TV) are assumed. Various models will be used to control for factors listed in table 2. The knowledge of the impact of those factors on mobile phone access, radio and TV usage will therefore help to understand gender differences or similarities that are found in the descriptive results. In each ICT chapter the focus will be drawn to gender aspects.

Table 2 – Relationship between independent variable and ICT outcomes.

Factor	Characteristics of variable	Relationship	Comment
Age	in years	negative	Technology being a domain of the younger generation a negative coefficient is expected
Income	Continuous, individual income using implied PPP conversion rates	positive	Income is assumed to be the main barrier to ICT access and usage.
Rural Area	Rural = 1, otherwise = 0	negative	There are fewer internet cafes, less mobile coverage, etc. in rural than in urban areas, therefore, a negative coefficient is expected.
Tertiary	Highest education tertiary= 1, otherwise = 0	positive	Education should enable individuals to use ICTs, while also being an indicator for income. With no education being the reference category having a higher level of education is expected to be positively related to ICT access and usage (with tertiary education having the highest impact), no education = reference category
Secondary	Highest education secondary = 1, otherwise= 0	positive	
Primary	Highest education primary= 1, otherwise = 0	negative	
Vocational	Highest education vocational = 1, otherwise= 0	positive	
Full-time employed	Full-time employed or self-employed = 1, otherwise = 0	positive (ownership) negative (use)	Someone who is employed full-time might be required to work with ICTs and hence would use mobile phones and internet more often, but might not have as much time to watch TV or listen to the radio.
Part-time employed	part-time employed or self-employed = 1, otherwise = 0	not significant	Although someone who is employed part-time might be required to work with ICTs too, the employment factor is expected to be less significant.
unemployed	unemployed = 1, otherwise = 0	positive (ownership) negative (use)	Someone who is unemployed might have more time to watch TV or listen to the radio, but might be less able to afford costly mobile phones (airtime), have less contact with the Internet etc.
student	Full-time student = 1, otherwise = 0	negative	Students are expected to be less likely to use ICTs.
Social network	Enrolled in a social network (church, sports club) = 1, otherwise = 0	positive	Someone who is a member of a social network is expected to have increased need to communicate with mobile phones or the internet. No assumption is made however, on how enrolment in social networks might relate to the other ICTs.
Country - dummies	country = 1, otherwise = 0		Control for country specific differences. Ethiopia as the country with the least ICT access and usage functions as reference category.

Table 3, 4 and 5 and figure 1 offer an overview of the sample statistics. Whereas in Botswana, Ethiopia, Kenya, Namibia, Rwanda, Senegal, South Africa, Tanzania and Zambia more females participated in the survey, men made up a greater share of the sample in the other countries. Despite the highly elaborate sampling procedure 80% of the participants in Burkina Faso were male, whereas the census data<sup>12</sup> reveals that the sex ratio should be approximately 1:1. Because of the obvious gender bias the results from Burkina Faso need to be interpreted with care. Literacy was defined as the share of people in each country that can write a letter. As can be seen, literacy is very uneven among the countries with South Africa (90.9%) and Nigeria (90.4%) at the top and Burkina Faso (19%) at the bottom.

The monthly average income (in US\$ using implied PPP conversion rates) varies greatly from less than 100 US dollars a month (Tanzania) to more than 700 US dollars a month (South Africa). The average age of the survey participants is similar in all countries, varying between 30 years (Kenya) and 41 years (Côte d'Ivoire, Burkina Faso). Sampling

12 <https://www.cia.gov/library/publications/the-world-factbook/geos/uv.html>

procedures were effective in securing a balance of people living in different areas with about 40% of the participants living in major urban areas, 30 % in other urban areas and 30% in rural areas in all countries.

Table 3 – Sample

	major urban		other urban		rural areas		All
Benin	432	39%	336	31%	333	30%	1101
Botswana	348	43%	241	29%	229	28%	818
Burkina Faso	416	39%	329	31%	332	31%	1077
Cameroon	490	40%	347	28%	398	32%	1235
Côte d'Ivoire	502	45%	312	28%	298	27%	1112
Ethiopia	1173	50%	631	27%	551	23%	2355
Ghana	473	43%	324	30%	295	27%	1092
Kenya	472	32%	557	38%	432	30%	1461
Mozambique	562	50%	312	28%	257	23%	1131
Namibia	311	35%	294	33%	280	32%	885
Nigeria*	895	33%	1012	37%	844	31%	2751
Rwanda	415	38%	333	31%	330	31%	1078
Senegal	432	40%	312	29%	337	31%	1081
South Africa	779	44%	465	26%	527	30%	1771
Tanzania	634	43%	393	26%	463	31%	1490
Uganda	436	39%	347	31%	344	31%	1127
Zambia*	405	46%	212	24%	264	30%	881

\*Results for Zambia and Nigeria are extrapolations to the national level but are not nationally representative

Participants were asked what they considered to be 'their main activity during the last six months', indicating their employment status. Figure 1 shows the results. Self-employment outweighs the number of employed for all countries but Botswana, and Namibia, which also had the highest number of unemployed. Figure 2 presents the marital status of the participants. As can be seen the majority of people in almost all countries were either single or married at the time they answered the questionnaire. Interestingly, the category 'cohabitate' hardly applied for people in Ethiopia, Senegal or Zambia, but was selected by about 50% of people in Côte d'Ivoire and Burkina Faso to describe their living arrangements.

Correlations (not shown in the table) of gender and the factors that are considered as relevant for gender issues reveal that being female relates to lower income, lower education and less full-time or part-time employment. The women in the RIA sample survey are less often enrolled as students than men, slightly younger than the male participants and slightly less likely to live in rural areas. Not surprisingly however, being female is positively related to being a housewife and also to the marital status of being widowed or divorced.

Table 4 – General sample statistics of randomly selected individual

	% females	Average individual income US \$			Average income US\$ ppp			Average age	% with a bank account
		All	♂	♀	All	♂	♀		
Benin	48%	53	70	34	157	209	101	33	5,4%
Botswana	69%	106	165	80	365	568	275	35	30,9%
Burkina Faso	19%	42	47	23	178	197	96	41	11,9%
Cameroon	43%	85	111	50	250	326	148	34	7,1%
Côte d'Ivoire	34%	114	144	58	269	338	137	41	18,2%
Ethiopia	53%	14	24	6	124	201	54	33	4,2%
Ghana	50%	97	118	75	642	784	498	38	32,3%
Kenya	63%	69	100	50	176	257	129	30	26,2%
Mozambique	37%	33	29	36	174	152	198	37	10,0%
Namibia	59%	127	186	85	521	767	350	38	46,2%
Nigeria*	42%	82	100	57	187	229	129	34	46,4%
Rwanda	53%	28	35	22	215	270	168	40	14,0%
Senegal	55%	65	106	32	221	362	108	34	8,1%
South Africa	59%	207	323	126	726	1133	442	36	52,5%
Tanzania	64%	27	39	20	94	135	70	35	6,8%
Uganda	49%	28	41	15	201	289	111	36	18,8%
Zambia*	60%	63	125	20	114	229	37	40	20,3%

\*Results for Zambia and Nigeria are extrapolations to the national level but are not nationally representative

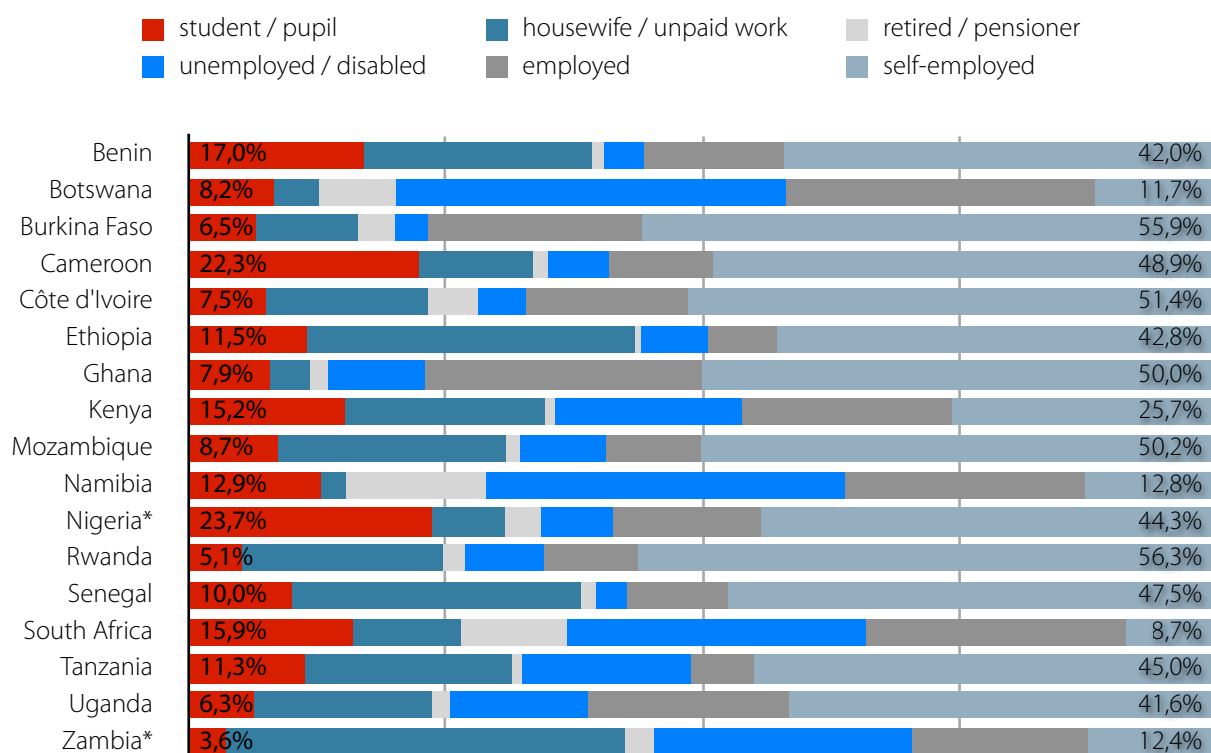


Figure 1: Main activity during past six months

Table 5 – Gender disaggregated educational sample statistics

	% that cannot write a letter			Highest Education: Tertiary			Highest Education: Secondary		
	All	♂	♀	All	♂	♀	All	♂	♀
Benin	53,6%	43,0%	65,1%	4,2%	6,3%	4,1%	25,3%	31,9%	18,0%
Botswana	12,1%	9,2%	13,4%	4,9%	6,8%	1,6%	53,4%	54,6%	52,8%
Burkina Faso	67,8%	70,3%	56,9%	1,4%	1,3%	7,0%	16,9%	14,5%	27,1%
Cameroon	24,7%	29,8%	17,9%	7,3%	7,5%	3,0%	41,4%	38,0%	45,9%
Côte d'Ivoire	42,1%	40,3%	45,6%	4,8%	5,7%	0,3%	28,6%	30,8%	24,2%
Ethiopia	58,5%	53,2%	63,3%	0,6%	0,9%	4,4%	14,8%	19,4%	10,7%
Ghana	33,7%	27,7%	39,9%	5,5%	6,6%	13,3%	27,8%	29,9%	25,7%
Kenya	13,0%	9,0%	15,4%	13,2%	13,0%	0,5%	36,9%	43,0%	33,3%
Mozambique	37,7%	31,3%	48,8%	0,8%	0,9%	6,4%	10,5%	12,4%	7,1%
Namibia	17,0%	17,6%	16,6%	6,7%	7,1%	9,2%	52,7%	49,9%	54,6%
Nigeria*	10,8%	7,3%	15,6%	12,0%	14,1%	0,3%	56,2%	58,4%	53,2%
Rwanda	37,7%	32,5%	42,3%	0,4%	0,6%	1,2%	6,4%	4,9%	7,7%
Senegal	63,6%	51,8%	73,0%	2,5%	4,1%	10,7%	15,2%	16,6%	14,1%
South Africa	10,1%	9,8%	10,3%	12,1%	14,1%	0,2%	57,5%	56,3%	58,3%
Tanzania	18,2%	15,1%	19,9%	0,3%	0,4%	1,8%	13,2%	13,9%	12,8%
Uganda	31,0%	22,2%	40,1%	3,0%	4,0%	0,2%	25,1%	28,7%	21,4%
Zambia*	20,5%	16,4%	23,3%	0,9%	1,9%	5,6%	32,8%	52,0%	19,9%

\*Results for Zambia and Nigeria are extrapolations to the national level but are not nationally representative.

