Gender norms, gendered work and intersectional digital inequalities in Rwanda

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Contents

1. Executive Summary

This study set out to explore what factors affect internet access for women and men, and what issues need to be addressed to ensure equitable digital access and use. These questions were examined in the context of the very high gender internet access and use gap found in the 2017/18 After Access survey, despite a policy and telecom industry environment that seems to have the relevant components to foster gender digital equality. A combination of quantitative and qualitative methods was used to examine the research questions. Analysis of the After Access survey data was complemented with urban and rural, male and female focus group discussions, providing a more nuanced understanding of the lived experiences of both those connected and those currently marginalised from internet services. The combined analyses provide insights into gender-related power dynamics, which quantitative data alone could not illuminate.

Key Conclusions

1. Structural (paid and unpaid labour), institutional (family and organisations), and cultural (gendered norms and values) combine to place women in a position of digital disadvantage relative to men. Both the qualitative and quantitative analyses have shown that women on average earn less than men resulting in their dependency on male partners in general. This creates a major barrier to internet use for women and makes them susceptible to gender norms and perceptions that further inhibit internet use.

2. The experiences of women (and men) are not homogeneous. Thus, an accurate reflection of the state of gender equality benefits from an intersectional lens. The study confirmed a wide range of similar constraints for men and women. However, people in different conditions, such as rural based, married, or unemployed, experienced these constraints in different ways or to greater degrees. In addition, some divergent views were expressed about gender-based constraints to internet access and use (and gender equality in general), highlighting the importance of considering multiple variables simultaneously (whether quantitatively or qualitatively) when assessing digital inequality and its causes.

3. The results also suggest that alongside policy measures and infrastructure developments, subtle cultural and individual transformations might be taking place that could, in the long term, lead to broader social transformations of gender roles and expectations, moving the society towards greater equity. Several participants noted that gender norms around domestic roles were malleable in different family circumstances. However, waiting for such transformations to happen organically or take root more widely could mean waiting centuries in some cases, considering that the 2020 Global Gender Gap report estimates that at current rates, it would take over 250 years to achieve gender parity in economic participation and opportunity.

4. Relative to other African countries, Rwanda may have strong foundations in place to make digital access affordable for all. However, gendered division of labour and power relations in the household seem to be contributing to a lingering gender imbalance in internet access and use—resulting from the intertwining impacts of paid employment, access to personal income, access to internet facilities

at work and perceptions of the need for internet access at home. The issues we have identified as impinging on gender digital equality – employment, income, education, demands of unpaid domestic labour, perception of internet relevance, perception of skills, gender norms and stereotypes, as well as misconceptions about the internet, are heavily intertwined with social and cultural structures and challenging to address in isolation. Effectively redressing digital inequality will require transforming the (analogue) structural inequalities that perpetuate economic and social exclusion and that are simply mirrored, and sometimes amplified in the digital world.

Key Recommendations

Revisit implementation of gender and digital technology policies. Policymakers should examine the current policies to assess why they have not generated the expected outcomes. This includes identifying whether there are implementation or other gaps that have weakened the influence of the policy in practice, and whether definitions of digital equality need to be upgraded to reflect not just physical access but meaningful access (the ability to translate access into benefits).

Deepen public education on the meaning of gender equality. Develop public education campaigns to improve understanding of gender equality (in theory and practice), break gender stereotypes and provide more economic and social opportunity to people of all backgrounds.

Institute measures to increase higher education and employment in general and female labour force participation. Increasing education and employment opportunities for women will in theory expand their access to income, which the study shows are key enablers of internet use. However, expectations should be tempered with an understanding that economic measures alone will not transform the patriarchal structures that sustain gender discrimination.

Institute measures to value unpaid domestic and care work. To mitigate the apparent link between gender digital inequality and perceptions that unpaid domestic work is economically unproductive, avenues should be sought to demonstrate the economic *and* social value of the labour of housewives and other unpaid domestic and care workers and their critical role in the reproduction of labour. Broad social change is also needed to correct the imbalance in the amount of time that women (compared to men) spend on unpaid housework versus paid work.

Policy experimentation: Although Rwanda has amongst the lowest data prices on the continent and one of the lowest GNI per capita, affordability remains a challenge for many. Rwanda should embark on low-risk licensing and regulatory experimentation that will enable the entry of multiple smaller, lower-cost technologies and offerings, including community network operators, micro cell users and dynamic spectrum operators in unused rural bands.

Stimulate demand. Government needs to balance supply-side infrastructure and service measures with strong demand-side measures such as stimulating local content in local languages, supporting local apps development, digital literacy as well as fundamental education and specialised tertiary education. Interventions should account for intersectional identities to avoid assuming one-size-fits-all solutions.

Conduct further research into the relationship between gender power relations and technology access and use in Africa. There is a surprisingly limited amount and variety of published research examining the intersection of gender, power, and technology in African countries. As new technologies

continually transform the digital landscape, it is important to generate more empirical local knowledge and evidence to feed into policymaking processes that, as our research has shown, might not be fully grasping the nature of the challenges standing in the way of true gender digital equality. This includes examining intersectional inequalities, studying gender digital inequality amongst children and drawing on both feminist and masculinities research. In countries where it is possible, researchers (including national statistics departments) should develop tools to collect and disaggregate their data beyond the binary level, taking into consideration the political sensitivities around nonbinary gender identities and the risk to partners and research respondents. The mobility restrictions imposed by the COVID-19 pandemic illustrate that new methods and approaches to fieldwork are needed to enable research to advance with rigor irrespective of the physical presence of the core research team.

Study limitations

Asynchronous data gathering: The quantitative data analysed for the study was collected in 2017, while the qualitative data was collected in 2020. Joint interpretation of the quantitative and qualitative data should bear this in mind.

Inability of RIA researchers to participate directly in the qualitative fieldwork. Due to COVID-19, the Research ICT Africa (RIA) team was unable to travel to Rwanda to physically conduct the fieldwork. Our partnership with the University of Rwanda's Centre of Gender Studies enabled the research to proceed, with the Centre effectively managing the in-country logistics and facilitating the FGDs and online roundtable.

Rushed fieldwork. Administrative and permission-seeking processes caused significant delays in the qualitative fieldwork. This led to a rush into the field when government approval was finally secured, granting a limited timeframe within which to complete the project.

Opaque FGD participant selection process. Participants were recruited by community leaders and did not report the processes they used for selecting participants. The research team, therefore, could not ascertain whether any types of selection bias affected the final sample.

Focus group design. The presence of different genders in the mixed internet user groups might have influenced the extent to which female participants freely expressed their views, especially on gender equality.

Participation of key stakeholders. While the high-level roundtable discussion had strong participation from several stakeholders, some important institutions were absent, such as mobile network providers and key government departments.

Insufficient exploration of key issues. Partly due to the absence of pretesting, the FGDs missed the opportunity to probe or explore some key issues such as women's negotiation of internet use or modes of resistance against the constraints they face.

2. Introduction

Information and communication technologies (ICTs) are perceived as cross cutting enablers to improve gender equality in the United Nations' Sustainable Development Goals (SDGs). Specifically, SDG 5b

identifies the enhanced "…use of enabling technology, in particular ICTs, to promote the empowerment of women".[1] In line with these goals, Rwanda's Vision 2050[2], targets gender as a cross-cutting issue in development policies and strategies, prioritising the deployment and use of the internet, especially in rural areas.[3]

The Gender Monitoring Office (GMO) has identified seven indicators to track gender and ICT – ownership of ICT assets and access to information; access to internet; use of e-learning systems; ICT skills; professional and technical staff in telecommunication companies; use of ICT in financial services; and access to ATM debit cards.[4] The seven indicators align with Rwanda's policy vision of enabling citizens to make optimal use of ICTs to improve access to services in their day to day lives. The recommendations put forward by the GMO to close digital divides focuses on skills development, education, collection of gender-disaggregated data, women's participation in leadership and ICT courses; and improving ICT-related facilities especially for women in rural areas. The recommendations proposed do not, however, account for power dynamics or social and cultural factors affecting ICT uptake by women.

The limited and uneven empirical evidence available at the global level from the International Telecommunication Union (ITU), indicates that while the gender gap has narrowed in most regions since 2013, it has widened in Africa, where 25% fewer women than men use the internet.[5] Critically, this research is binary in relation to women and men, and fails to assess the intersectional nature of marginalisation. The descriptive indicators used to measure the gap at the national level mask inequalities within and across groups of men and women (and particularly other genders that are generally invisible in UN and official African datasets). Nevertheless, the research shows a considerable disparity in access to the internet among women, within and across countries.[6] Whether living in rural areas or city slums, women located at the intersections of other factors of exclusion, such as poverty or illiteracy or unemployment will experience even greater digital inequality than women overall.

[1] United Nations. Sustainable Development Goals: Goal 5 Gender Equality. www.un.org/sustainabledevelopment/gender-equality/

[2] Republic of Rwanda: Ministry of Information Technology and Communications, "ICT Sector Strategic Plan 2018-2024," November 2017, http://www.minecofin.gov.rw/fileadmin/templates/documents/NDPR/Sector_Strategic_Plans/ICT.pdf.

[3] Gender Monitoring Office, "Gender and Information Communication Technology (ICT)," March 2017, http://gmo.gov.rw/rw/fileadmin/user_upload/profiles/Gender_and_ICT_Booklet___GMO__March_2017.pdf.

[4] Gender Monitoring Office, "Gender and Information Communication Technology (ICT)."

[5] International Telecommunication Union, "Measuring the Information Society Report 2016" (Geneva, 2016), https://www.itu.int/en/ITU-D/Statistics/Pages/publications/mis2016.aspx.