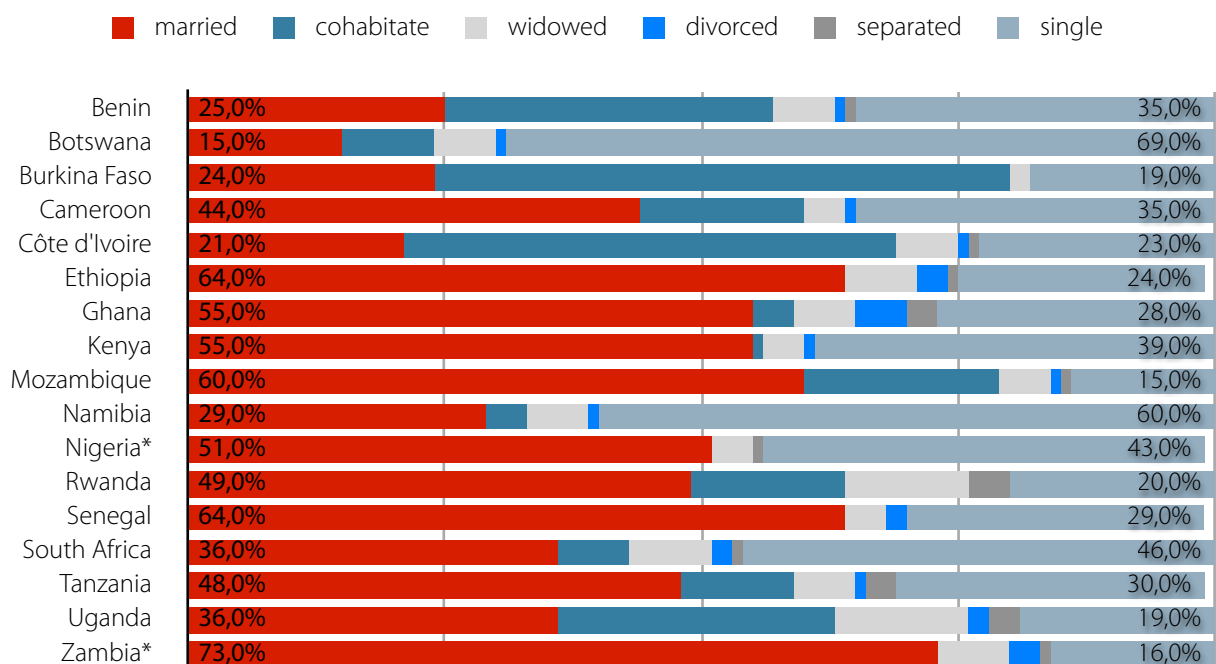


Figure 2: marital status

## Mobile Phone

The 2007/8 survey data highlights the relatively low overall mobile penetration in African countries (see table 6), with less than half the adult population owning phones in many countries. It also highlights the variation in mobile penetration between countries. Whereas in Ethiopia only 3.2% of the adult population owns a mobile phone or has an active SIM card around 60% of the adult population of South African, Ghana and Botswana have their own mobile phone. For the majority of countries, the survey results reveal differences between men and women in ownership of and expenditure on mobile phones. In 13 out of the 16 countries, more men than women own a mobile phone and mostly spend a greater amount of money on using it.

Gender differences in mobile ownership are small in some countries (e.g. Ethiopia, Côte d'Ivoire, Rwanda) and are not statistically significant for Botswana and Namibia. More women than men own mobile phones in Mozambique, Cameroon and South Africa, but this difference is only statistically significant for South Africa.

Table 6: Ownership and expenditure – mobile phones

	16+ with mobile phone or active SIM card			Monthly average mobile expenditure in US\$ PPP			Monthly average mobile expenditure in US\$		
	All	♂	♀	All	♂	♀	All	♂	♀
Benin	30%	38%	21%	24,87	25,63	23,37	8,33	8,59	7,83
Botswana	60%	60%	59%	35,02	52,32	27,23	10,18	15,21	7,92
Burkina Faso	27%	28%	25%	24,75	23,23	31,87	5,84	5,48	7,52
Cameroon	37%	34%	40%	21,05	25,16	16,27	7,14	8,54	5,52
Côte d'Ivoire	42%	43%	40%	29,48	34,01	20,12	12,52	14,44	8,54
Ethiopia	3%	4%	3%	32,54	38,72	24,74	3,81	4,53	2,90
Ghana	60%	62%	58%	69,26	75,36	62,76	10,44	11,36	9,46
Kenya	52%	58%	49%	26,71	30,01	24,45	10,41	11,69	9,52
Mozambique	26%	22%	33%	34,13	40,56	26,67	6,26	7,44	4,89
Namibia	49%	54%	46%	46,98	55,09	40,55	11,41	13,38	9,85
Nigeria*	77%	82%	71%	24,87	27,18	21,23	10,88	11,89	9,29
Rwanda	10%	12%	8%	45,90	53,88	35,93	6,02	7,06	4,71
Senegal	40%	56%	27%	37,67	45,63	24,62	11,00	13,33	7,19
South Africa	62%	58%	65%	55,64	63,63	50,75	15,88	18,16	14,48
Tanzania	22%	27%	18%	25,92	24,59	27,08	7,44	7,06	7,77
Uganda	21%	29%	13%	41,02	44,65	32,53	5,75	6,26	4,56
Zambia*	46%	58%	37%	19,31	23,39	14,98	10,55	12,78	8,18

\*Results for Zambia and Nigeria are extrapolations to the national level but are not nationally representative

To investigate these issues further more complex analysis tools need to be deployed. Testing for significance between two groups for large sample size will not deliver reliable results. Chabossou et al. (2008) used probit models to investigate mobile adoption and explain mobile expenditure. Their analysis included a gender variable. Table X provides summary results without reporting coefficients, showing for each of the independent variables whether their impact on the probability of mobile adoption is significant and whether it is positive or negative.<sup>13</sup>

<sup>13</sup> The detailed results can be found in the appendix.

Table 7: Nationally representative Probit results for each country using sampling weights (source: Chabossou et al. (2008))

Country	Pseudo R <sup>2</sup>	Prob > chi <sup>2</sup>	Positive Coefficients + = significant at 0.1 level, ++ = significant at 0.05 level, +++ = significant at 0.01 level Negative Coefficients - = significant at 0.1 level, -- = significant at 0.05 level, --- = significant at 0.01 level									
			Income	Age	Gender	Tertiary	Secondary	Primary	Vocational	Rural	Social N.	Constant
Benin	0.396	0.00	+++	++	No	+++	+++	+++	+++	---	no	---
Botswana	0.16	0.00	+	No	No	++	+++	No	Skip	--	+++	No
Burkina Faso	0.253	0.00	+++	---	---	+++	+++	+++	Skip	---	No	No
Cameroon	0.258	0.00	+++	++	No	+++	+++	+++	++	---	++	---
Côte d'Ivoire	0.292	0.00	+++	--	No	+++	+++	No	+++	---	+++	No
Ethiopia	0.452	0.00	+++	No	No	+++	++	No	+++	---	No	---
Ghana	0.158	0.00	No	-	No	+++	+++	+++	++	---	++	No
Kenya	0.258	0.00	+++	No	No	+++	+++	.++	+++	No	++	---
Mozambique	0.214	0.00	+++	No	+++	+++	+++	+++	No	---	No	---
Namibia	0.224	0.00	+++	No	No	+++	+++	No	No	---	No	No
Nigeria*	0.172	0.00	+++	--	No	+++	+++	No	+	No	++	No
Rwanda	0.244	0.00	No	No	No	Skip	+++	+++	Skip	---	No	---
Senegal	0.215	0.00	++	No	---	+++	+++	++	++	---	No	No
South Africa	0.171	0.00	+++	---	+++	+++	+++	No	No	---	No	No
Tanzania	0.172	0.00	+++	+	-	Skip	+++	+++	+	---	+++	---
Uganda	0.357	0.00	+++	+	No	+++	++	No	+++	---	No	---
Zambia*	0.289	0.00	+++	No	No	Skip	+++	+++	+++	Skip	+++	---

The results suggest that the variables used to analyse mobile phone adoption contribute significantly to explaining the probability of adoption. The gender variable is mostly insignificant as expected (11 countries). Only in Senegal, Tanzania and Burkina Faso does being a woman decrease the probability of mobile telephony adoption. In South Africa and Mozambique it even increases the probability significantly.

Subtle differences however emerge from qualitative research.

With the drop in the price of mobile phones and the booming second-hand handset market, mobile phone ownership appears to have eroded the gender divide in Cameroon. In urban areas, there are no significant differences between male and female ownership, despite income differences. However, in rural areas, men are more likely to own and have access to phones than women. This could be attributed to a number of factors, namely, illiteracy, cultural barriers, low buying power and the age structure of inhabitants in rural areas as opposed to urban areas. There are more older people than youngsters in rural areas. In urban areas, the main reason why men more than women don't have a mobile at a certain time is because of theft: mobile phones have become the most popular stolen object after money. In poor neighbourhoods, there is another factor explaining why men don't possess mobile phones at a certain time: mobile phones have become the easiest thing to sell.

When I have a money problem and don't see where to turn, I sell my phone.

*Tsague Joel, young man in poor neighbourhood in Yaoundé.*

Some men in poor urban areas without a handset buy SIM cards which allow them to use the phones of friends or family members, thus overcoming the need to have their own phone. The cost of SIM cards has come down substantially in Cameroon. In general women keep their phones longer than men and lose them less often. In rural areas, losing one's phone is the main reason why men are deprived of their handsets.

When buying a phone, men and women in poor areas consider security as the most important criteria with price being secondary to a certain extent. A comment from a poor urban group explains why: 'Fancy phones attract thieves'. Because of this they mostly buy phones with fewer features. They look for something strong and user-friendly, which allows them to easily make and receive calls.

I can't anymore buy a fancy phone. It's a very risky business. The last time I had one, I wasn't careful enough to phone at a safe place. One of those thugs we call 'proprietor' came close to me, rose his hand and just say: 'put it here once you will finish'. I had no choice than doing his will. It's was the second fancy handset putting my life at risk, and probably the last.

*Djomo Honore Patrick, young man in poor neighbourhood in Yaoundé, Cameroon.*

In middle to high income urban areas, women have the same attitude to phones as people in poor areas while men consider technology first. In rural areas, the trend is quite different. Older men consider price to be the determining criteria while young men look for features and sophistication. Young women, prefer fancy phones while older women share the same attitude as older men.

For phone owners, the difference between men and women lies in the method of acquisition. In general, men buy their own phones, either new or second hand, while women in many cases receive their phones as a gift. Most young, single women in the focus groups in Cameroon, received their phones as gifts from their lovers. Other women, generally received their phones from a family member. Phones are donated as gifts without any particular conditions of usage.

What means offering you a phone or air time and telling you how to use it. We are not kids. If this happens, I will tell the person to take back the phone.

*Foko Juliette, young woman in poor neighbourhood in Yaoundé, Cameroon.*

Poor men prefer second hand handsets, while poor women prefer new handsets as they do not want to risk purchasing a stolen handset by accident. However, women in middle to high income neighbourhoods prefer new phones because of their reliability. In this social category, there is no noticeable gender gap as far as quality is concerned (old versus new); women and men equally prefer new to old phones. The divide surfaces when it comes to the type of phone however. For women the decision making process is driven by the ease of use of the phone: whether it is user friendly, for making and receiving calls. Most men tend to look for sophisticated features such as 3<sup>rd</sup> generation (3G), multimedia messaging service (MMS), general packet radio service (GPRS) and Internet as the phone has become a status symbol.

In rural areas, gender stereotypes observed in society, are reflected in mobile phone ownership. The majority of female owners received their phone as a gift from their family.

I can't buy a new phone anymore. The last time I did, the phone didn't last. With old ones, at least I am assured people have already tested it.

*Ebolo David, a man in a rural area of Cameroon.*

Men in middle to high income urban areas tend to own more than one mobile handset while in rural areas, owning one phone is enough. However, women think that owning two phones is cumbersome. The reason for having two mobiles is network reliability, mobile prices of different operators, interconnection costs and to take advantage of operator specials. In order to make sure you are reachable at any time, you need to subscribe to at least two operators.

In Ethiopia about half of the participants from low income male and female groups and all the participants from the rural male and female groups did not have mobile phones.

Those without mobile phones attributed this to lack of finance, to the irrelevance of mobile phones considering their employment situation or lack of mobility, or to the presence of other telephone alternatives. The excerpts below from focus group participants illustrate the reasons and dynamics that influence individuals' decision to own a mobile phone or SIM in Ethiopia.

I want to have (a) mobile phone but I can't afford it.

*Low income female focus group participant.*

I am an old woman. What do I need (a) mobile for? Besides, I have a fixed phone at home.

*Low income female focus group participant.*

I don't have a mobile because I don't find it necessary to have because I have a fixed phone where I work and which I can use to make and receive calls.

*Low income male focus group participant.*

In Uganda among low and middle-income earners in the focus groups, men and women tended to have equal access to phones. Among people with low income levels, men and women appeared to be equally divided between those who bought brand-new handsets and those who bought second-hand ones. Some homes had mobiles which were only used by the husband. There were few instances where couples shared a mobile, and in instances where one partner had a phone the other partner had limited or controlled access to it. This could probably be explained by the private nature of mobile phones, which made most participants feel they needed to keep call information private. Instances of men putting restrictions on how females used phones they had bought for them occurred among both rural and urban dwellers, as well as among those with low levels of education and those who had reached higher levels of education, including tertiary. Where they existed, these restrictions were not necessarily spelt out by the buyer of the handset, but they expected the recipient to be aware of what not to use the phones for. In a number of cases the type of handsets that participants owned was related to levels of income and education, with those who had a higher level of income or education tending to have phones with greater functionality.

In South Africa, those women who did not have phones used public phones or more often received calls at their neighbours' homes. The issue of privacy was raised with regard to public phones however. A woman from a rural focus group said:

Yes...but sometimes when you have R5 you would rather buy airtime because you want to discuss private matters which cannot be discussed on a public phone.

They would only use their neighbour's mobile or public phone when really necessary, as they were aware their neighbour's were equally poor or only marginally better off. Some phone owners charged those who used their phone between R5 and R7 a call.

Table 8: – Mobile expenditure against monthly income

	share of monthly mobile expenditure / monthly individual income			share of monthly mobile expenditure / monthly disposable income		
	All	♂	♀	All	♂	♀
Benin	11,7%	10,9%	13,3%	32,9%	32,3%	33,9%
Botswana	10,4%	12,0%	9,6%	43,2%	40,2%	44,7%
Burkina Faso	14,1%	12,9%	19,6%	32,3%	32,7%	30,4%
Cameroon	10,8%	9,5%	12,7%	40,9%	40,3%	41,8%
Côte d'Ivoire	10,1%	8,4%	14,8%	39,6%	42,0%	34,4%
Ethiopia	7,1%	7,2%	6,9%	37,0%	37,2%	36,7%
Ghana	13,0%	11,1%	15,0%	47,9%	47,7%	48,1%
Kenya	16,7%	17,4%	15,9%	52,5%	53,5%	51,7%
Mozambique	11,7%	13,6%	8,6%	32,6%	35,9%	28,3%
Namibia	9,2%	9,5%	9,0%	25,3%	26,5%	24,2%
Nigeria*	13,7%	12,2%	16,2%	52,4%	52,8%	51,7%
Rwanda	10,3%	8,4%	13,1%	65,5%	67,7%	62,3%
Senegal	14,2%	12,5%	17,2%	22,2%	22,5%	21,7%
South Africa	7,4%	5,9%	8,8%	29,3%	27,4%	30,6%
Tanzania	15,4%	14,5%	16,5%	28,9%	28,0%	29,8%
Uganda	10,8%	9,9%	13,1%	48,6%	50,0%	44,7%
Zambia*	10,8%	10,5%	11,6%	60,3%	61,8%	58,4%

\*Results for Zambia and Nigeria are extrapolations to the national level but are not nationally representative

In most of the countries surveyed, men spend more money than women on their mobile phones. Although the numbers suggest that in Tanzania, woman spend more than men, the difference is not statistically significant.

However, expenditure patterns are different when they are viewed as a percentage of monthly individual income. While the expenditure patterns above illustrated differences between genders, table 7 reveals that most women are spending a similar amount to men as a percentage of their monthly individual income, and hardly differ in the share of their monthly disposable income devoted to mobile expenditure. In Rwanda, Senegal and Tanzania, countries with very low (female) average income, women spent more of their monthly individual income on mobile phones than men. Interestingly, Ghana also falls into this group although it is at the top end of female income.

Chabossou et al. (2008) find that the gender variable is insignificant for 10 countries for the analysis of expenditure pattern (see Table x). This is somewhat surprising given that the average income of women is lower compared to that of men for all countries but Mozambique. However income is already taking care off in the equation. This means that apart of being at different income levels women spend the same on mobile phone as men. For Botswana, Cameroon, Mozambique and Namibia the gender variables was significant and negative, which means that women spend less. Nigeria had the only positive significant coefficient.

Table 9: Mobile expenditure - Robust regression results for each country using sampling weights (source: Chabossou et al. (2008))

Country	R <sup>2</sup>	Prob > F	Only significant coefficients are being displayed: * = significant at 0.1 level, ** = significant at 0.05 level, *** = significant at 0.01 level							
			Income	Age	Gender	Work phone	Public phone	Fixed phone	Rural	Social Netw.
Benin	0.399	0.000	0.35***			1.07***	-0.27***			
Botswana	0.298	0.000	0.46***		-0.26**					
Burkina Faso	0.206	0.000	0.33***				0.28*	0.35***		
Cameroon	0.22	0.000	0.27***		-0.32**		-0.22*	0.54*	-0.4*	
Côte d'Ivoire	0.196	0.000	0.36***	-0.02*		0.45**		0.37*	0.34*	
Ethiopia	0.353	0.000	0.29***	-0.01**					-0.47***	0.23*
Ghana	0.145	0.000	0.47***	-0.01**						
Kenya	0.251	0.000	0.33***	-0.02***		0.44***		0.47***		
Mozambique	0.189	0.000	0.11**	-0.03***	-0.72***			1.04***		
Namibia	0.449	0.000	0.43***		-0.23*	0.37**				
Nigeria	0.458	0.000	0.71***		0.24***			-0.41*	0.24***	
Rwanda	0.339	0.000	0.55***				0.66***			
Senegal	0.266	0.000	0.43***				0.247*			
South Africa	0.477	0.000	0.47***	-0.02***		0.2**	-0.2***	0.3***		
Tanzania	0.127	0.000	0.33***					0.84**		
Uganda	0.292	0.000	0.39***					0.48**	-0.24*	0.43**
Zambia	0.378	0.000	0.52***	-0.01**				0.69***		

In South Africa, as the women largely paid for their phone usage from whatever income they received, it did impact on the household and food budget, but many of them were primarily receiving calls or sending missed calls. One woman an anti-drug campaigner, in a female focus group in Delft, received airtime (as much as R300) from the 'courts' to inform the police daily on any activities in the community.

I use it for the community work that I do; like fighting gangsterism. Because I am a community worker, if somebody needs to speak to me or needs my assistance, I give them my number, if I haven't got money, they

can call me; and I also use it to call emergency numbers, as I work with the police. So, if I have money I will buy airtime or else they would give me money for airtime... It is important for us to have cell phones and to be able to call the police. We cannot call Delft police; we need to call police outside our area, as the police in the area are corrupt...

The cost of calls limited phone usage for men and women. As a result many of the women were primarily receivers of calls, some of which they would initiate either with a missed call or a 'please call me'. For a number of women this was their primary form of mobile communication. Generally they would call people whom they were confident would call back, such as more well-off family members. Sometimes they just hoped that people in a similar position would have airtime when they did not, and call them back. As women in the poor urban and rural groups were largely indigent only a few of them regularly received please call me messages from any particular group such as their children. In some instances they preferred to send please call me messages to older children who worked. Some women had younger children with phones, sometimes acquired illegally, but they were responsible for their own accounts. A woman who was at home with her children would get her grandparents to call her as they were pensioners and had some income.

Few men were primarily call receivers but all used missed call and please call me messages when they ran out of airtime. Those who perceived others, particularly family members to be better off or knew they had contracts would use these methods to contact family even if they had some airtime. They would contact their siblings, or children who were employed, in this manner. The responses they received varied but they were sufficiently positive for people to continue to pursue this option.

Despite the complaints about the high costs of calls, several of the male participants indicated they were spending more on the lottery than on communications. One participant indicated that he spent about R300 on the lottery as opposed to about R150 on his mobile phone. Both men and women were topping up their airtime regularly with small amounts rather than larger single amounts and did not always seem to keep a clear record of their accumulated expenditure.

Any control over the use of their phones and constraints on whom women called could not be well assessed in the rural and poor urban focus groups due to the preponderance of single women headed households. The absence of men in many households meant women acquired their phones themselves and determined their use largely on the basis of available funds, buying airtime in the smallest quantities available. There were only two women in the group with husbands, one with no phone at all and the other with both pre-paid fixed and mobile phones. All the women but the youngest one in the group had children. One of the young women had received her phone from her boyfriend who paid the account which she used very little as she generally sent him please call me messages if she wished to speak to him or generally he called her. Another woman had received her phone from her daughter. It was the second phone she had received from her daughter as her son had stolen the first one to buy 'tik', the local name for a widely used drug.

Most women said the primary reason for 'needing' a phone was for security. Even within their homes they were not safe and needed phones to contact family or friends in case of an incident. Although this was overwhelmingly given as the reason for having a phone, the focus group revealed that phones were primarily used for social calls. Usage was limited by the fact that few of the group members had regular incomes and most depended on the goodwill of others.

The men who had cell phones also prioritised security as the reason for having a phone but regarded it as more of a convenience and vital to other aspects of everyday life. They also pointed out that a phone could also make one a target of crime. One indicated that it was important to have a mobile phone to remain in touch with one's family in an emergency or just to receive information timeously when at work, as they were often not given messages left for them with their supervisors using the company's fixed line. The men who were self-employed used their mobile phones, all pre-paid, for work related matters. Depending on the nature of their communication they might make a call or meet someone face to face if phoning would not solve a problem. A fixed or mobile phone was seldom used for municipal or government enquiries as it was known that it would be too expensive considering the lack of responsiveness and inefficiency in government.

Although some of the men used SMSs and the children used Mix It, a low cost chat service, both men and women largely used their phones for voice calls. The older men in particular indicated their inability or desire to use their phone for anything other than basic voice calls. They were unable to check if their phones had been misused by family members and had to get their younger children to perform certain functions for them. None of them used their phones for email though some of the younger men, without phones were aware of this facility.

None of the women in the poor urban group used the phone for anything other than voice calls – not even for sending SMSs. Women were aware that SMSs were cheaper but did not see them as a substitute for voice calls. Some women are illiterate or the person they wanted to contact was illiterate:

...we know SMS is cheaper but now you must remember if you have to speak to your grandpa or if your grandpa phones, it's a little different. He doesn't know how to read the messages, and with a please call me; it's just confusing to him.

In response to questions about their willingness to use their cellphones for banking, many seemed not to have banking accounts but even for those who did it seemed a strange concept. Some not only expressed distrust of the cellphone system for banking but also of the banking system itself, which they regarded as untrustworthy, making the combination an unlikely prospect. Some of the better off women said they might use it but saw it as too complicated. When it was pointed out that by definition it could not be more complicated than using a phone, they seemed interested. Others argued that even if they knew how to use their cell phones for banking, airtime was so expensive it would not be worthwhile. However, there are no banks in Delft and people have to pay about R10 to travel to a bank. They pointed out, however, that they usually combined other shopping or social activities with the trip to the bank.

Holding influencing factors constant no significant gender effect for mobile phone ownership can be found; meaning that women with similar income, education, employment status etc. will be as likely to have a mobile phone as men. However, these influencing factors differ for women and therefore mobile phone usage is not equally accessible. Even though men spend more on mobile phones in total, women spend as much relative to their monthly income, or in many cases even more than men on mobile phone usage.

## Internet

The Research ICT Africa survey results show that Internet usage is not common in Africa. Only about 26% of the interviewees know what the Internet is and less than 10% use it. Table 7 lists the country and gender disaggregated results. In South Africa, Senegal and Zambia almost every second person knows what the internet is. Even so, only 15% at most (in South Africa, Kenya) access the Internet, with twice as many men using it as women. In Mozambique, Rwanda, Uganda, Ethiopia and Tanzania less than 10% of people know what the Internet is and less than five percent use it. Accordingly, only a small share of men and women have an email address in those countries. For most of the countries, the numbers for Internet access and email usage are similar, indicating that almost everybody who uses the Internet has an email address.

Gender differences turn out to be statistically significant for almost all the countries where analyses were conducted, although difference effect sizes are small. More men than women claim to know what the Internet is, with Cameroon being the only exception. In Cameroon significantly more women than men know what the Internet is and there is equity in email and Internet usage. The numbers for Rwanda and Zambia do not reach a level of statistical significance. As expected, however, in most countries men are more likely to use the Internet or have an email address. Interestingly, Tanzania and Rwanda show reverse patterns, although with only slightly more women than men using the Internet and generally very low Internet usage.

Only a minor share of about 8% of the participants in the RIA survey claimed to use the Internet, therefore, the following results on different aspects of Internet usage will not be reported separately for each country. No country specific conclusions can be drawn, however, the results still point out overall trends. As table 8 shows, both women and men with email addresses use email mainly for social communication with friends and family. Although significantly more in the case of men than women, almost every second person with an email address also uses email for communicating with colleagues or for work purposes, with every fifth man using it for business. There is parity in the proportion of men and women who claimed to use email for communication with fellow students and for study

purposes. Use of email to handle personal government affairs is rare – only 7% of men and 4.8% of women with an email address use it for interacting with local government.