[6] Oliver Rowntree, "GSMA Connected Women: The Mobile Gender Gap Report 2019" (GSMA Association, 2019), https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2019/03/GSMA-Connected-Women-The-Mobile-Gender-Gap-Report-2019.pdf; Alison Gillwald, "Harnessing Opportunities, Mitigating Risks. WSIS, Opening Plenary Address on Behalf of Civil Society and Academia" (WSIS 2019, Geneva, 2019), https://researchictafrica.net/2019/04/09/wsis-2019-harnessing-opportunities-mitigating-risk/; Anri Van Der Spuy and Namita Aavriti, "Mapping Research in Gender and Digital Technology" (Association for Progressive Communication, 2018), https://www.apc.org/sites/default/files/IDRC_Mapping_0323_0.pdf.

2.1. Gender, internet access and ICT policy context in Rwanda

2.1.1. Internet access and use in Rwanda

Mobile internet infrastructure is quite extensive, with two major mobile phone operators—MTN Rwanda Ltd (48% market share) and Airtel-Tigo Rwanda (52% market share) (RURA,2018). MTN leads in network coverage with 99% geographical and population coverage for 2G and 2.5G but with a 3G geographical coverage of 77% geographical and 99% for the population, while Airtel-Tigo is mainly a 2G and 2.5G service provider at 87% geographical coverage and 4% 3G coverage (RURA 2017).

The ICT access and use survey that RIA conducted across selected countries in sub-Saharan Africa in 2017 and 2018, indicates that Internet use is still relatively low. While there has been some increase in internet use across countries, in some of the less developed countries like Rwanda, Tanzania and Mozambique, internet use was still below 15% for both sexes. The findings[7] also indicate that least developed countries (LDCs) have lower penetration rates and generally higher gender gaps than some of the more developed economies in Africa, like South Africa, which only has a 12% gender gap. Amongst the LDCs, the poorest countries, however, do not have the lowest internet penetration or biggest gap (suggesting that other factors can affect penetration rates). With only a slightly higher penetration rate than Rwanda's 8.2%, Tanzania's gender gap (33%) is about half of Rwanda's (62%). Rwanda's gender gap is much higher than other least developed economies surveyed and more in line with the biggest gaps identified in the populous countries of Southeast Asia—Bangladesh and Pakistan. About 12% of men in Rwanda use the Internet as opposed to only 4.8% of women (see quantitative findings section). Less than a quarter of the population (21.1%) indicated that they know what the internet is. Even though the figure was low for both sexes, relatively fewer women (16.7%) attested to knowing what the internet is.

Access to and use of the internet amongst most of the population in sub-Saharan Africa is driven by smartphone ownership, which correlates directly with internet penetration. Yet, smartphones remain unaffordable to many. This is even more pronounced when disaggregated by gender, with fewer women having a mobile phone, and particularly a smart phone. Ownership of mobile phones among men in Rwanda (60.4%) is almost double that of women (37.2%), with a gender gap of about 62%—the largest among the 10 African countries surveyed. Despite policies to support gender equality and to drive Internet take up, Rwanda has amongst the lowest internet penetration in Africa, with the widest recorded gender gap. Of all Rwandans that have used the internet, 12% are men, as opposed to 5% of women.

Rwanda showed a unique case specific to men. Most individuals (men and women) first accessed and used the Internet on a mobile phone in all the countries surveyed except Rwanda, where more men indicated that they first used the internet on a computer (first wave adopters). On the other hand, more women (second wave adopters) in Rwanda first used the internet on a mobile phone.

The few women that go online tend to spend most of their time on work, education and social media. This could reflect a limited number of middle-class women who have a job or are pursuing their education. Previous studies have shown that income and education are the main determinants of

[7] Alison Gillwald, Helani Galpaya, and Aileen Augerro, "Towards Understanding the Gigital Gender Gap in the Global South," in *Taking Stock: The State of Gender Equality in Digital Access, Skills and Leadership*, ed. Araba Sey and Nancy Hafkin (United Nations University Institute on Computing/International Telecommunication Union, 2019), 220–42, http://collections.unu.edu/view/UNU:7350.

internet access and use.[8] In general, the share of individuals who have completed a specific level of education in Rwanda is quite low for both men and women. However, women are often less educated and earn less than men. This puts them at a disadvantage when it comes to using the internet. It supports the hypothesis that women often find themselves in a situation of multiple marginalities and this is translated in the digital realm.

2.1.2. Gender equality and digital policy in Rwanda

Gender equality is enshrined at a constitutional level in Rwanda and includes the establishment of a specialised Gender Monitoring Organ.[9] Women have the same rights to inherit land as men, and girls are equally as likely to attend schools as boys given the existence of a girls' education policy and implementation plan.[10] The 2018 parliamentary elections saw the incumbent party maintaining its majority and women filling 61% of seats. Rwanda experienced strong economic growth of 4.7% per capita gross domestic product (GDP) between 2008-2017. This led to an improvement in living standards and near universal primary school enrolment. A strong focus on homegrown solutions and initiatives contributes to improved access to services and other indicators of human development. The poverty rate dropped from 44% in 2011 to 39% in 2014, while inequality measured by the Gini coefficient stood at 0.45, similar to many other African countries, lower than South Africa, but double the best performing Scandinavian countries.[11]

With respect to digital readiness, policy and infrastructure interventions indicate that the regulatory and policy environment has been oriented toward ensuring uptake of the internet. Rwanda is ranked 96th on the World Economic Forum Network Readiness Index.[12] The country has long focused on ICTs and the expansion of the mobile telecommunications sector as a strategy to achieve socio-economic growth. As a result of a public-private partnership, Korean Telecom Rwanda Networks (KTRN), formed between the Government of Rwanda and Korean Telecom, 4G network coverage stands at 96.6%.[13] Since the inception of the three phase National Information and Communications Infrastructure (NICI) plan in 1998, Rwanda's ICT policy development has focused on the importance of ICTs in achieving socio-economic growth, envisioning "a prosperous and knowledgeable society through SMART ICT", as part of its SMART

[8] Mariama Deen-Swarray et al., "Lifting the Veil on ICT Gender Indicators in Africa," Lifting the Veil on ICT Gender Indicators in Africa, 2016, https://researchictafrica.net/2016/06/07/lifting-the-veil-on-ict-gender-indicators-in-africa/; Alison Gillwald, Anne Milek, and Christoph Stork, "Gender Assessment of ICT Access and Usage in Africa," Research ICT Africa Policy Paper (Research ICT Africa, 2010).

[9] Comparative Constitutions Project, "Rwanda's Constitution of 2003 with Amendments through 2015," n.d., https://www.constituteproject.org/constitution/Rwanda_2015.pdf?lang=en.

[10] The World Bank, "The World Bank in Rwanda," Text/HTML, World Bank, March 19, 2021, https://www.worldbank.org/en/country/rwanda/overview.

[11] Rwanda Ministry of Education, "Girls' Education Policy" (Republic of Rwanda, 2008), https://www.ilo.org/dyn/natlex/docs/ELECTRONIC/94008/110190/F-1833244927/RWA-94008.pdf; Rodrigue Rwirahira, "Senate Passes Succession Law," *The New Times | Rwanda*, October 19, 2015, https://www.newtimes.co.rw/section/read/193654.

[12] Soumitra Dutta and Bruno Lanvin, eds., *The Network Readiness Index 2020: Accelerating Digital Transformation in a Post-COVID Global Economy* (Portulans Institute, 2020), https://networkreadinessindex.org/org: https://witsa.org.

[13] World Bank, "Rwanda Economic Update: Accelerating Digital Transformation in Rwanda," 2020, https://documents1.worldbank.org/curated/en/912581580156139783/pdf/Rwanda-Economic-Update-Accelerating-Digital-Transformation-in-Rwanda.pdf.

Rwanda Master Plan (2015-2020).[14] What is prioritised in this plan is the investment in Rwandan infrastructure such that it becomes a regional economic hub. The SMART Rwanda plan furthers this by prioritising objectives aimed at ensuring Rwanda's use of ICTs to positively impact citizens' lives and to develop the capability of key private sector industries to ensure sustainable growth. Five policy areas for this strategy include broadband policy to ensure that the necessary infrastructure is in place as well as cyber security policy, private sector development policy, eWaste policy and an Open Data policy.[15]

The intention of these policies is to ensure social and economic growth of Rwanda. However, what is missing or perhaps not clearly highlighted in the policy documents, are the cultural and social enablers that need to be taken into account in focusing on ICT reliance. The social environment analysis in SMART Rwanda highlights the need to build up the skills and services for the youthful population; strategies around managing urbanisation; and dealing with the low levels of access to electricity and the costs associated for those who do have electricity. Yet, as noted above, despite the aggressive investment in ICTs and creation of an enabling environment for sector expansion, Rwanda has amongst the lowest Internet penetration rates in Africa, with the widest recorded gender gap. The findings are counterintuitive as, politically, the Rwandan Government is committed to promoting gender equality and digital inclusion. While on paper there are policies to ensure gender equality and inclusion, the poor Internet take up and gaping digital gender gap revealed by the After Access survey highlights a need to investigate other issues besides infrastructural and supply side concerns constraining digital equality.

2.2. Research purpose – background on the study, research problem and key research question

This project considers gender disparities in internet access and use adopting a feminist approach. This provides a critical lens to review policy and implementation by assessing the impact of digital policy interventions meant to address gender disparities on the lived reality of men and women. The research aims to promote equitable access to the internet for women by contributing to evidence-based change in policy, grounded in an understanding of wider structural inequality and power relations that constitute some of the 'invisible' barriers to internet access. The research is framed from the perspective of intersectional inequality, which identifies points of inequality at the intersection of gender and other layered identities.[16] Through quantitative and qualitative data assessment within the context of Rwanda's political economy, the purpose is to identify the policy interventions required to enable meaningful internet access and use in the country.

Research questions

Given the apparent enabling conditions and policy support for gender equality in Rwanda, why is there such profound inequality in access and use of the Internet between women and men? In order to answer this overarching research question, the study explored two broad sub-questions:

[14] Republic of Rwanda, "Smart Rwanda Master Plan 2015-2020," accessed July 8, 2021, https://docs.igihe.com/IMG/pdf/ict_ssp__smart_rwanda_master_plan_.pdf.