Table 10: ICT access and usage

	Share of people (16 or older) that know what the Internet is			Share of people (16 or older) that use the Internet			Share of people (16 or older) with email addresses		
	All	♂	♀	All	♂	♀	All	♂	♀
Benin	21,5%	27,8%	14,6%	8,7%	11,9%	5,3%	8,0%	11,2%	4,6%
Botswana	22,0%	30,8%	18,1%	5,8%	10,1%	4,0%	4,9%	7,5%	3,8%
Burkina Faso	9,0%	8,9%	9,8%	4,3%	3,7%	6,4%	3,4%	3,0%	5,0%
Cameroon	38,9%	34,5%	44,6%	13,0%	13,1%	12,8%	11,0%	11,4%	10,5%
Côte d'Ivoire	17,3%	19,3%	13,4%	6,7%	8,1%	4,0%	4,1%	4,4%	3,4%
Ethiopia	8,6%	10,8%	6,5%	0,7%	0,9%	0,4%	0,4%	0,5%	0,3%
Ghana	26,6%	29,7%	23,4%	5,6%	8,1%	3,2%	5,2%	7,5%	2,8%
Kenya	32,2%	39,9%	27,8%	15,0%	21,1%	11,5%	13,0%	19,1%	9,5%
Mozambique	3,8%	3,8%	3,7%	1,0%	1,0%	0,9%	0,8%	0,8%	0,7%
Namibia	26,7%	30,4%	24,2%	8,8%	11,2%	7,2%	5,5%	6,7%	4,7%
Nigeria*	38,3%	40,7%	34,9%	12,7%	16,4%	7,6%	10,2%	12,5%	6,9%
Rwanda	6,7%	6,4%	7,0%	2,0%	1,8%	2,1%	2,0%	1,8%	2,1%
Senegal	45,0%	56,5%	35,8%	10,1%	14,4%	6,7%	6,5%	10,9%	3,0%
South Africa	50,8%	56,2%	47,0%	15,0%	20,4%	11,3%	12,6%	16,9%	9,6%
Tanzania	8,7%	9,9%	8,0%	2,2%	1,9%	2,3%	1,6%	1,0%	2,0%
Uganda	6,5%	9,4%	3,5%	2,4%	3,7%	1,1%	2,1%	3,4%	0,8%
Zambia*	43,4%	49,2%	39,6%	3,3%	5,6%	1,7%	2,8%	4,7%	1,5%

\*Results for Zambia and Nigeria are extrapolations to the national level but are not nationally representative

In terms of the location where people access the Internet hardly any gender differences can be found. Only around 10% have internet access at home. The great majority (about 70%) of those who use the Internet, use it at cyber or internet cafes (men slightly more often than women). Using the Internet at work is as common for women as it is for men (nearly 25%). A slightly greater share of women (12.3%) than men (9.6%) use the Internet at an educational institution, whereas women as well as men hardly access the Internet at other peoples homes (3%), at a library (2.2%) or using a mobile phone (4.2%).

While the focus groups focused on mobile access and usage primarily, it was not possible to discuss internet usage in most focus groups as almost none of the participants had ever used the Internet. In the case of South Africa, men and women both had access to the Internet largely through their place of work, though a few had access at home, with business people also having mobile access either on their mobile phones or laptops. In the case of the urban, mixed gender focus group, the business person with these multiple access points was a man.

Probit models were employed (for detailed results see appendix B) over and above the merely descriptive results to gain a deeper insight into ICT usage and access. Looking at internet knowledge, usage and having an email address while keeping factors such as age, education, income, rural area, status of employment, membership of a social network and country differences constant, reveals that a significant gender effect can be detected for knowledge about the internet, usage and possession of an email address. The models explain 33% to 35% of the variance.

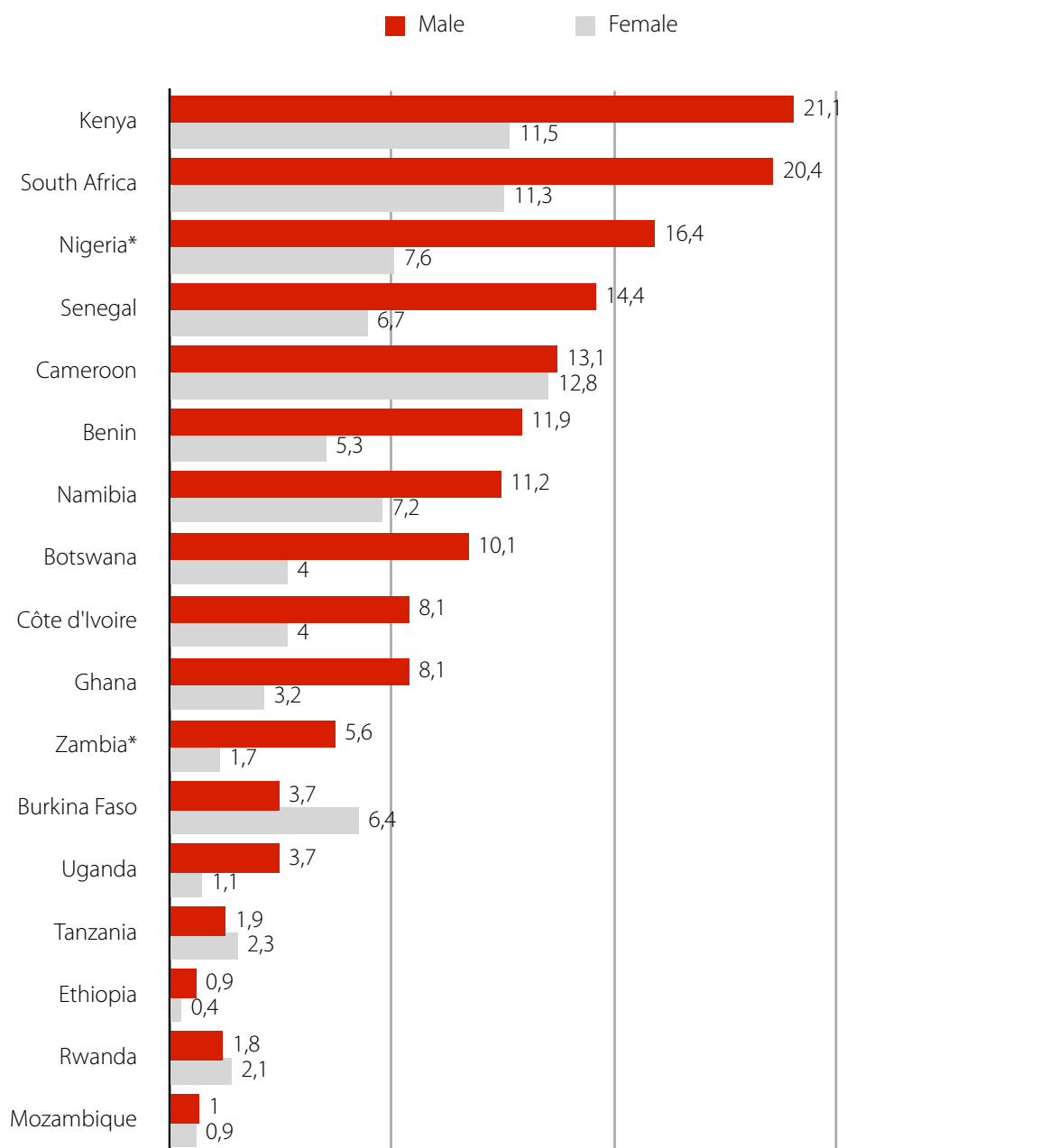


Figure 3 - Percentage of women and men 16 years or older that are using the Internet (\*Results for Zambia and Nigeria are extrapolations to the national level but are not nationally representative)

Ethiopia, with the lowest ICT penetration in general, is used as the reference point for the country dummies. This leads usually to significant and positive coefficients for all other country dummies. This is however not the case for the probit model for knowledge about the Internet, where the dummies for Botswana, Burkina Faso, Ivory Coast, Rwanda and Tanzania not significant. For Uganda and Mozambique the coefficients were significant and negative, implying less knowledge about the Internet than Ethiopia on average. The poor performance in terms of Internet access and usage in Ethiopia seems to be less an educational issue than but more one of income, prices and infrastructure availability.

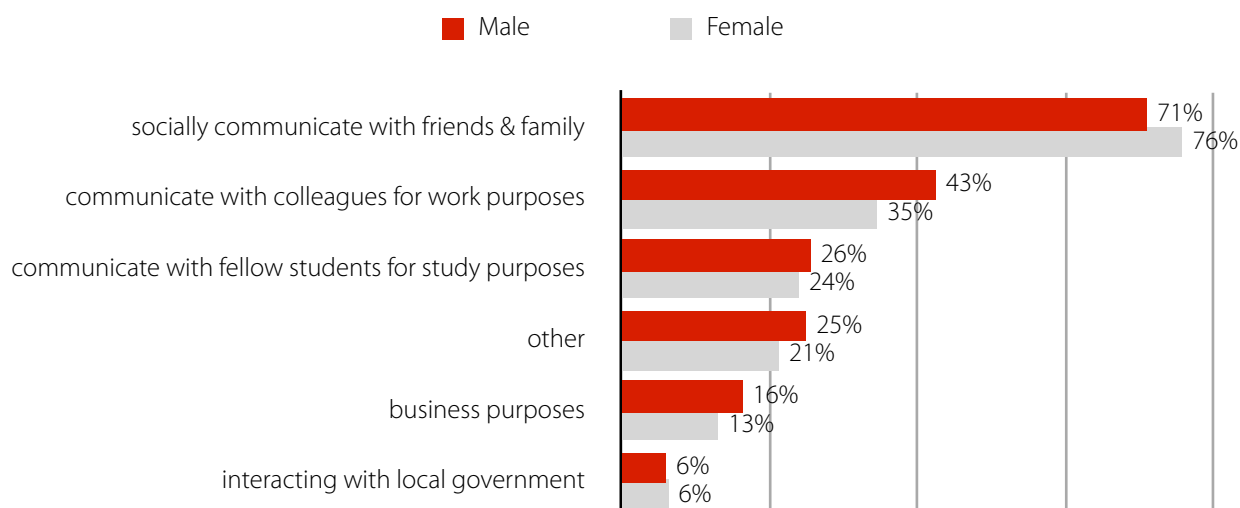


Figure 4: Purpose of email use in Percent of 16+ across 17 Countries

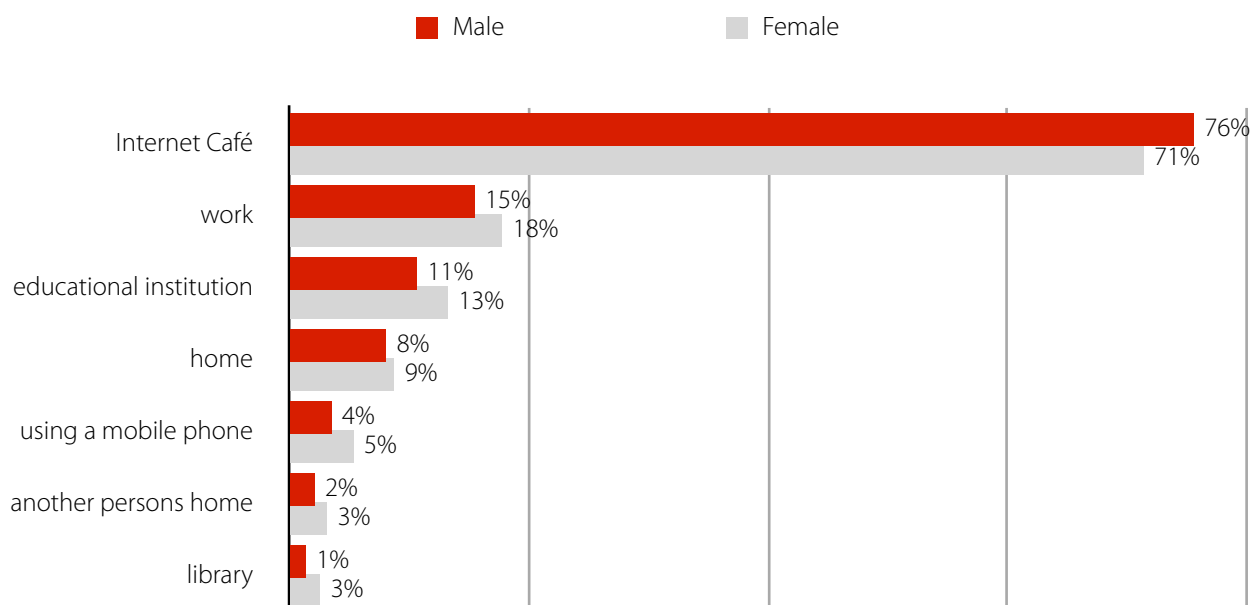


Figure 5: Share of 16+ (of those who use the internet) that use it (across 17 Countries)

Being female reduced the probability for knowing what the Internet is, using the Internet and having an email address significantly. Being full-time employed or being a student are better predictors for Internet knowledge and use than income<sup>14</sup>, which was not significant for Internet use and having an email address. This supports the theory that most Africans access the Internet through school, work or public access and less through private household level access due to income constraints and cost of access.

Age reduces the probability of knowledge and use of the Internet, while being part of a sports club increases it. This points towards the youth a key adopters but may also indicate sport as a key driver. The Internet is the key information source when it comes to international spots and foreign leagues.

When splitting the analysis and running the models for rural and urban areas separately, gender becomes insignificant for predicting knowing what the Internet is for rural areas. For urban areas gender remains significant and women are less likely to know what the Internet is. Internet use and having an email address could not be run separately due to the limited use in rural areas. This indicates that gender differences only emerge beyond a certain income and general technology access threshold.

<sup>14</sup> Dropping the employment status variables would lead to income entering the model with a positive significant coefficient.