[15] Republic of Rwanda, "Smart Rwanda Master Plan 2015-2020."

[16] Kimberle Crenshaw, "Demarginalizing the Intersection of Race and Sex: A Black Feminist Critique of Antidiscrimination Doctrine, Feminist Theory and Antiracist Politics," *University of Chicago Legal Forum* 1989, no. 1 (1989): 139.

- What are the structural (fundamental economic and political systemic failure – poverty, unemployment); institutional (state, family, schools, church); and cultural/religious (gendered norms and values) issues that women and men face that have an impact on internet access and use?
- What are the issues, from a feminist perspective, that need to be addressed to ensure equitable access and use of the internet?

3. Literature review and conceptual framework

Gender is understood as a social relation of inequality (not only inclusion/exclusion) and also as a core practice of identity politics as discussed further below. While acknowledging crude forms of gender essentialism in much policy and statistics accompanying them, this report treats gender strategically as a stable category of analysis in order to inform and influence decision-making. To this end, it is necessary to produce rigorous gender differentiated data to highlight gender inequalities/provoke action,[17] but also to nuance the quantitative findings with the qualitative insights necessary to identify the exact points of policy intervention.

3.1. Intersectional inequalities

The concept of intersectional inequality underpins the design and analysis of this research. From this perspective gender intersects with race, class, ethnicity, sexual constructed identities – as such, not separable from politics and culture through which gender is reproduced and maintained (Crenshaw 2017). Intersectionality provides a lens to understand how gender, race and class and other identities have an impact on access and use of technology. An intersectional conceptual framework may be used to better understand how policy "constructs citizens' relative power and privileges vis-à-vis their status, health and wellbeing".[18] Specifically, it requires taking an individual's identity based on multiple social differences to understand the impact of technology on women in relation to the experience of men.

Individuals that face multiple marginalities may yield different research results from those measured on the basis of a singular marginality. Based on this, there is a possibility that respondents from minority communities may view negative gender experiences very differently from respondents in other communities and might score lower on 'single oppression frameworks' than those with a single marginal status.[19] To mitigate this, a multivariate model is used to help identify the 'multiple embedded structures of inequality' when gender is disaggregated along other social categories.[20] Including independent variables that are specifically dependent on the context of the object being studied, can also foster the analysis of gender inequality based on intersectionality.

[17] Jill Steans and Daniela Tepe-Belfrage, eds., *Handbook on Gender in World Politics* (Edward Elgar Publishing, 2016).

[18] Olena Hankivsky, ed., *An Intersectionality-Based Policy Analysis Framework* (Vancouver, BC: Institute for Intersectionality Research and Policy, Simon Fraser University, 2012), 8.

[19] Elizabeth A. Klonoff and Hope Landrine, "The Schedule Of Sexist Events: A Measure of Lifetime and Recent Sexist Discrimination in Women's Lives," *Psychology of Women Quarterly* 19, no. 4 (December 1, 1995): 439–72, https://doi.org/10.1111/j.1471-6402.1995.tb00086.x.

[20] Ambika Tandon, "Feminist Methodology in Technology Research" (The Centre for Internet and Society, India, December 23, 2018), https://cis-india.org/internet-governance/feminist-methodoloty-in-technology-research.pdf.

From this standpoint feminist theorists aim to change the dichotomies and hierarchies' methods through which knowledge is organised, which is something that poses a limitation on current ICT studies. Analyses around ICTs often adopt a binary approach. This study moves beyond this by including other variables alongside gender in analysing the data. This will not be sufficient, however, for the research to qualify as feminist. For the analytical framework to be feminist, it is imperative that the research takes on a perspective that considers the 'multifaceted and intersectional nature of gender and power relations.[21] In employing the quantitative and the qualitative approach in this study, it is hoped that this will be achieved. Combining the methods, will allow the study to provide recommendations not only to advocate for transformation within communities, but also to influence policy outcomes more at the national level.

3.2. Meaningful access

Efforts to reduce the access gap have mainly focused on connectivity. However, connectivity alone does not reduce information inequality. While it is a necessary condition for digital participation, connectivity on its own, is not sufficient to ensure that all people can exercise their rights as citizens, consumers and producers equitably. As we migrate from voice to data services (and beyond, to Over the Top platforms, Internet of Things and artificial intelligence), a central policy challenge and paradox is that digital inequality is often amplified by greater access to digital technologies. This is not only between the connected and those who remain unconnected, but also between those barely connected due to affordability and lack of skills and those with the resources to actively consume digital services and even use advanced technologies to produce and contribute to their prosperity.[22] Women are generally overrepresented among the disconnected, but this is not the main determinant of inequality. If they are connected, they are likely not to have the resources to buy sufficient data to be 'always online' and they generally do not have the digital literacy or education to optimise their use of the Internet for their well-being, education, online work or entrepreneurialism.[23]

Lack of meaningful access begins from infrastructure impediments such as last mile connectivity to the technology and associated impacts on availability and affordability of devices and services.[24] Policy related issues in relation to access include lack of competition, poor spectrum allocation, high taxes and onerous licensing requirements. The research that is available on the disparities between men and women in relation to access and use of digital ICTs often highlights similar issues—pertaining to network

[21] Gwendolyn Beetham and Justina Demetriades, "Feminist Research Methodologies and Development: Overview and Practical Application," *Gender & Development* 15, no. 2 (July 1, 2007): 199–216, https://doi.org/10.1080/13552070701391086.

[22] Gillwald, "Harnessing Opportunities, Mitigating Risks. WSIS, Opening Plenary Address on Behalf of Civil Society and Academia."

[23] Anita Gurumurthy, Nandini Chami, and Deepti Barthur, "Democratic Accountability in the Digital Age" (IT for Change, 2016), https://www.makingallvoicescount.org/publication/democratic-accountability-digital-age/; Deen-Swarray et al., "Lifting the Veil on ICT Gender Indicators in Africa."

[24] Chenai Chair, "Internet Use Barriers and User Strategies: Perspectives from Kenya, Nigeria, South Africa and Rwanda," After Access Policy Paper, After Access-Assessing Digital Inequality in Africa (Research ICT Africa, 2017), https://researchictafrica.net/publication/internet-use-barriers-and-user-strategies-perspectives-from-kenya-nigeria-south-africa-and-rwanda/; Deen-Swarray et al., "Lifting the Veil on ICT Gender Indicators in Africa"; Dhanaraj Thakur, "Internet for All by 2020? The 2015-2016 Affordability Report," https://1e8q3q16vyc81g8l3h3md6q5f5e-wpengine.netdna-ssl.com/wp-content/uploads/2016/04/AffordabilityReportLaunch_Nigeria-March2016-FINAL.pdf.

rollout, affordability, the network quality and availability.[25] Research has also focused on the need for relevant content and the impact of existing content, "including the impact of stereotypes, cultures and norms, as integral to promoting universal, acceptable, affordable, unconditional, open, meaningful and equal access to the internet."[26] Research conducted by RIA[27] demonstrates how the disparities between men and women in mobile phone access exist initially, but flatten out as more people come online. Their modelling demonstrates that it is because women are concentrated in the lower income and education levels that they gain access later in terms of classical technology adoption and diffusion S curves. As Kularski and Moller (2012) explain, in "a circular causation", it is this degree of unequal education that is observed to facilitate digital inequality in the deployment of capabilities required to engender improved wellbeing.[28] While men and women may face similar challenges at similar income or education levels, women at the intersection of various forms of marginalisation are more likely to experience more barriers more significantly in comparison to men, due to structural inequalities and entrenched prejudice.

These issues are difficult to measure and the reasons why families are comfortable with women using the internet tend to differ.[29] The different experiences of men and women mean that policy makers may need both generalised and localised action informed by issues within their contexts. This indicates a need for more localised studies.

In addition to the issues being difficult to measure, there are also huge data discrepancies in gender-disaggregated data available in low- to middle-income countries. The measures provided by the International Telecommunications Union (ITU) often do not suffice to capture base indicators in predominantly prepaid markets – a feature of developing countries.[30] While developing countries could fill this gap of lacking data, few countries have invested in collecting the relevant data to develop better policies. This worsens the state of knowledge about and action to address intersectional inequalities.

[25] UN Broadband Commission for Sustainable Development, Working Group on the Digital Gender Divide, "Recommendations for Action: Bridging the Gender Gap in Internet and Broadband Access and Use," 2017, https://www.broadbandcommission.org/Documents/publications/WorkingGroupDigitalGenderDivide-report2017.pdf; World Wide Web Foundation, "Women's Rights Online Digital Gender Gap Audit Scorecards," World Wide Web Foundation, 2016, https://webfoundation.org/research/digital-gender-gap-audit/; Gerard Sylvester, *Use of Mobile Phone by the Rural Poor: Gender Perspectives from Selected Asian Countries* (FAO, IDRC and LIRNEasia, 2016), http://www.fao.org/3/i5477e/I5477E.pdf.

[26] Van Der Spuy and Aavriti, "Mapping Research in Gender and Digital Technology" 30.

[27] Gillwald, Milek, and Stork, "Gender Assessment of ICT Access and Usage in Africa"; Deen-Swarray et al., "Lifting the Veil on ICT Gender Indicators in Africa."

[28] Curtis M Kularski and Stephanie Moller, "The Digital Divide as a Continuation of Traditional Systems of Inequality," 2012, http://papers.cmkularski.net/documents/20121214-2699.pdf 5.

[29] Chenai Chair and Ariane De Lannoy, "Youth, Deprivation and Internet in Africa," 2018, 38; Gillwald, Milek, and Stork, "Gender Assessment of ICT Access and Usage in Africa."

[30] Alison Gillwald, "We Don't Have Enough Data to Draw Conclusions about the Digital Divide," *World Economic Forum* (blog), 2018, https://www.weforum.org/agenda/2018/08/we-cant-tell-if-were-closing-the-digital-divide-without-more-data/; Van Der Spuy and Aavriti, "Mapping Research in Gender and Digital Technology."

3.3. Relationship between social and digital inclusion

Social exclusion encompasses the idea that people or groups of people, such as women, are unable to participate in the economic, social and cultural life of the community they live in. This could be attributed to a range of factors such as income, education and cultural practices that create barriers to full or effective participation in society. In looking at ICT access and use, exclusion discourse in ICT has mainly focused on social inequalities of those who have and do not have, referred to as the digital divide.[31] The digital divide perspective often assumes that in order to bridge the gap, to allow for inclusion, there needs to be a provision of the necessary technological skills to include those without access. Yet, the problem of inclusion is found in a wider social structure, which shapes participation in the information society.[32] In considering inclusion for women, it is not focused on getting them to be part of the information society, but how they can make use of ICT tools to work for them in their daily activities.[33] Inclusion goes beyond issues of access and highlights the interplay between gender and ICTs as gender identities and practices may need to be modified in order to achieve beneficial inclusion.[34]

In our study, access is framed as meaningful access, which places emphasis on how people, especially marginalised women, make use of the internet and the impact it has on addressing structural inequality.[35] The focus on meaningful access signifies that the potential of ICT4D depends on how and the extent to which women use ICTs. While the current research and initiatives on women's uptake of technology provides some insights, there is a need for research that better understands the reasons for the access and use of ICTs by women in relation to the internet. In particular, framing access as meaningful access, places emphasis on how people, especially marginalised women, make use of the internet, the need for relevant content in indigenous languages and the impact it has on addressing structural inequality.[36]

A feminist approach to the issue of digital inequality problematises the impact of access to ICTs that moves beyond equating inclusion with equity and highlights the unevenness of the impact that does not necessary result in a positive and empowering change.[37] To better understand the power relations and interests that manifest in gender inequality, this research adopts quantitative and qualitative methods to explore the intersectionality of gender, class, race, culture and other factors of exclusion.

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[31] J. B. Sorensen, "The Strength of Corporate Culture and the Reliability of Firm Performance," *Administrative Science Quarterly* 47 (2002): 70–91; Mark Warschauer, *Technology and Social Inclusion: Rethinking the Digital Divide* (Cambridge, MA: MIT Press, 2003).

[32] Sorensen, "The Strength of Corporate Culture and the Reliability of Firm Performance."

[33] Sorensen.

[34] Sorensen, "The Strength of Corporate Culture and the Reliability of Firm Performance."

[35] Chenai Chair and Mariama Deen-Swarray, "Determining User Capabilities to Ensure the Achievement of ESCRs through Internet Use," in *Global Information Society Watch 2016: Economic, Social and Cultural Rights and the Internet*, ed. Alan Finlay (APC and IDRC, 2016), 212–16, https://giswatch.org/sites/default/files/gw2016-southafrica.pdf.

[36] Van Der Spuy and Aavriti, "Mapping Research in Gender and Digital Technology."

[37] Association for Progressive Communications, "Providing a Gender Lens in the Digital Age: APC Submission to the Office of the High Commissioner for Human Rights' Working Group on Business and Human Rights," 2018, https://www.apc.org/en/pubs/providing-gender-lens-digital-age-apc-submission-office-high-commissioner-human-rights-working.

4. Methodology

4.1. Mixed methods approach

We adopted a mixed methods approach underpinned by feminist values, using both quantitative and qualitative methods for data collection and analysis. Specifically, our empirical analyses draw on the gender-disaggregated data from the 2018 After Access Survey and on qualitative data from focus groups and a high-level roundtable discussion conducted in Rwanda in 2020. Localised qualitative research on gendered digital inequality in Rwanda nuances the quantitative findings highlighted in the After Access research to understand the gendered issues around internet access in Rwanda

Since gender is constructed differently over time and locations and because it is impossible to separate from race, class, culture and religion, many gender specialists and feminists have argued that it cannot be understood in terms of a discrete, quantifiable indicator or even area of social science. But as Steans and Tepe-Belfrage point out, "…in order to speak to policy makers and to inform and influence discussion and decision-making it is often necessary to produce rigorous gender differentiated data which will elucidate myriad gender inequalities…"[38] and enable monitoring and evaluation against policy or strategy targets. While acknowledging the dangers of binary constructions such as male and female, as if it were a "coherent and stable category of analysis".[39] This is done strategically in the case of indicator development for the purposes of research-to-policy influence. It is intended to be sufficiently reflective so as not to reduce our analysis to the crude forms of gender essentialism so evident in policy and practice.

Based on theories of intersectional feminism, multiple marginalities do exist among women. Using only gender as a variable can mask these other marginalities, hence the need to combine a multi method approach. Demand-side research in the form of surveys allows some of these intersections in the gender inequality discourse to be identified and measured. The disaggregation of gender data, which demand-side studies allow, is important if one is to better understand gender-specific challenges, needs and potentials. Deploying a qualitative approach in parallel allows issues that are not susceptible to measurement to inform our understanding of how inequality reproduces itself. These complementary methods enable the development of a more holistic understanding of digital inclusion and exclusion and provide a broader evidence base for stakeholders to use in decision-making. This should contribute to furthering feminist political goals.

Both quantitative and qualitative components include male and female research participants, since to understand the differences in male and female experiences it is important to capture perspectives from both genders. From a qualitative standpoint, the views of men and boys also provide a window into the patriarchal mentality that often underpins and perpetuates gender norms—such insights are important for developing mitigation strategies targeted towards men.

[38] Steans and Tepe-Belfrage, *Handbook on Gender in World Politics* 2.

[39] Steans and Tepe-Belfrage 2.

4.2. Quantitative method

A nationally representative ICT access and use survey was undertaken in 2017 by RIA across ten African countries, including Rwanda. Although our initial dataset was designed to answer general ICT access and use questions, feminist values were applied in the handling of data in relation to ethics and approach to analysis.

The analysis was disaggregated based on gender to provide an accurate picture of gendered differences in access and use in pre-paid mobile environments. The questionnaire had several questions that tracked some core indicators, including mobile phone ownership, internet use, social media use, household internet connection, and type of internet connection, collected across household and individual surveys. The questionnaire also included questions on education, expenditure, race, age, marital status, employment status and location that allow for both descriptive and binary regression analysis of the factors of gender inequality. This goes some way to nuancing conceptions of women and men as homogenous groups that have plagued much of the quantitative research and grand claims in this area and enables the location of gender at the intersection of other factors of inequality such as geographic location, class, age and race. Therefore, the analysis of the data allows us to understand the context-based issues in relation to access and allows us to identify "multiple embedded structures of inequality".[40]

The sample size for Rwanda was 1 217 comprising 53% women and 47% rural (Table 1). Full methodological details as well as datasets can be found in the DataFirst online portal[41] (see Annex 1 for additional survey sample characteristics).

Table 1: Age and Geographic Location of Survey Sample (%)

Variables		All	Female	Male
Age categories	15-24	25.5	25.5	25.4
	25-34	20.9	21.1	20.6
	35-44	22.5	24.8	20.0
	45-54	14.1	11.7	16.9
	55 and above	17.0	16.9	17.1
	Total	100.0	100.0	100.0
Location	Rural	78.4	78.0	78.9
	Urban	21.6	22.0	21.1

[40] Tandon, "Feminist Methodology in Technology Research" 27.

[41] DataFirst: An Online Microdata Library, "Africa – RIA ICT Access Survey 2017 – 2018", last modified July 20, 2020, https://www.datafirst.uct.ac.za/dataportal/index.php/catalog/765/study-description#page=overview&tab=study-desc

	Total	100.0	100.0	100.0

4.3. Qualitative method

The qualitative aspect of the research responds to the need to further understand structural issues at play in relation to policy and the lived realities of access, and using the internet from a qualitative perspective. It is based on six focus group discussions (FGDs) with the men and women in communities of high- and low-level internet use (largely corresponding to urban and rural areas). We also conducted one online roundtable discussion with different stakeholder groups including relevant Government of Rwanda ministries, intergovernmental organisations working on gender equality issues, and private sector individuals implementing solutions on access challenges in Rwanda. RIA worked with the Centre of Gender Studies at the University of Rwanda, who assisted us to develop the focus group approach and identify roundtable participants. The FGDs and online roundtable discussion were conducted in Rwanda during November and December 2020.

Focus group design and implementation

The FGDs were designed by RIA together with the University of Rwanda's Centre of Gender Studies, who conducted the fieldwork. This collaboration was critical due to the inability of the RIA team to travel to Rwanda for data collection activities as planned, as a result of COVID-19. Six FGDs were held to cover different population configurations in rural and urban areas (Table 2).

Table 2: Rwanda focus group design

Rwanda focus group design			
Focus groups	**Number of participants**	**District**	**Description**
Urban male non-internet users	**8**	Gasabo	▪ 18+ years ▪ Aware of the internet
Urban female non-internet users	8	Kicukiro	▪ 18+ years ▪ Aware of the internet
Rural female non-internet users	11	Gakenke	▪ 18+ years ▪ Aware of the internet
Mixed urban internet users	8	Nyarugenge	▪ 18+ years
Mixed rural internet users	10	Gisagara	▪ 18+ years
Male Rural non-internet users	10	Bugesera	▪ 18+ years ▪ Aware of the internet

Selection of participants

The minimum criteria for all participants was that they be 18 years or older and aware of what the internet is. Mixed internet user groups were required to have either equal representation of the sexes or more women than men. Participants were recruited by contacting the relevant district administrative entity which identified a member of its staff to connect the research team with the Executive Secretary of the political administrative unit (province, district, sector, cell and village) selected as a research site. Within the Rwandan political and research context, the only way of being able to conduct fieldwork of this kind is through the administrative authorities of these political units. The Executive Secretaries identified participants based on inclusion criteria we gave them related to age, sex, use and non-use of internet. In each location, the District Officer and the Executive Secretary introduced the data collection team to participants before the FGDs started. As a result, the research team had no direct involvement in the recruitment process, and as such had no way of noting or preventing selection bias on the basis of favour or patronage. The resulting focus groups consisted of participants who were primarily young, with a high school education, employed and unmarried (see Annex 2 for additional focus group sample characteristics).