Table 11: Probit summary results for Internet knowledge and use

Summary Stats and variables		Knowing what the Internet is	Using the Internet	Having an Email Address
Number of obs		22203	22203	22203
Wald chi2(39)		2211,09	1650,87	1453,63
Prob > chi2		0,0000	0,0000	0,0000
Pseudo R2		0,3262	0,3460	0,3564
income US \$ PPP		+++	ns	ns
Part time employed		-	ns	ns
Full-time employed		+++	+++	+++
Student		+++	+++	+++
Living in a rural area		---	---	---
Belonging to a social network	other	-	ns	ns
	church	ns	ns	ns
	trade union	++	ns	ns
	sports club	+++	+++	+++
	saving club	ns	ns	ns
	radio club	ns	ns	ns
	lobby group	ns	+	+
	reading club	+	++	+
	internet group	++	+++	++
	co-operative	+++	ns	ns
	burial society	ns	ns	ns
producer group	ns	ns	ns	
<b>Being female</b>		-	---	---
Age		---	---	---
Highest level of education: tertiary		+++	+++	+++
Highest level of education: secondary		+++	+++	+++
Highest level of education: primary		+++	ns	+
Highest level of education: vocational		+++	+++	+++
Constant		---	---	---
Country Dummies		Botswana, Burkina Faso, Ivory Coast, Rwanda and Tanzania not significant, Uganda and Mozambique negative coefficient and significant, rest significant with positive coefficient	all significant and positive (Ethiopia was the reference point)	
Positive Coefficients + = significant at 0.1 level, ++ = significant at 0.05 level, +++ = significant at 0.01 level Negative Coefficients - = significant at 0.1 level, -- = significant at 0.05 level, --- = significant at 0.01 level				

It would seem that similar educational and financial background create similar awareness in men and women of the Internet and usage of it . As with other ICTs access and usage, the internet reflects wider inequities between women and men evident in their differential access to education, employment and public access points. The high levels of literacy and education they demand, and the high cost of owning or accessing ICTs, increase the chances of women being marginalised.

## Radio & TV

Radio and TV ownership maybe household or individual assets. TV generally requires higher expenses in terms of electricity access, TV set and often a TV licence fee compared to a radio that maybe operated by batteries. Radio and TV may be substitute products for those that can afford both.

Of the different ICTs considered in the household survey, radio is the most widely used. It is also perhaps the only ICT that exists in most rural areas in Africa and is one of the main sources of information for many low income and rural households. Between 39% (Ethiopia) and 90% (Senegal) listened to radio in 2007, with men listening to Radio more often than women. Average hours listened to the radio per day were higher for women In Namibia, South Africa and Kenya (see figure 6).

Table 12 Gender differences for radio access and usage – country split

	Share of people (16 or older) that listen to the radio			Share of people (16 or older) that own a personal radio they can use at any time			Share of people (16 or older) that watch TV		
	All	♂	♀	All	♂	♀	All	♂	♀
Benin	75%	76%	73%	59%	72%	45%	47%	49%	45%
Botswana	55%	66%	50%	60%	69%	55%	49%	56%	46%
Burkina Faso	74%	77%	63%	72%	81%	30%	39%	36%	49%
Cameroon	62%	65%	58%	62%	68%	54%	54%	48%	62%
Côte d'Ivoire	64%	73%	46%	83%	89%	64%	56%	56%	58%
Ethiopia	39%	41%	37%	57%	59%	55%	19%	21%	17%
Ghana	88%	91%	84%	84%	89%	78%	57%	52%	62%
Kenya	84%	88%	81%	84%	87%	82%	57%	70%	49%
Mozambique	42%	45%	37%	89%	94%	78%	11%	8%	17%
Namibia	70%	71%	70%	62%	75%	54%	39%	46%	35%
Nigeria*	83%	87%	78%	57%	64%	48%	78%	77%	80%
Rwanda	69%	73%	64%	71%	85%	57%	13%	13%	13%
Senegal	90%	92%	88%	57%	66%	50%	81%	87%	77%
South Africa	68%	73%	66%	64%	69%	60%	69%	67%	71%
Tanzania	65%	74%	60%	72%	74%	70%	35%	40%	32%
Uganda	87%	96%	78%	68%	79%	55%	28%	34%	21%
Zambia*	56%	71%	45%	89%	90%	87%	35%	48%	26%

\*Results for Zambia and Nigeria are extrapolations to the national level but are not nationally representative

TV usage differs between countries (see table 12). Whereas in Mozambique, Rwanda and Ethiopia only a small number of people (less than 20%) watch TV, almost 80% of people in Nigeria and Senegal do so. From a gender perspective too, no clear picture of TV usage can be drawn. In some countries (e.g. Botswana, Kenya, Namibia) significantly more men than women watch TV, in other countries (e.g. Cameroon, Mozambique) the opposite applies.

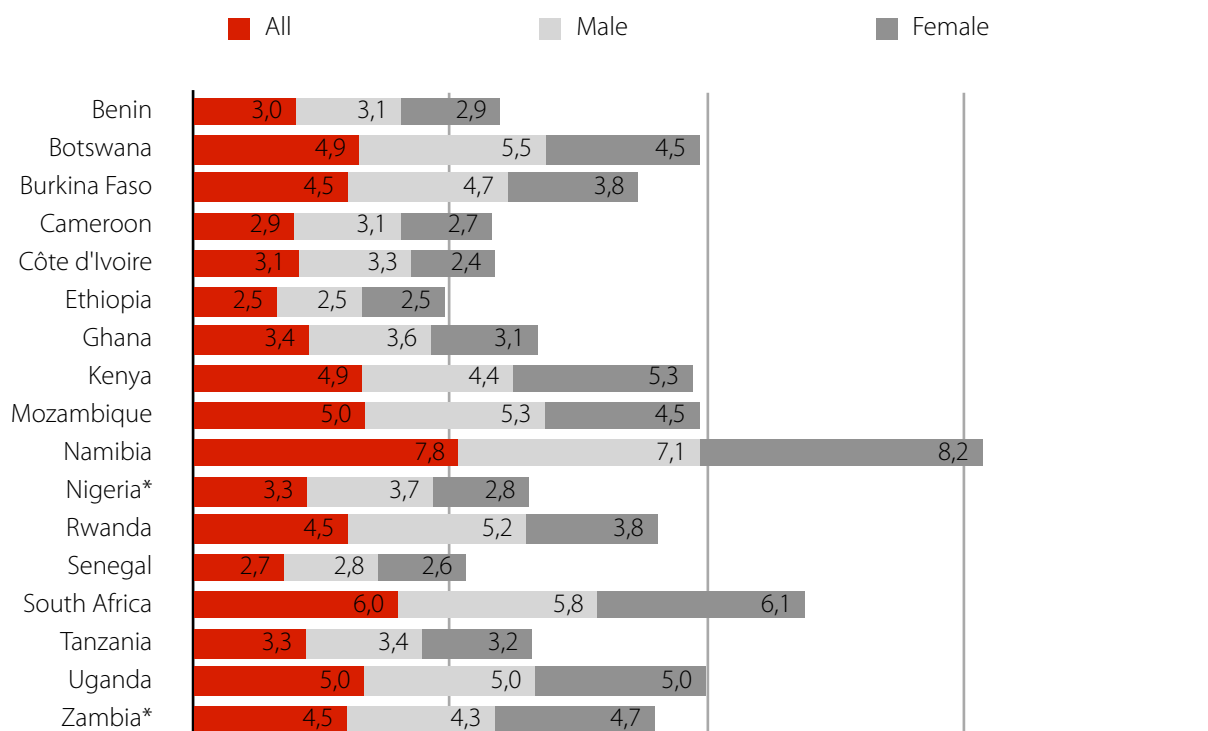


Figure 6: Daily average hours of listening to the radio

More than 80% of radio listeners across the surveyed 17 countries listen to the radio mainly at home (either alone or with others). Almost two thirds of all female participants listen to the radio at home with others, and every second man also does so. The home was also the main location for watching TV, again: women watching together with others more often, more men than women watching TV alone). While 8.7% of all the men watched TV in public places (bars, community halls, etc.), only 2.5% of all women did this. Combined results for all countries show women are as likely as men to watch TV at friends', relatives' or neighbours' houses.

Table 13: Location and programme preferences for 17 African countries

		TV		Radio	
		♂	♀	♂	♀
Where do you watch TV or listen to Radio	at home alone	15%	10%	24%	20%
	at home with others	63%	76%	59%	65%
	at friends, relatives or neighbours home	12%	10%	4%	6%
	public places (bars, community halls)	9%	3%	1%	1%
	other	1%	1%	12%	8%
What programmes to you watch or listen to?	entertainment / music	35%	55%	27%	35%
	politics / programmes on local issues	3%	1%	15%	11%
	educational programmes	5%	4%	6%	7%
	sports	13%	3%	6%	1%
	News	33%	21%	29%	21%
	ANYTHING that is being broadcasted	11%	16%	17%	24%
	other	1%	1%	1%	1%

Looking at favourite radio programmes from an overall gender disaggregated view highlights that men and women listen to different radio programmes. Although both generally prefer music / entertainment and news the most, for men listening to news scores higher whereas it is the other way around for women. Politics and sports programmes are more favoured by men than women, whereas more women than men say that they listen to anything that is being broadcast. When it comes to TV men and women mainly watch entertainment programmes (women even more often than men) followed by news broadcasts (men 33% versus women 20.9%) and anything that is being broadcast. Again, politics and especially sports TV programmes are more favoured by men than women.

Probit models were used to test for factors contributing to the likeliness of someone watching TV or listening to radio.. Individual income was not significant for explaining radio use, possibly due to the low purchase and operating barrier. Age was also not significant in predicting whether someone listens to radio. Income and age were significant and increased the likeliness of someone watching TV.

Being female interestingly reduced the probability of someone listening to Radio and increased the probability of someone watching TV. Women seem to watch TV significantly more often than men having the same educational and financial background, social network and employment status. Focus group results (see next section), however, also stress the fact that cross-country generalisations should only be made with caution, since there is great variety in opinions when it comes to who is watching the most TV.

Table 14: Probit summary results for Internet knowledge and use

Summary Stats and variables		Watching TV	Listening to Radio
Number of obs		22203	22203
Wald chi2(39)		2905,58	1324,14
Prob > chi2		0,0000	0,0000
Pseudo R2		0,3142	0,1740
income US \$ PPP		+++	ns
Part time employed		ns	ns
Full-time employed		+++	+++
Student		+++	ns
Living in a rural area		---	-
Belonging to a social network	other	+++	+++
	church	+++	+++
	trade union	+	+
	sports club	++	ns
	saving club	ns	+++
	radio club	--	ns
	lobby group	ns	ns
	reading club	ns	ns
	internet group	++	+
	co-operative	ns	+++
	burial society	++	++
producer group	ns	+++	
<b>Being female</b>		<b>++</b>	<b>---</b>
Age		---	ns
Highest level of education: tertiary		+++	+++
Highest level of education: secondary		+++	+++
Highest level of education: primary		+++	+++
Highest level of education: vocational		+++	+++
Constant		---	---

Table 14: Probit summary results for Internet knowledge and use

Summary Stats and variables	Watching TV	Listing to Radio
Country Dummies	Zambia and Uganda not significant Rwanda and Mozambique significant negative coefficient rest significant with positive coefficient	all significant and positive (Ethiopia was the reference point)
Positive Coefficients + = significant at 0.1 level, ++ = significant at 0.05 level, +++ = significant at 0.01 level Negative Coefficients - = significant at 0.1 level, -- = significant at 0.05 level, --- = significant at 0.01 level		

While almost all the urban dwellers have a radio in their households, regardless of income, this was not the case for a great proportion of those living in rural areas. The main reason given for this by rural dwellers in the focus groups in Ethiopia is lack of money. The following responses shed light on the factors and dynamics that influence households' access to radio.

'I am a widow. I am responsible for the education of my young children. I don't have the capacity to buy a radio,' said a rural woman. Another rural woman added, 'I used to have a Phillips radio. Following my husband's death, we didn't use the radio for two years. When I finally wanted to have it maintained after two years, I was told that it is beyond repairing. The inside of the radio got rotten, and spare parts were not easy to find because it is an old brand. I am a mother of four children so I haven't bought another one.'

The periodic expense of buying new batteries for the radio is a major challenge for many households considering their meagre income and the various bills they have to pay. Hence, many participants with radios said that they do not listen as much as they would like to, if at all. The following excerpts from the focus groups with rural dwellers illustrate the dynamics affecting optimum usage of radio in rural areas.

'We buy batteries from what we earn as a daily labourer or from selling different agricultural products. The one problem these days is that the price of two batteries has increased from two birr to five or seven birr. The battery lasts only a week or two. This requires buying over and over again. The expense has become too much. Many people have locked it away in a box. Most of the batteries these days don't last long and make the radio rust,' explained an elderly rural man.

Another rural man added, 'We buy batteries with whatever money we have. Many people do not afford the battery expense and they just lock the radio away. It is difficult to find even day labour jobs these days. From what are we going to get the money when there is no work? That is why the radio is often wrapped and tucked away.'

In the focus group with urban dwellers, those who hold that male family members listen to the radio more cited reasons like having more free time and better opportunities to listen to the radio. Interestingly, those who hold that female family members listen to the radio more cite contradictory reasons claiming that men are busy outside the house for most of the day, and that they have little time and few opportunities to listen to the radio. The excerpts below illustrate these differences in perception.

'Women listen to the radio more than men because men are not around the house for most part of the day. Men tend to be busy with work. However, since women are at home often, they know the programmes from morning till evening very well,' said a participant from one low income male group.

'It is men who have more opportunities to listen to the radio more. Women have less time to listen to the radio because of work overload,' said a participant from another low income male group.

While these contradictory views are characteristic of urban areas, the difference in usage levels between men and women is stark in rural areas. It was repeatedly suggested by many of the participants from the male and female rural groups that the household head and the older boys are the ones that listen to the radio most. Interestingly, school-going girls were also cited by a few participants as one of the groups listening to the radio most.

Conversely, aged members of the family and women were mentioned as the ones listening to the radio least. This has been attributed to lack of time and inability to operate the radio. The following excerpts from focus groups with male and female rural dwellers illuminate further the dynamics in rural areas that affect whether people listen to the radio or not.

'I have a radio. I listen to useful programmes. But it is my husband who listens to the radio most. He listens to programmes in local as well as foreign languages. I like to listen to different programmes but as I am very busy with different work at home, I don't listen much,' said a participant from the focus group with rural women.

'The old don't use it [radio] because they don't know how to operate it. But they listen when others turn it on. The women are busy with different work. So they also listen less. It is often older boys and girls who listen to the radio. The young also buy the batteries from what they earn selling agricultural products,' said a participant from the focus group with rural men.

'There is only one radio in the house and if everyone wants to listen, boys get priority on choice of programmes. The girls may have as much interest to listen to the radio as the boys but the boys have a sense of ownership to the radio,' said another participant from the focus group with rural men.

- Although radio is the most commonly used ICT, financial resources to buy batteries play a great part in determining whether a person can afford to listen to the radio or not.
- Although women may be at home more they tend to listen to the radio less than men, even though they might have a similar education and income. This is often due to their work or not having access to a radio or not being able to select which programmes to listen to if male members of the household are present.
- Cultural differences – men having the right to regulate whether and what is being listened to on the radio
- People mainly listen to the radio at home, not while travelling as happens in economies where people mainly use private transport and have access to television at home.

Just as is the case with radio, the focus group discussions revealed differences between men and women in the manner and intensity of TV usage. There was no agreement among urban dwellers on who watches TV most, as there were contrasting assertions on whether male or female family members watch more TV. The one consensus reached was that when it comes to watching TV at home, women have more time and opportunities than men. The following excerpts illuminate some of the assertions made to this effect:

'Although I have a TV at home, I have little time to watch because of work overload. I may have watched briefly at night,' said a participant from the low income male group.

'At home, women might watch the TV more than the men, even in her effort to make the home lively,' said another participant from the low income male group. (Ethiopia)

Conversely, there was a consensus that when it comes to watching TV outside the home men have more access and opportunities for doing so. Respondents also attributed the low access and inclination among women to watch TV outside the home to a range of cultural and social barriers including harassment, work overload, and socialisation or lack of interest. The excerpts below illuminate the dynamics affecting whether women watch TV outside the home.

'I am very interested in soccer and want to watch games. It is not affordable to watch such games (to have DSTV) at home. To go and watch outside like the men, you start wondering what people would say, and you would abandon the idea. Although I want to be out there and follow the game with the men, comments like "why won't she stay at home," by people is what makes me prefer to stay home,' said a participant from the middle-high income female group.

'When it comes to watching TV outside the house, to watch news or soccer, men have more opportunities than women. It is not common for women to hang out in crowded places to watch something interesting,' said another participant from the low income male group.

'Just as it is uncommon for a woman to propose (marriage) to a man, a woman also does not dare enter a house (a public place) to watch TV,' said another participant from the low income male group.

'I watch whatever programme there is (on TV) with my family. Men tend to like the crowd and noise in bars and public places, and hence prefer to watch outside. . . . Women watch TV at home. For instance, the culture won't let me to go out, order a drink and watch TV. There is also sentiment about what other people would say,' said a participant from the middle-high income female group.

'Women watch TV outside home less because of our culture. The culture puts particular pressure on women,' said a participant from the middle-high income male group. (Ethiopia)

ICT usage, particularly media consumption is intrinsically tied to cultural norms and standards. Thus, it is difficult to analyse gender issues without the background and context of the larger societal gender issues.

Issues of harassment were highlighted and women were afraid of watching TV in public places for fear of harassment.

'When women dare go out to watch TV, they face all kinds of bantering. This in turn will discourage women from going out,' said a participant from the middle–high income male group.

'I think it is part of the cultural pressure against women. If a woman sits in a café by herself and is relaxing, other people will think of many things. They might even comment, "What? He stood you up?" as if the man I am waiting for didn't show up. So instead of facing such comments, I prefer to sit home,' said a participant from the middle–high income female group.

'There is a lot of sentiment and fear for a woman to have fun outside by herself. She could be subjected to many things. The fear is that she will be in the middle of men and there could be a quarrel and she could face many problems,' said a participant from the middle–high income female group. (Ethiopia)

It emerged from the discussion that there was a difference in socialisation between men and women. Women were expected to stay at home for various reasons, including personal safety, while men socialised in public spaces outside the home.

'I have a son. He watches soccer outside. The rest of the family (the mother and two daughters) watch TV at home. I bought a TV so that my kids will not leave home. I don't allow my daughters to leave home to watch TV because the situation out there is very bad. I don't mind if the boy wants to watch TV outside the house. He often returns home early unless he is watching soccer during which he might come at 1 or 2 in the evening,' said a participant from the low income female group. (Ethiopia)

There were responses contesting this view and indicating that, in contrast to past practice, more and more women watch TV outside the home. The following excerpt illuminates this changing trend.

'Previously just when satellite TV was started, women were not used to watching TV outside. These days especially in Addis Ababa many women are seen watching DSTV. Previously there was cultural pressure and pressure from parents. It (watching TV outside home) is becoming common these days, and many women are breaking free of this pressure. There is a lot of change in this regard,' said a participant from the low income female group (Ethiopia).

In rural areas, due to lack of electricity, there is no access to TV. Rural dwellers, however, get to watch TV when they visit the nearby town. All the same, there is a difference in TV usage between men and women for reasons similar to the ones cited in urban areas. The excerpts presented below shed light on the difference in TV usage between rural men and women. A participant from the rural female focus group said:

'The men use whatever they earn to watch soccer on TV while having bread or tea. But if we (women) have 50 cents, we spend it on buying goods such as onion or salt for the household. We are concerned about our household problems.'

'There is no TV in this area. It is only found in the town. When we go to the town, we watch TV while having a drink,' said a participant from the rural male focus group.

'Only older boys and men can watch TV in town and return late. This is not something for the old or the women,' said another participant from the rural male focus group (Ethiopia).

There are significant differences across countries around radio access by men and women and differences in the favourite programmes men and women listen to (large country differences). There are also a number of social dynamics, norms and customs that come into play when determining access to and usage of media like radio and TV. Some of these, such as determining what to watch, usage in public spaces and time available mirror the gender issues encountered with mobile phone use.

- In many countries and particularly in rural areas, television is not widely available, highlighting the issues of public viewing and particularly the constraints on access by women.
- Social dynamics, norms and customs influence TV usage.
- Generalisations across countries should be made with caution when analysing viewing patterns, penetration, electricity costs, public programmes offered and social rules.

## Conclusion

The limited access to the full range of ICTs by women in Africa and their constrained usage, mostly due to the high costs of services or equipment, highlight the sub-optimal use of ICTs on the continent. It is evident that access to and usage of ICTs with the potential to improve the well-being of individuals and the livelihoods of households, and with the associated developmental benefits, is highly uneven and relatively untapped. While radio is the most widely used medium, and mobile phone usage is extensive across all countries, only miniscule numbers (often statistically insignificant) of men and women own computers and have Internet connections at home. Only relatively small numbers are able to access the Internet at public access points and large numbers remain unaware of it entirely. In a few exceptional cases women are more aware of the Internet such as in Cameroon, and have nearly equal access to Internet and mobile communications.

This descriptive, gender-disaggregated overview indicates that women are not equally able to access and use ICTs. Important factors such as income, education and social position play a major role in explaining ICT access and usage. When men and women share similar backgrounds (data is controlled for factors such as education and income.) the differences in access to ICTs and their use are less. However, due to unequal access to the factors that appear to enhance ICT access and usage – such as income and education – women generally have less access to ICTs and this increases as the technologies and services become more sophisticated and expensive, requiring greater levels of income and education to access and to operate.

For these reasons women in lower income groups or rural areas may have more in common with men in similar situations with regard to access and usage of ICTs than with women who are more educated or from higher income groups. While mobile phones are increasingly pervasive, their usage is limited by the high cost of communications. Even so both men and women spend significant portions of their salaries on, mostly mobile, phone services. While men tend to spend more than women, the portion of women's generally lower income spent on mobile phone usage is greater than that of men.

Besides the high cost of PC ownership, the lack of computer skills is one of the main factors hindering men and women from using the Internet. Apart from slow connections, people are also deterred by the high cost of being online. In addition, the importance of setting up locally relevant sites and using local languages to increase the number of users cannot be overemphasised from the point of policy intervention.

As a reflection of the gender disparity in educational attainment, women are less likely than men to have the necessary e-skills to use different technologies optimally. This is partly responsible for affecting their confidence in using these technologies. Efforts aimed at ensuring equal inclusion and involvement of women in the use of ICTs need to focus on primary government school training in basic computer literacy but in addition, as other RIA e-literacy studies have shown, optimal use of PCs and the Internet requires high school and tertiary training. Further, to increase the participation of women as employees, managers and owners of ICT enterprises, programmes that target women and incentivise their training in traditionally male terrains of mathematics, science and engineering will be required on a significant scale across the continent.

The most intractable limitations to equitable access and use of ICTs however lie in the cultural and social dimensions of what are considered by many as normal social practices, but which discriminate against women and girls in key enablers of ICT access and usage such as education and employment. Specifically however, various cultural barriers also limit the opportunities for women to access ICTs, including harassment in public spaces, work overload and gendered perceptions in relation to the use of certain ICTs. Hence, in addition to economic empowerment, it is important from a policy point of view to create a legal environment that ensures equal rights for women and men, which safeguards them from discriminatory practices and which fosters equitable participation in society and the economy more widely by both women and men.

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# Appendix

## Focus group discussions

### Cameroon

Five focus groups were conducted in urban and rural areas: three in Yaoundé, Cameroon's capital, (two in poor areas and one in a middle–high class area) and two in Koayos, in the rural areas. The composition of groups was as follows: one group of men and one of women in a poor area, and one mixed group in a middle–high income urban area; in the rural area, one group of women and one group of men. Each group was composed of eight people on average. The focus was primarily on mobile phones but general questions of access through public phones were explored.

### Ethiopia

A total of six focus group discussions were conducted. Four in Addis Ababa, and two in a rural setting in Abeshge. The participants were selected on the basis of sex, income, location, and ICT access. The groups consisted of men and women from low and middle–high income groups and urban and rural dwellers. There were three male groups and three female groups, involving 33 men and 26 women in total. Separate focus groups were held for low income, middle-high income and rural men and women. Participants ranged from those in their early 20s to those in their late 60s. They included employees of government and non-governmental institutions, those working in the informal sector, students, farmers, and unemployed.

### Nigeria

Five focus groups were held in Nigeria. Participants were selected from people of low income (separate male and female discussion groups), rural dwellers (separate male and female discussion groups), and middle-high income (mixed male/female discussion group). The low-income discussion groups were drawn from low-income areas of Lagos (Bariga/Akoka, Ajegunle/Olodi Apapa, and Lagos Island (Isale Eko)); whilst the rural dwellers came from some villages in the country's southwest geo-political zone (Imota, Itele-Ijebu, Abeokuta, and Ibadan). Members of the middle income group mainly came from Lagos.

### South Africa

Regional focus groups were conducted in South Africa with separate and mixed gender groups in rural and urban areas. The randomly selected enumerator area of Delft in the Western Cape was identified for the semi-urban poor area, a remote agricultural community in Vrede in Mpumalanga as the rural area and the mixed urban group was conducted in Johannesburg.

### Uganda

Four focus groups were held in Masaka, Makerere, Ntinda and Jinja. Two of the focus groups were single sex and two were mixed groups. The focus groups covered a mix of education, income levels and age ranges. The focus groups consisted of 8–10 members each and lasted between 60–80 minutes each. Discussions were based on the issues in the focus group discussion guide. It was noteworthy that younger participants, particularly in the Ntinda group (middle-income, urban mixed) and in Makerere (women-only, low-income urban) did not express themselves as freely as the older participants. The older participants in the Masaka and Jinja groups were more frank engaging in candid discussions of their experiences or those of people they knew.