High-level roundtable discussion

The high-level roundtable was held online to enable broader participation under COVID-19 distancing conditions. Participants included different stakeholder groups, including ministries and regulatory institutions within the Government of Rwanda, gender-focused nongovernmental organisations and academic institutions. Other invited stakeholders, such as the main mobile network providers were unable to attend.

1) Gender Monitoring Office (GMO)
2) Ministry of Gender and Family Promotion (MIGEPROF)
3) Rwanda Utilities Regulatory Authority (RURA)
4) UN Women
5) Rwanda Men Resource Centre (RWAMREC)
6) Rwanda Women Engineers
7) Prof-Femmes Twese Hamwe (an umbrella of organisations intervening in gender equality and women empowerment in Rwanda)
8) University of Rwanda – College of Science and Technology (UR/CST)

4.4. Limitations

Asynchronous data gathering: The quantitative data analysed for the study is three years old, coming from the After Access surveys that were conducted in 2017. This is the most current nationally representative and gender-disaggregated demand-side data available on digital access and use in Africa. The qualitative data, on the other hand, represents a more recent timeframe – 2020. Therefore, our

comparison and interpretation of the quantitative and qualitative data together should be considered with this in mind.

Inability of RIA researchers to participate directly in the qualitative fieldwork. Due to COVID-19, the RIA team was unable to travel to Rwanda to physically conduct the fieldwork. Our partnership with the University of Rwanda's Centre of Gender Studies enabled the research to proceed, with the Centre effectively managing the in-country logistics and facilitating the FGDs and online roundtable. This is not an unusual situation for RIA, as much of our research outside South Africa is conducted by our in-country network partners. Despite the associated challenges, it is important to avoid the temptation (typically ascribed to western researchers) to assume that other African researchers with different training are incapable of properly carrying out research. This is a difficult aspect of collaboration, but one that researchers have to find ways to grapple with and resolve while resisting the impulse to impose external standards or devalue the work done by local partners if/when it does not meet those expectations.

Rushed fieldwork. Administrative processes related to acquiring the necessary research permissions, and changes in leadership of partner institutions in Rwanda caused significant delays in beginning the qualitative fieldwork. When government approval was finally secured, the team was given just one month within which to complete the data collection. This led to a rush into the field and an inability to test the FGD protocols and question guide before implementation. Since the six FGDs occurred in close sequence, it was also not possible to review transcripts and course-correct for subsequent discussions.

Opaque FGD participant selection process. Participants were recruited by community leaders and did not report the processes they used for selecting participants. The research team therefore could not ascertain whether any types of selection bias affected the final sample.

Focus group design. The presence of different genders in the mixed internet user groups might have influenced the extent to which female participants freely expressed their views, especially on gender equality. Also, note-taking during the mixed group discussions did not always identify whether the speaker was male or female, thus limiting our ability to fully contextualise the comments participants made or compare responses from the mixed group with those from the male- or female-only groups.

Participation of key stakeholders. While the high-level roundtable discussion had strong participation from several stakeholders, some important institutions were absent, in particular mobile network providers and key government departments.

Insufficient exploration of key issues. Partly due to the absence of pretesting, the FGDs missed the opportunity to probe or explore some key issues such as women's negotiation of internet use or modes of resistance against the constraints they face. There was also ultimately insufficient time to elicit deep responses from the high-level roundtable discussants as most of the session was spent presenting the findings and responding to questions.

5. Findings from quantitative and qualitative research

5.1. Quantitative findings

5.1.1. Gender differences in ICT access and use

This section looks at how individuals' access and use ICTs including the internet, mobile phones and computers and how this varies by gender.

i. Gender differences in computer and mobile phone (smartphone) ownership

Ownership of personal computers is very low in general and more so for women and so is the use of computers. Only 2% of the population use computers on a daily basis and only 1.8% of women make use of computers daily.

Table 3: Ownership and use of ICTs by gender

Variables		All	Female	Male
Frequency of computer use	Never	95.0	95.5	94.6
	Hourly	0.9	0.8	1.0
	Daily	2.0	1.8	2.1
	Every now and then	2.1	1.9	2.3
Ownership of a personal desktop/laptop		1.9	1.1	2.8
Own a mobile phone		48.2	37.2	60.4
Own a smartphone (of entire population)		4.3	3.4	5.4

N = 1217 (Male: 572; Female: 645)

Source: Research ICT Africa Database 2017

Only 48.2% of the Rwandan population own a mobile phone with only 9% of these having a smartphone and of the entire population only 4.3% own a smartphone. Whilst 5.4% of men in Rwanda own a smartphone, only 3.4% of women do.

Table 4 shows that the majority (36%) of those who own a smartphone have a tertiary education. When it comes to other mobile phones (basic or feature phone), even women with lower levels of education do own one. It is mostly women who are self-employed that have a mobile phone, followed by those who are unemployed and looking for a job. Whereas when it comes to owning a smartphone, it is mostly women who are employed that have one. This could be due to the fact that smartphones are more complicated to use and may need skills and expertise and also in order to use them effectively one needs to be able to afford data charges.

Table 4: Share of individuals who own a mobile phone by gender and various categories

Share of those who have mobile devices by different variables		Mobile phone ownership		Smartphone ownership	
		Female	Male	Female	Male
Level of education	None	8.4	12.1	3.9	1.3
	Primary	58.1	59.5	9.2	11.7
	Secondary	24.5	21.4	28.3	35.0
	Tertiary: Diploma/Certificate	5.0	2.0	17.7	7.3
	Tertiary: Bachelors	3.6	4.7	36.3	39.9
	Tertiary: Masters	0.4	0.4	4.7	4.8
Economic activity engaged in	Student/pupil	4.6	3.4	13.9	12.1
	Unemployed, seeking a job	18.4	16.8	12.7	3.5
	Unemployed, not looking for a job	3.9	5.6	1.2	1.5
	Employed	16.5	16.3	50.7	43.8
	Self-employed with employees	2.1	10.5	0.0	5.7
	Self-employed without employees	30.9	32.5	13.3	29.8
Age categories	15-24	16.9	17.3	13.8	12.8
	25-34	25.8	22.8	43.8	30.3
	35-44	32.2	24.4	36.4	33.6
	45-54	13.1	19.7	6.0	17.9
	55 and above	12.1	15.8	0.0	5.5
Marital status	Married	59.7	75.4	53.7	53.1
	Single	23.8	22.8	35.9	43.3
	Widowed	12.3	0.8	9.0	2.5
	Divorced	3.6	0.7	1.4	1.2
	Other	0.7	0.3	0.0	0.0
	0 - 1000	19.5	10.0	17.9	1.3

Income Categories	1001 - 5000	3.9	5.3	0.0	0.0
	5001 - 10000	7.6	6.5	1.4	0.0
	10001 - 20000	16.8	15.7	7.5	7.4
	20000 and above	52.3	62.4	73.2	91.3

N = 1217 (Male: 572; Female: 645)

Source: Research ICT Africa Database 2017

Women between the ages of 25 – 44 years seem to be the ones that own a mobile phone and a smartphone more than women in the other age brackets. The data shows that only a few women above 45 years old have a smartphone. Women who are married tend to have mobile phones and smart phones more than women with other marital status. The descriptive results above show that it is mostly women who find themselves in the higher income category that own a mobile phone and a smartphone.

ii. Gender differences in Internet use

a. Gender differences by demographic characteristics

Internet use in Rwanda is very low and amongst one of the lowest in sub-Saharan Africa. Whilst knowledge of the Internet is slightly higher at 21.1%, internet use is only at 8.2%, with 4.8% of women using the internet in comparison to 12% of males using the internet. The mobile phone has been the main point of entry into the internet for most sub-Saharan countries and this is reflected in Table 5. Whilst this was mainly the case for women, with 64.7% of internet users first accessing the internet through a mobile phone (second wave adopters – poorer, less educated), the case was slightly different for men. For men, it was through the computer that most started using the internet (small number of first wave early adopters).

Women who go online mainly make use of social networking (83.1%) relative to the other activities. Around 67% indicated that they spend their time online searching for jobs, whilst 50.5% spend their time going through government services and 47.3% on educational purposes. Doing online banking and shopping online are two of the activities that those who go online participate in.

Table 5: Internet use analysed by gender

Variables		All	Female	Male
Knowledge of the internet		21.1	16.7	25.9
Internet use		8.2	4.8	12.0
Where internet was first used	Desktop/laptop	48.8	35.3	54.9
	Mobile phone	50.9	64.7	44.7
	Tablet	0.3	0.0	0.4

Purpose for which internet is used	Educational purposes	43.3	47.3	41.5
	Social networking	74.6	83.1	70.8
	Work related	47.1	44.6	48.2
	Shopping	10.7	12.8	9.7
	Government services	53.2	50.5	54.5
	Job search	49.4	66.8	41.5
	Online banking	15.0	14.7	15.1

N = 1217 (Male: 572; Female: 645)

Source: Research ICT Africa Database 2017

An analysis of the share of individuals who know what the Internet is and who use it, reveals that whilst even those with primary level of education know what the Internet is, a higher proportion of internet users are those with higher levels of education. When compared to men, a higher proportion of women with a tertiary level of education be it a diploma, bachelor's or master's degree ,use the internet. For the lower levels of education, the proportion of men using the internet is higher in comparison to women.

Interestingly, about 15.7% of women who use the internet are among the unemployed who are job seeking and this figure is even higher than that for males who are in the same category. Also, women who are formally employed use the internet more than employed men, whereas men who are self-employed use the internet more.