# Probit Results Internet

## Having an Email address

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Probit regression                               Number of obs   =    22203
                                                Wald chi2(39)   =   1453.63
                                                Prob > chi2     =    0.0000
Log pseudolikelihood = -45189898              Pseudo R2      =    0.3564
    
```

iu_3re	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
iiincomeppp	.0000199	.0000165	1.21	0.227	-.0000124	.0000522
c_llpart	.177512	.1330011	1.33	0.182	-.0831654	.4381893
c_llfull	.3224356	.0897544	3.59	0.000	.1465203	.4983509
c_llstudent	.4846488	.1018393	4.76	0.000	.2850474	.6842502
Rural	-.5172055	.0592378	-8.73	0.000	-.6333094	-.4011016
i_10_13	-.0174431	.1026437	-0.17	0.865	-.2186211	.1837349
i_10_2	.0208795	.0672408	0.31	0.756	-.11091	.1526689
i_10_3	-.0474834	.1439693	-0.33	0.742	-.3296581	.2346913
i_10_4	.4131011	.1112859	3.71	0.000	.1949847	.6312176
i_10_5	-.0277294	.1047472	-0.26	0.791	-.23303	.1775713
i_10_6	-.1980277	.3970974	-0.50	0.618	-.9763244	.580269
i_10_7	.4006609	.2287933	1.75	0.080	-.0477658	.8490876
i_10_8	.6860346	.3685827	1.86	0.063	-.0363742	1.408443
i_10_9	1.042762	.22561	4.62	0.000	.6005748	1.48495
i_10_10	-.1188161	.145193	-0.82	0.413	-.4033892	.165757
i_10_11	-.1809472	.1756649	-1.03	0.303	-.5252441	.1633497
i_10_12	.1205249	.3909324	0.31	0.758	-.6456885	.8867383
female	-.2855237	.0717295	-3.98	0.000	-.4261109	-.1449364
c_7	-.0160758	.0034022	-4.73	0.000	-.0227441	-.0094076
Tertiary	2.261112	.2153183	10.50	0.000	1.839096	2.683128
Secondary	1.175085	.2085886	5.63	0.000	.7662592	1.583912
Primary	.3892438	.2207213	1.76	0.078	-.043362	.8218496
Vocational	1.704845	.2516177	6.78	0.000	1.211683	2.198006
benin	1.156008	.1076488	10.74	0.000	.9450198	1.366995
botswana	.7277066	.1297785	5.61	0.000	.4733454	.9820678
burkinafaso	1.011756	.1142949	8.85	0.000	.7877425	1.23577
cameroon	1.170197	.1094069	10.70	0.000	.9557634	1.38463
Ivorycoast	.7998466	.1309229	6.11	0.000	.5432424	1.056451
ghana	.9916246	.1301238	7.62	0.000	.7365866	1.246663
kenya	1.432216	.1267881	11.30	0.000	1.183716	1.680716
mozambique	.3803521	.1123154	3.39	0.001	.1602179	.6004863
namibia	.8420726	.138034	6.10	0.000	.5715309	1.112614
nigeria	1.102464	.0988682	11.15	0.000	.9086858	1.296242
southafrica	1.050941	.1015756	10.35	0.000	.8518568	1.250026
uganda	.5872257	.2137072	2.75	0.006	.1683674	1.006084
rwanda	1.159354	.1482201	7.82	0.000	.8688477	1.44986
senegal	1.263689	.124184	10.18	0.000	1.020292	1.507085
tanzania	.9381945	.1972657	4.76	0.000	.5515608	1.324828
zambia	.5660588	.1239573	4.57	0.000	.323107	.8090106
_cons	-3.047962	.2507483	-12.16	0.000	-3.539419	-2.556504

## Using the internet

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Probit regression                               Number of obs   =    22203
                                                Wald chi2(39)   =   1650.87
                                                Prob > chi2     =    0.0000
Log pseudolikelihood = -52961943              Pseudo R2      =    0.3460
    
```

iu_2	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
iincomeppp	.0000176	.0000168	1.05	0.294	-.0000153	.0000505
c_11part	.1286291	.1223975	1.05	0.293	-.1112657	.3685238
c_11full	.3079968	.0837518	3.68	0.000	.1438462	.4721474
c_11student	.4309972	.0942794	4.57	0.000	.2462129	.6157814
Rural	-.495364	.0522629	-9.48	0.000	-.5977974	-.3929306
i_10_13	-.0366602	.0995796	-0.37	0.713	-.2318326	.1585121
i_10_2	.0655117	.0646551	1.01	0.311	-.06121	.1922334
i_10_3	-.0234694	.1264394	-0.19	0.853	-.2712861	.2243474
i_10_4	.2822361	.1075364	2.62	0.009	.0714687	.4930035
i_10_5	.0889595	.1001386	0.89	0.374	-.1073086	.2852275
i_10_6	.5470178	.4130693	1.32	0.185	-.2625832	1.356619
i_10_7	.3648345	.2139795	1.70	0.088	-.0545577	.7842266
i_10_8	.6839434	.3336406	2.05	0.040	.0300198	1.337867
i_10_9	1.116261	.2263338	4.93	0.000	.6726547	1.559867
i_10_10	-.206617	.1322036	-1.56	0.118	-.4657314	.0524973
i_10_11	-.0292652	.1404221	-0.21	0.835	-.3044874	.2459571
i_10_12	.1184958	.3181084	0.37	0.710	-.5049852	.7419768
female	-.376595	.0667613	-5.64	0.000	-.5074447	-.2457453
c_7	-.019929	.0031653	-6.30	0.000	-.0261329	-.0137252
Tertiary	1.953214	.2671898	7.31	0.000	1.429531	2.476896
Secondary	.9050537	.2612429	3.46	0.001	.3930271	1.41708
Primary	.0717505	.2568928	0.28	0.780	-.4317502	.5752511
Vocational	1.602511	.2876748	5.57	0.000	1.038679	2.166344
benin	.9985446	.1018933	9.80	0.000	.7988374	1.198252
botswana	.62335	.119673	5.21	0.000	.3887953	.8579047
burkinafaso	.9654356	.1210399	7.98	0.000	.7282018	1.202669
cameroon	1.103474	.1025657	10.76	0.000	.9024485	1.304499
Ivorycoast	.8959639	.1154484	7.76	0.000	.6696892	1.122239
ghana	.8130598	.120274	6.76	0.000	.5773272	1.048792
kenya	1.344548	.1180338	11.39	0.000	1.113206	1.57589
mozambique	.2649783	.1050302	2.52	0.012	.0591228	.4708338
namibia	.9878767	.1249565	7.91	0.000	.7429664	1.232787
nigeria	1.040152	.0973846	10.68	0.000	.8492821	1.231023
southafrica	.9869226	.0970619	10.17	0.000	.7966847	1.177161
uganda	.3958896	.1985198	1.99	0.046	.0067979	.7849813
rwanda	.9325461	.1389797	6.71	0.000	.660151	1.204941
senegal	1.387634	.1115054	12.44	0.000	1.169087	1.60618
tanzania	.9024585	.1582077	5.70	0.000	.592377	1.21254
zambia	.4200981	.1181307	3.56	0.000	.1885662	.65163
_cons	-2.407136	.2853743	-8.44	0.000	-2.966459	-1.847812

## Knowledge about internet All

Probit regression

Number of obs = 22203

Wald chi2(39) = 2211.09

Prob > chi2 = 0.0000

Log pseudolikelihood = -1.121e+08

Pseudo R2 = 0.3262

iu_1	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
iincomeppp	.000115	.0000321	3.58	0.000	.0000521	.0001779
c_llpart	-.1615674	.0902246	-1.79	0.073	-.3384044	.0152696
c_llfull	.1927584	.05565	3.46	0.001	.0836865	.3018303
c_llstudent	.3315769	.071628	4.63	0.000	.1911886	.4719652
Rural	-.2894671	.0356508	-8.12	0.000	-.3593413	-.2195929
i_10_13	-.1468793	.0812787	-1.81	0.071	-.3061827	.0124241
i_10_2	.0288211	.0444074	0.65	0.516	-.0582158	.1158581
i_10_3	.2749506	.1120838	2.45	0.014	.0552704	.4946308
i_10_4	.3170753	.0982643	3.23	0.001	.1244808	.5096698
i_10_5	-.14482	.0880589	-1.64	0.100	-.3174123	.0277722
i_10_6	-.2405428	.444275	-0.54	0.588	-1.111306	.6302203
i_10_7	.2654074	.2046687	1.30	0.195	-.1357358	.6665506
i_10_8	.589614	.3434863	1.72	0.086	-.0836068	1.262835
i_10_9	.7852754	.3782902	2.08	0.038	.0438401	1.526711
i_10_10	.3964575	.1060083	3.74	0.000	.188685	.6042299
i_10_11	.1555867	.1051443	1.48	0.139	-.0504924	.3616658
i_10_12	-.1682579	.1469046	-1.15	0.252	-.4561857	.1196698
female	-.0783052	.0474425	-1.65	0.099	-.1712907	.0146804
c_7	-.0100215	.0018258	-5.49	0.000	-.0136001	-.0064429
Tertiary	2.370346	.1342707	17.65	0.000	2.10718	2.633512
Secondary	1.543289	.1089051	14.17	0.000	1.329839	1.756739
Primary	.6315349	.1009068	6.26	0.000	.4337612	.8293086
Vocational	1.850406	.2023555	9.14	0.000	1.453796	2.247015
benin	.4199861	.0995711	4.22	0.000	.2248304	.6151418
botswana	-.0195854	.1063979	-0.18	0.854	-.2281214	.1889506
burkinafaso	.1090426	.1191252	0.92	0.360	-.1244386	.3425237
cameroon	.7329095	.0934894	7.84	0.000	.5496736	.9161454
Ivorycoast	.1298978	.1020967	1.27	0.203	-.070208	.3300036
ghana	.4860449	.102138	4.76	0.000	.285858	.6862318
kenya	.4962821	.1099095	4.52	0.000	.2808634	.7117009
mozambique	-.3790464	.1060304	-3.57	0.000	-.5868621	-.1712307
namibia	.2189817	.113583	1.93	0.054	-.0036368	.4416002
nigeria	.367102	.0957544	3.83	0.000	.1794268	.5547771
southafrica	.7442229	.0957845	7.77	0.000	.5564888	.931957
uganda	-.5331284	.1612029	-3.31	0.001	-.8490804	-.2171764
rwanda	.0716224	.1213723	0.59	0.555	-.1662628	.3095076
senegal	1.509842	.094254	16.02	0.000	1.325108	1.694577
tanzania	.0737199	.1101626	0.67	0.503	-.1421949	.2896347
zambia	1.017769	.1058909	9.61	0.000	.8102267	1.225311
_cons	-1.807668	.1427124	-12.67	0.000	-2.087379	-1.527956

Note: 0 failures and 2 successes completely determined.

## Knowledge about internet: Urban

Probit regression

Number of obs = 15962

Wald chi2(37) = 2560.45

Prob > chi2 = 0.0000

Log pseudolikelihood = -40971125

Pseudo R2 = 0.2983

iu_1	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
iincomeppp	.0001119	.000036	3.11	0.002	.0000413	.0001826
c_llpart	.013625	.0820452	0.17	0.868	-.1471806	.1744307
c_llfull	.2383198	.0469144	5.08	0.000	.1463692	.3302704
c_llstudent	.4164054	.0589109	7.07	0.000	.3009421	.5318687
female	-.1852462	.0381649	-4.85	0.000	-.260048	-.1104443
c_7	-.0141164	.0016101	-8.77	0.000	-.0172722	-.0109607
Teritiary	2.385766	.0877757	27.18	0.000	2.213728	2.557803
Secondary	1.447311	.0710076	20.38	0.000	1.308139	1.586483
Primary	.638742	.0696049	9.18	0.000	.5023189	.775165
Vocational	1.965104	.1214385	16.18	0.000	1.727089	2.203119
i_10_13	-.0136105	.0650479	-0.21	0.834	-.141102	.1138809
i_10_2	-.0138923	.037872	-0.37	0.714	-.0881201	.0603355
i_10_3	.2724179	.0908485	3.00	0.003	.094358	.4504777
i_10_4	.3689305	.0807832	4.57	0.000	.2105982	.5272627
i_10_5	-.0071301	.0784456	-0.09	0.928	-.1608807	.1466204
i_10_6	-.2782301	.5268518	-0.53	0.597	-1.310841	.7543805
i_10_7	-.3082663	.2119313	-1.45	0.146	-.7236439	.1071114
i_10_8	.8361583	.1951837	4.28	0.000	.4536052	1.218711
i_10_9	(omitted)					
i_10_10	.0914365	.1048127	0.87	0.383	-.1139927	.2968657
i_10_11	-.0453813	.0988412	-0.46	0.646	-.2391065	.148344
i_10_12	.3440859	.1778543	1.93	0.053	-.0045022	.6926739
benin	.9354842	.0831228	11.25	0.000	.7725665	1.098402
botswana	.2353353	.097199	2.42	0.015	.0448287	.4258418
burkinafaso	.307841	.0886542	3.47	0.001	.134082	.4816
cameroon	1.081209	.0860792	12.56	0.000	.9124967	1.249921
Ivorycoast	.4250613	.0972578	4.37	0.000	.2344395	.6156832
ghana	.9214015	.0920434	10.01	0.000	.7409997	1.101803
kenya	.5748376	.0857264	6.71	0.000	.4068169	.7428584
mozambique	.2875583	.1007723	2.85	0.004	.0900481	.4850685
namibia	.9436435	.0920292	10.25	0.000	.7632695	1.124017
nigeria	.5837411	.0738879	7.90	0.000	.4389234	.7285587
southafrica	1.079412	.0792881	13.61	0.000	.9240098	1.234813
uganda	-.0544047	.1009549	-0.54	0.590	-.2522727	.1434634
rwanda	.5367286	.0902007	5.95	0.000	.3599386	.7135187
senegal	2.115293	.0913259	23.16	0.000	1.936297	2.294288
tanzania	.4614757	.0901284	5.12	0.000	.2848272	.6381241
zambia	1.364116	.0940823	14.50	0.000	1.179718	1.548513
_cons	-1.904564	.1112854	-17.11	0.000	-2.122679	-1.686448