Table 6: Share of those who have used the internet by different variables

Share of those who have used the internet by different variables		Knowledge of the internet		Internet use	
		Female	Male	Female	Male
Level of education	None	4.4	3.4	3.6	7.3
	Primary	25.7	38.3	11.8	15.6
	Secondary	51.1	43.8	36.5	52.5
	Tertiary: Diploma/Certificate	10.0	3.7	17.5	4.1
	Tertiary: Bachelors	7.9	9.8	27.3	18.4
	Tertiary: Masters	1.0	1.0	3.3	2.2
	Student/pupil	25.5	20.9	24.5	27.0

Economic activity engaged in	Unemployed, seeking a job	22.4	18.6	15.7	5.0
	Unemployed, not looking for a job	1.1	9.8	0.9	0.0
	Employed	22.0	21.8	39.6	33.0
	Self-employed with employees	1.8	7.7	1.5	16.1
	Self-employed without employees	15.5	15.2	8.6	17.2
Age categories	15-24	38.4	30.8	24.4	27.1
	25-34	33.9	22.1	45.0	26.0
	35-44	15.0	24.5	21.6	20.8
	45-54	7.8	11.3	4.2	17.9
	55 and above	4.8	11.3	4.8	8.2
Marital status	Married	39.2	57.7	47.0	54.8
	Single	48.7	41.5	39.7	43.8
	Widowed	9.3	0.6	11.1	0.8
	Divorced	2.4	0.2	1.0	0.5
	Other	0.4	0.0	1.2	0.0
Income categories	0 - 1000	30.8	18.6	31.1	15.3
	1001 - 5000	6.4	2.1	0.6	1.6
	5001 - 10000	4.6	1.8	1.6	4.0
	10001 - 20000	10.0	12.8	11.4	7.9
	20000 and above	48.2	64.6	55.3	71.3

N = 1217 (Male: 572; Female: 645)

Source: Research ICT Africa Database 2017

Analysing the data based on age shows that women who use the Internet fall between the younger population, with the majority in the 25-34 years category. Married women also access the Internet more in comparison to the other categories and the largest share of women using the Internet are those within the

highest income category. It is also noteworthy that more women than men in the lowest income category use the internet.

b. Gender differences by geographic location (rural/urban)

The data shows that the gender differences observed in Rwanda are similar to trends across the other countries surveyed.[42] Across countries, disaggregating the data by location shows that differences exist among women – women in urban areas are more exposed to the internet and a higher proportion of them use it in comparison to women in the rural areas. Furthermore, the gap becomes wider when the devices or activities are more sophisticated. The share of women across the countries who own a smartphone in urban areas is more than double that of women with a smartphone in rural areas. The results further show that women in urban areas are better off in internet access and use than men in rural areas. However, men in rural areas are better off than women in rural areas in the access and use of the internet. This, again, points to the fact that women are marginalized as a result of several factors. In this case, their gender and location make women in rural areas worse off.

In Rwanda specifically, the analysis shows that women in rural areas have the lowest mobile phone ownership, ownership of smartphones, knowledge of the internet and use of the internet (Table 7).

Table 7: Mobile Phone and Internet analysed by gender and location in Rwanda

Questions	Urban		Rural	
	Men	Women	Men	Women
Do you own a mobile phone?	70.8%	52.3%	57.7%	32.9%
What type of phone is it? (smartphone?)	18.6%	12.9%	1.9%	0.7%
Do you know what the Internet is?	39.4%	30.8%	22.3%	12.8%
Have you ever used the internet?	25.8%	16.2%	8.3%	1.6%

N = 1217 (Male: 572; Female: 645)

Source: Research ICT Africa Database 2017

This goes to show that the gender gap is not only a result of the gender of an individual, but could reflect multiple factors, some of which are beyond the scope of this quantitative study. However, the analysis has shown that the level of education, income earned, age and location are some of the main determinants of internet use. The qualitative component of this research sought to better understand some of these gender differences and the influencing factors.

[42] See https://researchictafrica.net/publication/after-access-2018-a-demand-side-view-of-mobile-internet-from-10-african-countries/ for the comparative analysis of 10 countries.

5.1.2. Determinants of internet use (regression results)

A logistic regression model was run to assess which variables affect an individual's use of the internet. A binary option on whether someone uses the Internet or not was used as the dependent variable and age, income, gender, level of education, location, marital status and employment status were used as independent variables.

The table below shows the results of the logit model on internet use. The first column shows the coefficients from the logit model estimation. The second column shows the average partial effects which shows probabilities of relationships between outcome variables and internet use.

Table 8: Estimation results

	(1)	(2)
Variables	Logit model	Average Partial Effects
Age	0.101	0.00716
	(0.0719)	(0.0051)
Age squared	-0.00170*	-0.000121*
	(0.000911)	(0.0000645)
Log income	0.170*	0.0121*
	(0.0967)	(0.00683)
Female	-0.887***	-0.0636***
	(0.259)	(0.0183)
Primary	0.814	0.028
	(0.634)	(0.0177)
Secondary	2.695***	0.206***
	(0.622)	(0.0305)
Diploma/Certificate	4.106***	0.458***
	(0.748)	(0.0899)
Bachelors	5.347***	0.680***
	(0.772)	(0.0797)
Urban	1.024***	0.0705***
	(0.304)	(0.0196)
Married	-0.656**	-0.0481**
	(0.283)	(0.0211)
Employed	0.398	0.0282

	(0.263)	(0.0185)
Constant	-6.951***	
	-1.527	
Observations	959	959
Standard errors in parentheses		
*** p<0.01, ** p<0.05, * p<0.1		

The results can most easily be described in terms of average partial effects (APEs). The APEs suggest that, for females in Rwanda, the probability of having access to the internet decreases on average by 6.4 percentage points *ceteris paribus*, when compared to the base case, which is the male. A 1% increase in income will result in a 0.0121 percentage points increase in the probability of accessing the internet.

The model shows that completing secondary education increases the probability of having access to the internet by an average of 20.6 percentage points, holding other outcome variables constant, compared to the one who has no education at all. The probability of accessing the internet increases as one acquires higher levels of education with 45.8 and 68 percentage points more likely for those with a diploma/certificate and bachelor's degree, respectively, compared to one with no education. Completing primary education was not statistically significant.

The probability of urban dwellers accessing the internet increases by an average of 7 percentage points *ceteris paribus*, compared to those who stay in Rwanda's rural areas. The results further show that the probability of those married accessing the internet decreases by 4.8 percentage points compared to those who are not married (single, widowed or divorced).

The probability of accessing the internet increases with age up to an average of 29.6 years, the turning point where it starts to decrease. This indicates that the internet is in greater demand by the youthful population of Rwanda.

5.1.3. Barriers to internet access and use

The challenges that many women face in the access and use of the internet is not unique only to women, though they are affected more than men. This seems to come back to some of the fundamental gender disparities in areas of education, skills and earning power and as shown in the model, education and income are two strong determinants of internet use.

The price of Internet services is still very high and not affordable for many in sub-Saharan Africa. The survey result shows that the price of data is one of the main reasons why men and women tend to use special data promotions. Special data promotions are offerings that come from mobile network operators in small packages with varying time validities for users with limited disposable income to make use of. This is a limitation for many, as it does not allow individuals to make use of the Internet in the way they might like to, but are rather forced to wait for when there is a promotion in order to save on data. Price was cited by

women as one of the main reasons why they do not use the internet. In Rwanda, most people make use of free public WiFi to save on data charges and more women tend to do so. This points to the lack of financial resources among most women making them more sensitive to price and data charges.

Another major barrier preventing people from using the internet is the lack of the appropriate devices. In order to access the internet, one needs a computer, a smart phone or at least a feature phone. However, these are still expensive and for some, a simple basic phone is enough to stay in contact with family and friends. Computer ownership is also very low with women comparatively worse off than men. This was the barrier most cited by women in Rwanda, Mozambique, Tanzania and South Africa. Again, with women not having enough earnings and in many cases being dependent on their male partners, it is possible that they cannot afford mobile phones with internet capabilities. The descriptive statistics show that it is mostly women with higher levels of education, women who are employed and women with higher incomes that tend to own a smartphone.

Table 9: Reasons for not using the Internet by gender

Reasons for not using the Internet	All	Female	Male
I don't know what the Internet is	8.9	6.1	11.5
No access device (computer/smartphone)	42.8	51.4	34.7
No interest/not useful	3.8	0.5	7.0
I don't know how to use it	2.7	4.1	1.3
Too expensive	33.0	31.4	34.4
No time, too busy	4.0	4.4	3.5
Lack of content in my language	0.7	1.2	0.2
My spouse or parents do not allow me	0.3	0.6	0.0
Other	3.9	0.4	7.3

N = 1217 (Male: 572; Female: 645)

Source: Research ICT Africa Database 2017

5.2. Qualitative findings: Gendered perceptions and experiences of internet use

This section presents a range of gendered experiences and perceptions about gender shared by focus group discussants. They illustrate the complex interplay of social and economic forces that have created an environment in which supply-side oriented policy and industry measures (and possibly even some cultural initiatives) have not translated into equal gender digital inclusion.

5.2.1. Internet challenges

Participants mentioned several intersecting factors that affect internet access and use as well as digital technology use in general by both females and males. Broadly these related to personal circumstances, characteristics and abilities; the state of infrastructure; industry practices; and social issues (Table 10). Whilst these challenges cut across all participants, some can be singled out for their apparently differential impacts on women, girls and other socially marginalised groups. As discussed in the following sections, these impacts seem to emerge from the interaction of women's low labour force participation and related association with personal income; access to workplace digital resources; unresolved norms about domestic labour and women's role in the home; power relations in domestic settings; and flawed perceptions about gender equality and women's agency.

Table 10: Communication and internet use challenges (for both female and male participants)

Individual situation	Infrastructure & macro-economic trends	Industry practices	Socio-cultural
▪ Lack of resources for devices and data	▪ Poor connectivity	▪ Cost of devices and data	▪ Gender norms
▪ Lack of skills	▪ High unemployment	▪ SIM card bundle limits	▪ Domestic restrictions/violence
▪ Employment status	▪ Low female labor force participation		
▪ Time constraints			
▪ Lack of interest			

***Definitions**: Individual situation – constraints participants attributed to their individual condition; Infrastructure – constraints participants attributed to the state of infrastructure; Industry practices – constraints participants attributed to the actions of network providers; socio-cultural – constraints participants attributed to prevalent social practices and values.*

5.2.2. Gendered domestic roles and internet access

i. Domestic roles and time constraints

Overall, time constraints, especially for adult women and men, emerged as a major constraint to internet use, despite being raised as an issue by less than 5% of women in the quantitative study. However, this barrier was raised more often by and in relation to women, and particularly linked to their preoccupation with domestic chores:

> … if you bring up here ten men and ask them the same question, I am sure that five of them would say that they never lack time to use a mobile phone … But women always lack time to visit these platforms because of too many chores to do. (*Rural female nonuser2*)

> … it's possible that you have purchased that internet bundle but never get time to use it before it expires. … It is because you have been busy in your chores. (*Urban female nonuser1*)

> Then when I start to think I didn't cook lunch for my husband … You are thinking about homework for children… Are you telling me that you will have time to use internet? (*Urban female nonuser2*)

> Women are busy doing chores and it's not easy for a woman to spare time for social media when for us, men, we even have time to meet and discuss. For women, it never happens. (*Urban mixed user4-male*)

This framing of domestic chores as being the purview of women was dominant in the female groups, but interestingly less so in the male and mixed groups. The way women spoke about housework suggests that they have internalised norms about domestic work. However, some complexity in their views might be hints of either nuanced thinking or evolving concepts of which household tasks are acceptable to be done by men and which are not, as illustrated in the different allowances made in the quotes below (both by urban females).

> He asked us if there are husbands who help wives with chores. … it doesn't happen often. … And there's no reason why you would ask him such a question since it's our duty to do the chores. … they are not made for that. They are not used to coming to offer help. (*Urban female nonuser2*)

> There are jobs for women and jobs for men. What would my neighbour think if she comes home and finds my husband washing cooking pots? … I can't let him do some types of chores. … I can let him help me to cook. … I wouldn't be worried if he is making a bed. But there are chores that anyone can think that they are made for a woman… I can only let him do the chores that are reasonable in the eyes of the society. God created men with their respect. (*Urban female nonuser5*)

Although comments in the female groups indicate that household chores are largely the responsibility of women and girls, in the male and mixed groups, some male participants described household chores as a regular part of their daily routine. This was especially connected to periods of unemployment.

> When I don't have a job, I may look for dirty clothes and wash them, I may repair few things that need repairs on my house because I don't have resources to hire a builder… That's the type of work I do when I am home. There is so much to do when I spend my day at home, small tasks. (*Urban male nonuser3*)

Tasks mentioned by men included so-callled typically masculine activities like "cut the fence" (*Urban male nonuser1)* as well as so-called typically feminine activities such as "clean inside and outside the house" (Urban *male nonuser2*) and "cleaning the floor, washing dishes*" (Urban male nonuser4*). Some female participants also indicated that there is sharing of responsibilities: "about my husband, I don't see problems. We try to partner in all tasks" (*Rural female nonuser1*).

Conversely, though infrequently, some men suggested that a man's breadwinner role could also impose time restrictions:

> …men leave homes to try to make little money. As he is busy working, I don't think that he will spare some time to browse internet. (Urban mixed user1)

> I may wake up early in the morning and go to work, as usual, to try to make some money to supply for my family…That is because a major part of responsibilities relies on me as I am the head of the family. I never spare time to take care of myself often. (Rural male nonuser5)

5.2.3. Gendered employment and internet access

i. Formal employment, internet access and skills development

Following from the above discussion of gendered domestic work, there appears to be a strong connection between having paid employment, access to the internet, internet affordability, and ability to develop internet skills.

The Rwanda 2020 labour force survey report[43] shows relatively high unemployment levels for women – in 2019, labour force participation among females (45.1%) was about 18% lower than for males (62.8%), and even lower in rural areas (Table 11).

Table 11: Labour force participation rates

Population	Female (%)	Male (%)	Difference (percentage points)
Total	45.1	62.8	17.1
Rural	60.5	73.6	18.6
Urban	41.3	59.9	13.1

Source: National Institute of Statistics of Rwanda, 2020[44]

From the perspective of research participants, having a job enables access to office internet facilities and more so if work responsibilities require use of the internet. Despite the widely hailed high representation of women in Rwandan politics, other sectors have not followed suit, as several respondents noted that the workforce is dominated by men.

> I think that the differences come from the fact that the majority of employed people are men. Another difference is that among the available jobs, there are jobs that require internet use. That is where some people keep using the internet. On the other side, there's that person whose job doesn't require internet use. (*Urban mixed user2*)

> I assume you all know how the rate of unemployment issue here in our country is very high. If we could get jobs and leave homes, you know that in many institutions there are free internet access, we would increase our internet use. (*Urban female nonuser1*)

This access to employment has knock-on effects on availability of personal income for internet access outside the workplace, motivation to use the internet for personal and professional development, and the building of internet skills.

[43] National Institute of Statistics of Rwanda, 'Labour Force Survey 2019, Thematic Report on Gender', 2020, https://www.statistics.gov.rw/publication/labour-force-survey-2019-thematic-report-gender

[44] National Institute of Statistics of Rwanda.

Employment, personal income and spending habits

While female participants did not explicitly separate personal and family income, their comments suggest that lack of personal disposable income weighs heavily on their purchasing habits. Mobile phone voice packages in Rwanda cost 4.5% of the average income, 2.5% more than the global average; and a monthly allowance of 2GB data costs about 7% of gross national income.[45] Most female participants agreed that men had more resources to spend on internet access because men have a higher rate of employment and ostensibly personal income, whereas women's source of income is whatever housekeeping money their husbands provide.

> …if you don't have a regular job, it's not easy to get information using the internet…When you look at the rate of employment, men are employed at a high rate compared to women. It means that they have more resources compared to women when it comes to purchasing data and internet use. (*Urban mixed user1*)
>
> You may be unemployed, and in that case you wouldn't be able to buy a device on which you can use internet. (*Rural female nonuser7*)
>
> For us women, if it was possible for us to get jobs, nothing would stop us from using internet. *(Urban female nonuser3*)

Furthermore, women's dependence on men for financial resources for housekeeping means that they are more guarded in how they spend money, weighing priorities in a deliberate effort to either be responsible with limited resources or avoid having to ask for additional funds.

> The majority who are unemployed are women. Many stay at home. You can't ask your husband to give you money to purchase groceries, then ask money for bundles. (*Urban female nonuser4*)
>
> …women who don't have paid jobs, stay at home and receive money to purchase groceries…about 20,000 Rwf. You can't start thinking about loading 5,000 Rwf in a mobile phone. You start to think about how to manage the money your husband left you, then to plan to save some for the next day, making sure that she tries all she can to not ask him additional money the next day…But men never think that way. They go ahead and purchase the bundles the way they want. (*Urban female nonuser6*)
>
> If the bread winner leaves you a certain amount of money, you make sure to save some for tomorrow. So, you can't just spend the money that your husband left with you and spend it on internet bundles. (*Urban female nonuser3)*
>
> If there wasn't an issue of resources, I wouldn't think that I am going to waste money if I purchase internet bundles of 2000 Rwf. I would just take the money and use it because it is there. But if the resources are low and I use that money on the internet, I can only think that it is going to impact the bread winner, or the baby will not drink milk. (*Urban female nonuser1*)

[45] ITU, "Measuring Digital Development: ICT Price Trends 2019," 2019, https://www.itu.int/en/ITU-D/Statistics/Documents/publications/prices2019/ITU_ICTpriceTrends_2019.pdf

Notably, participants in the male and mixed focus group discussions tended to present this challenge as a tendency or trait in women to be frugal rather than as a reflection of limited finances.

> Women say that men waste money. An example is that I can purchase an internet package for internet bundles to read information. But women are precocious. They never buy bundles easily, but think first comparing what is the priority, thinking that if she spends 100 Rwf or 200 Rwf on internet bundles, she would be wasting money. I think that the issue starts from there. They don't use their bundles often. (*Urban male nonuser1*)

> For men, they give up easily. A man can give up on 200 Rwf to purchase internet bundles, but for a woman, she considers that there's something she can use with that money. (*Urban mixed user*4)

However, one participant noted that if the cost of access were lower, women might perceive more financial flexibility and even be more inclined to carve time out of their domestic schedule for internet access.

> But if the price of internet bundles was lowered, and if you had a device, you may spare some time for the internet. You can't work nonstop... (*Urban female nonuser2*)

As with the issue of the burden of domestic roles, there were a few inferences to men also facing financial constraints due to family responsibilities (see Section 5.2.5. on Employment status and income).

Employment and motivation to use the internet

There is also a complex set of interactions around being in paid employment and having financial resources that could be stunting women's interest in using the Internet. This outcome, framed as "laziness", points to a slow detachment from social engagement or personal development resulting from despair, loneliness and discouragement in addition to concerns about wasteful use of limited funds. Even if 'reading' and gathering 'information' from the Internet is seen as a positive activity, it is viewed as squandering family resources. Thus, the psychological impacts of unemployment or unpaid work contribute to a vicious cycle fuelling perceptions of nonrelevance of the internet and disincentivising its use.