## Knowledge about internet: Rural

Probit regression

Number of obs = 5934

Wald chi2(36) = 781.00

Prob > chi2 = 0.0000

Log pseudolikelihood = -69440961

Pseudo R2 = 0.2895

iu_1	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
iincomeppp	.0001169	.0000719	1.63	0.104	-.000024	.0002578
c_llpart	-.2854506	.1472795	-1.94	0.053	-.5741131	.0032118
c_llfull	.1541897	.0845237	1.82	0.068	-.0114736	.3198531
c_llstudent	.284296	.1100406	2.58	0.010	.0686205	.4999716
female	-.0337271	.0731731	-0.46	0.645	-.1771438	.1096895
c_7	-.0066618	.0028646	-2.33	0.020	-.0122764	-.0010472
Teritiary	2.379014	.2121978	11.21	0.000	1.963114	2.794914
Secondary	1.622284	.1662516	9.76	0.000	1.296437	1.948132
Primary	.6424444	.1479764	4.34	0.000	.352416	.9324729
Vocational	1.762557	.3313751	5.32	0.000	1.113074	2.41204
i_10_13	-.2000724	.1217583	-1.64	0.100	-.4387144	.0385695
i_10_2	.058829	.0685115	0.86	0.391	-.0754511	.1931091
i_10_3	.2674892	.1431367	1.87	0.062	-.0130536	.5480321
i_10_4	.2688531	.1682099	1.60	0.110	-.0608322	.5985385
i_10_5	-.1823635	.1374679	-1.33	0.185	-.4517956	.0870686
i_10_6	-.1929719	.6688455	-0.29	0.773	-1.503885	1.117941
i_10_7	.530589	.2392358	2.22	0.027	.0616954	.9994826
i_10_8	.2450457	.7585217	0.32	0.747	-1.24163	1.731721
i_10_9	.4665789	.4202351	1.11	0.267	-.3570668	1.290225
i_10_10	.4563931	.1299394	3.51	0.000	.2017165	.7110697
i_10_11	.2406147	.1447248	1.66	0.096	-.0430408	.5242702
i_10_12	-.2903454	.2154093	-1.35	0.178	-.7125398	.131849
benin	.080753	.1718666	0.47	0.638	-.2560993	.4176053
botswana	-.0278174	.1766788	-0.16	0.875	-.3741015	.3184666
burkinafaso	.0751117	.1929546	0.39	0.697	-.3030724	.4532957
cameroon	.5324151	.1423198	3.74	0.000	.2534735	.8113568
Ivorycoast	.0054325	.1680531	0.03	0.974	-.3239456	.3348105
ghana	.2587609	.1588259	1.63	0.103	-.0525322	.570054
kenya	.4503101	.1470967	3.06	0.002	.162006	.7386143
mozambique	(omitted)					
namibia	-.2282756	.1900338	-1.20	0.230	-.6007349	.1441837
nigeria	.2749296	.136331	2.02	0.044	.0077257	.5421336
southafrica	.6482637	.1414543	4.58	0.000	.3710183	.925509
uganda	-.6492416	.2243559	-2.89	0.004	-1.088971	-.2095121
rwanda	-.0961984	.1767253	-0.54	0.586	-.4425737	.2501768
senegal	1.094143	.1408241	7.77	0.000	.8181329	1.370153
tanzania	-.0961613	.1641072	-0.59	0.558	-.4178055	.2254829
zambia	(omitted)					
_cons	-2.144942	.1966836	-10.91	0.000	-2.530434	-1.759449

# Probit Results Radio & TV

## Radio

Probit regression

Number of obs = 22203

Wald chi2(39) = 1324.14

Prob > chi2 = 0.0000

Log pseudolikelihood = -1.482e+08

Pseudo R2 = 0.1740

r_lre	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
iincomeppp	.000025	.0000218	1.15	0.250	-.0000177	.0000677
c_llpart	.0871134	.0685532	1.27	0.204	-.0472483	.2214752
c_llfull	.2297672	.0427659	5.37	0.000	.1459476	.3135867
c_llstudent	.059206	.0658071	0.90	0.368	-.0697736	.1881856
Rural	-.0580988	.0302785	-1.92	0.055	-.1174435	.0012459
female	-.1879027	.0376907	-4.99	0.000	-.2617752	-.1140302
c_7	-.0011448	.0012504	-0.92	0.360	-.0035956	.001306
Teritiary	.8542523	.0813603	10.50	0.000	.694789	1.013716
Secondary	.5961416	.0584866	10.19	0.000	.48151	.7107732
Primary	.4110133	.0501349	8.20	0.000	.3127507	.5092758
Vocational	.6909666	.2144176	3.22	0.001	.2707157	1.111217
i_10_13	.6303385	.0731754	8.61	0.000	.4869173	.7737597
i_10_2	.1322554	.0373092	3.54	0.000	.0591307	.20538
i_10_3	.1942396	.1031648	1.88	0.060	-.0079598	.3964389
i_10_4	-.0322586	.1096624	-0.29	0.769	-.247193	.1826758
i_10_5	.2742389	.0780807	3.51	0.000	.1212036	.4272742
i_10_6	-.1893686	.3718534	-0.51	0.611	-.9181878	.5394506
i_10_7	.1512903	.165547	0.91	0.361	-.1731759	.4757566
i_10_8	.273428	.2092637	1.31	0.191	-.1367213	.6835773
i_10_9	.3871409	.2274207	1.70	0.089	-.0585955	.8328773
i_10_10	.6982149	.1055098	6.62	0.000	.4914194	.9050103
i_10_11	.2397933	.0842106	2.85	0.004	.0747435	.4048432
i_10_12	.3677889	.1111626	3.31	0.001	.1499142	.5856636
benin	.9398196	.0851481	11.04	0.000	.7729324	1.106707
botswana	.2703957	.0820055	3.30	0.001	.1096677	.4311236
burkinafaso	.9678178	.0945663	10.23	0.000	.7824712	1.153164
cameroon	.2957681	.0770608	3.84	0.000	.1447318	.4468045
Ivorycoast	.4594444	.0786104	5.84	0.000	.3053709	.6135179
ghana	1.310169	.0907618	14.44	0.000	1.132279	1.488059
kenya	1.131761	.0883974	12.80	0.000	.9585053	1.305017
mozambique	.2132171	.0938812	2.27	0.023	.0292132	.3972209
namibia	.7481718	.0951195	7.87	0.000	.5617409	.9346027
nigeria	.8517722	.0787585	10.81	0.000	.6974084	1.006136
southafrica	.4453099	.0729434	6.10	0.000	.3023435	.5882763
uganda	1.404953	.1121234	12.53	0.000	1.185195	1.624711
rwanda	.7747072	.0917355	8.45	0.000	.594909	.9545054
senegal	1.473084	.0915122	16.10	0.000	1.293724	1.652445
tanzania	.7039367	.0792699	8.88	0.000	.5485706	.8593029
zambia	.2798622	.0884485	3.16	0.002	.1065063	.4532182
_cons	-.6154573	.0868769	-7.08	0.000	-.7857329	-.4451818

# TV

Probit regression

Number of obs = 22203

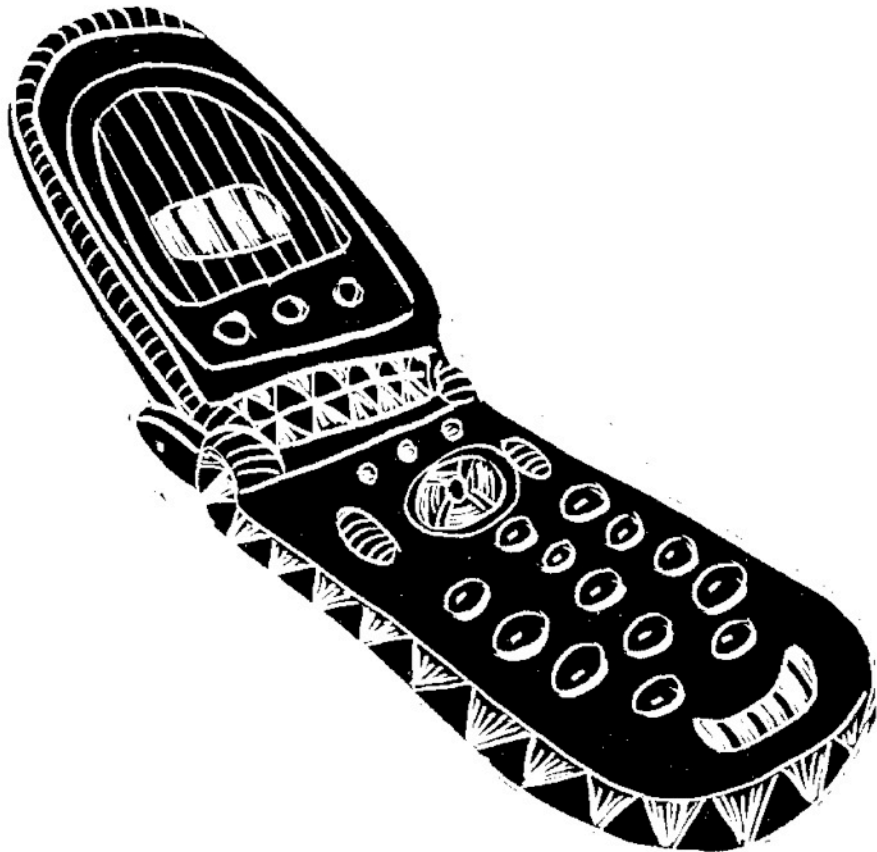
Wald chi2(39) = 2905.58


Prob > chi2 = 0.0000

Log pseudolikelihood = -1.377e+08

Pseudo R2 = 0.3142

t_lre	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
iincomeppp	.0001153	.0000373	3.09	0.002	.0000421	.0001884
c_llpart	.0828618	.0701193	1.18	0.237	-.0545695	.2202931
c_llfull	.3006793	.0451836	6.65	0.000	.2121211	.3892375
c_llstudent	.2151845	.0704372	3.05	0.002	.0771301	.3532389
Rural	-.6179584	.0302041	-20.46	0.000	-.6771573	-.5587594
female	.086674	.039824	2.18	0.030	.0086204	.1647276
c_7	-.0083515	.0013561	-6.16	0.000	-.0110095	-.0056935
Teritiary	1.533581	.0890342	17.22	0.000	1.359077	1.708085
Secondary	1.02241	.0622362	16.43	0.000	.9004292	1.14439
Primary	.5436968	.0534333	10.18	0.000	.4389695	.6484242
Vocational	1.06647	.1847901	5.77	0.000	.7042883	1.428652
i_10_13	.2840642	.0758024	3.75	0.000	.1354942	.4326342
i_10_2	.1338335	.0384608	3.48	0.001	.0584518	.2092152
i_10_3	.1968302	.1028888	1.91	0.056	-.0048281	.3984886
i_10_4	.2821142	.1230346	2.29	0.022	.0409708	.5232577
i_10_5	.1106323	.0730266	1.51	0.130	-.0324972	.2537618
i_10_6	-.824776	.4131105	-2.00	0.046	-1.634458	-.0150943
i_10_7	.1611198	.2037382	0.79	0.429	-.2381997	.5604394
i_10_8	.4817585	.296625	1.62	0.104	-.0996158	1.063133
i_10_9	.6863219	.324584	2.11	0.034	.0501489	1.322495
i_10_10	-.0079885	.0990875	-0.08	0.936	-.2021964	.1862195
i_10_11	.2256138	.0841621	2.68	0.007	.0606592	.3905684
i_10_12	-.0037619	.1320796	-0.03	0.977	-.2626332	.2551094
benin	.7358539	.0857742	8.58	0.000	.5677395	.9039684
botswana	.3308928	.0875621	3.78	0.000	.1592742	.5025115
burkinafaso	.9679883	.100426	9.64	0.000	.771157	1.16482
cameroon	.525051	.0785459	6.68	0.000	.3711039	.6789981
Ivorycoast	.9232814	.0852353	10.83	0.000	.7562234	1.090339
ghana	.754824	.0877688	8.60	0.000	.5828003	.9268477
kenya	.7570077	.0863536	8.77	0.000	.5877578	.9262576
mozambique	-.2724459	.0959574	-2.84	0.005	-.4605189	-.084373
namibia	.2175413	.0987254	2.20	0.028	.0240431	.4110394
nigeria	1.218866	.081305	14.99	0.000	1.059511	1.378221
southafrica	.7180476	.0762013	9.42	0.000	.5686958	.8673994
uganda	.1415335	.1041643	1.36	0.174	-.0626247	.3456917
rwanda	-.2369549	.1027357	-2.31	0.021	-.4383132	-.0355966
senegal	1.7478	.085974	20.33	0.000	1.579294	1.916306
tanzania	.4840424	.0835769	5.79	0.000	.3202347	.64785
zambia	-.1011382	.0825933	-1.22	0.221	-.2630181	.0607417
_cons	-.9213841	.096748	-9.52	0.000	-1.111007	-.7317615



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