> I think that there's a certain psychological aspect of this issue. You start to develop some kind of loneliness and desperation behaviour when you spend all your days home. That happens frequently to be educated people who never got job opportunities…you develop no interest to internet, discourage to use it. In that mood, you develop certain laziness, loose interest in things…when unemployed and always home, you have nothing new that attracts you to browse internet and you feel lazy. [*Urban female nonuser 4]*

> that laziness we talked about is a consequence from the insufficient resources…As you are browsing, you are curious to know more about what you are seeing looking new to you. And you would develop internet skills easily…I think low resources impact on lack of skills and brings laziness. For example, if you are a reader and you are using your computer. You read and keep reading as you enjoy it. Then you read more. But as you are reading and browsing links, you are consuming the money you used to purchase the bundles. (*Urban female nonuser1*)

Employment and skills development

Several participants noted how the combined effect of being unemployed, not having the means to purchase internet access at home and resulting lack of motivation to use the internet leads to inability to build internet skills. One can surmise that their real or perceived lack of digital skills then further reinforces decisions not to use the internet.

> If you want to develop ICT skills, you have to regularly use these devices at work or somewhere else…But if you are always at home, you will never have these skills. Differently, a husband's workplace gives him access to ICT devices and internet. He develops these skills easily. But for women, they always stay at one place and don't develop their skills…most of unemployed people are women. So, people who are always home, never have other work, they don't develop these skills*. (Urban female nonuser 2*)
>
> Talking about our situation as mothers in the homes…if I was employed in an institution where I could use internet regularly, I would have a computer probably to use at home as I needed to access internet to complete the workload I didn't finish at workplace, then submit online. In that case, I would have even better skills than a man. (*Urban female nonuser5)*

ii. Devaluation of unpaid domestic and cultivation work

The above views about the benefits of formal employment stand in contrast to attitudes expressed about the value or lack thereof of the unpaid work women do within the household. Globally, it is documented that women carry a disproportionate amount of unpaid domestic and care work, and calls are increasing for such "reproductive" work to be valued equally to so-called "productive" work that occurs outside the home.[46] Rwanda statistics confirm that a much higher proportion of women (6.6% compared to 1.2% of men) are engaged in unpaid work.[47] In this regard, the comments made by FGD participants are important because as discussed in Sections 5.2.2. and 5.2.4. on gendered domestic roles and gendered power relations, the perception that unpaid domestic work is not productive work appears to provide justification for some women to be denied the means (whether in time or funds) to access the internet.

Unsurprisingly, housewives in the focus groups considered themselves to be unemployed. As illustrated in the exchange below, employment is assumed to be work that happens outside the home or homestead.

> **Facilitator**: You just told me something interesting. You just told me that you are unemployed.
> **Participant3**: I meant a job that allows me to go out of my home like all others wake up in the morning and go, then come back home later. (*Urban female nonuser3*)

[46] Laura Addati and Umberto Cattaneo, "Care Work and Care Jobs for the Future of Decent Work," Report, June 28, 2018, http://www.ilo.org/global/publications/books/WCMS_633135/lang--en/index.htm; Valentina Beghini, Umberto Cattaneo, and Emanuela Pozzan, "A Quantum Leap for Gender Equality: For a Better Future of Work for All," Report, March 7, 2019, http://www.ilo.org/global/publications/books/WCMS_674831/lang--en/index.htm; ILO, "The Future of Labour Supply: Demographics, Migration, Unpaid Work," *The Future of Work Centenary Initiative, Issue Note*, no. 2 (November 3, 2016), http://www.ilo.org/global/topics/future-of-work/publications/issue-notes/WCMS_534204/lang--en/index.htm.

[47] National Institute of Statistics of Rwanda, "Labour Force Survey 2019: Thematic Report on Gender," 2020, https://www.statistics.gov.rw/publication/labour-force-survey-2019-thematic-report-gender.

And even though some men indicated their employment as "farmer" it appears that women's work on the household farm is not considered employment, instead being referred to by women as "cultivating".

It was clear that several women felt a deep sense of their work in the home being undervalued because it does not directly generate income, as illustrated in the exchange below as well as quotes from both urban and rural women:

> **Participant5**: We do the chores all day. We work hard but at the end it's not obvious. It's like we did nothing all day. Do you think that we are given the same value to these who have a monthly paid job?
> **Facilitator:** But you both worked, don't you both have a job?
> **Participant4:** That one who have a paid job, she earns money. But on our side, what we do is not obvious. It's like we did nothing.
> **Facilitator:** You look like you don't have money even if you worked hard and are very tired, it seems that you did nothing.
> **Participant3:** Yes. You may even have done hard work compared to that one who is paid for his/her job. (*Urban female nonuser)*

> …men say my wife is a housewife, she is unemployed. They spend their days sitting, just eating what we supply, doing nothing. Then he insults/quarrels with the wife showing her that she did nothing all day long. They don't value the chores and how tiresome they can be…when he gets home, he finds that dinner is not ready. He quarrels, forgetting that he found that children were bathed, the house was cleaned. (*Rural female nonuser3*)

> She cultivated. And the husband always qualifies his wife as a lazy woman because she took care of children and did her chores…Because they never understand the value of a woman in a household … as long as they still think that a woman works only if she earned money, that is a problem. (*Rural female nonuser2)*

In addition to not being considered "work", there was a perception by some participants (mostly in the male or mixed groups) that housework is less burdensome than other types of work. Specifically, referring to having time to use the internet, views were expressed that women (especially married women) working in the home have more time on their hands than men do:

> Some single mothers are wealthy. In that case, that woman must invest very much in physical strength to develop her household. But in general, there are times when a woman spares more free time compared to a man. That is when one of them leaves the household early when the other stays home. They don't leave their household to the housemaids. In that case, the wife doesn't have paid work and doesn't have the means to make money…in general, when a woman stays at home, she does chores and can spare some free time. (*Rural male nonuser)*

However, while pervasive, this view was not universally held. Some male participants argued that women's work in the home has value, with one man describing both men's work outside the home and women's work in the home in terms of "working hours":

> … when you wake up, you don't leave your wife in the bed sleeping. You may have gone to try to make small money somewhere out there because that's how men use to do to make

> money…That wife stays home doing chores. Maybe their roles differ but the working hours are the same. (*Rural male nonuser3*)

5.2.4. Gendered power relations

i. Explicit references to male control and domestic violence

While some participants were incredulous about men's ability to restrict women's access to the internet, asking, "how can you stop someone from using internet*" (Urban male nonuser3*), female participants, in particular ,highlighted overt and covert forms of male control over their technology acquisition, internet use and even income-earning capacity, some of which arguably border on psychological violence. These insights notably came from both rural and urban females.

> A husband leaves you home knowing that you will be busy doing your chores. Then he notices that you are online browsing WhatsApp. He starts to count your time. Then finally, he tells you: "You are behaving like an adolescent"…If he gets home and finds that you were browsing some platforms or opened some links, he tells you what you were doing is useless. And it becomes more like perpetrating violence against that woman when her husband thinks that internet access is not necessary to his wife…Even if a woman is employed, some men just see that their wives are online and…He asks her why were you connected an hour long? Who were you talking to? What happened at your workplace when I realized that your mobile phone was connected on internet all day long? (*Urban female nonuser2*)

> …The screen of my phone is broken. By the time my husband was giving it to me, he was arguing me. I had stressed him many days that I wanted a phone, but he kept telling me: what for? Because the baby will break it anyway? If I give it to you today, it is going to become a toy for the baby. You don't deserve a phone. That's what happened when he gave it to me. He was right…Then my husband says: I told you, this phone is wasted. Do you think I will buy you another when I see this one the way I told you it was going to be?…And keeping asking becomes begging because I can't buy a phone knowing I have other priorities. (*Urban female nonuser6*)

Other restrictions are based on mistrust of women and young girls. Jealous spouses, secretive spouses and suspicious parents directly or indirectly impose barriers or create environments in which women choose to avoid using the internet completely.

> Let me start by violence. People still have the thinking that there's no woman who is allowed to own a phone. They say that if she has it, she will talk to men…Then that create conflict between spouses. Even if she has resources to afford a phone, she can't buy it to avoid that her husband would notice it. There are even husbands who crash phones because their wives bought them. *(Rural female nonuser5*)

> There are also different problems in households. A man may forbid his wife to use social media because of their relationship. He may be jealous and ask her who these people that you chat with, who are not me are? *(Urban mixed user1*)

> In rural areas, men think that no one else has to call their wife, that she is not supposed to access social media, thinking that she will meet other men or other people that the husband doesn't

> want. There are cases where a man just takes it from her not because they lack resources to buy his own, but just being jealous. (*Rural mixed user9*)

These relationships of mistrust are not perpetuated only by men, but sometimes by women as well.

> There are cases where, for example, if my daughter is using internet, I would quarrel her saying that she is misbehaving sexually. She wants to become a prostitute…The girl ends up stopping using it… *(Rural female nonuser4*)

ii. Hints of normalised domestic violence

In addition to specific references above, there were a few almost casual references to violence against women that seemed to imply an acceptance of it as a practice. A comment about the International Day of Women was particularly insightful and troubling:

> Then at the International Day of Women, so many women are beaten. And I wonder why the world celebrate the day of women…When it is the International Day of Women, they start to say *Ya minsi yabo yageze*…Their day has come; we will not survive them. A woman like that, if they bring someone to listen to their issues so they could solve them, and she made a mistake to tell what her husband does to her…If that woman says I am oppressed. If she says something like that, she is said to be a stupid woman who broke the secrets of her marriage. (*Rural female nonuser3*)

In another instance, a man observes that a woman might anticipate that "If my husband gets home and doesn't find lunch ready but I am using the internet, he may slap me several times." (*Rural male nonuser3). The* context in which this comment was made did not reflect on such violence being inappropriate, but rather gave the impression that being slapped was a normal expectation.

iii. Concerns about impact on spousal relations

Concerns that spousal relationships could be negatively affected by social media and other types of online content apparently holds some women (and men) back from using the internet. This issue was raised mostly by participants in the rural areas.

> When I owned a smart phone for the first time, my husband forced me to have it. He bought it when I didn't want it…In my mind, I had that word "WhatsApp destroys marriages". And you would find that many women avoid using WhatsApp because of these words. (*Rural female nonuser3*)

Examples mentioned included hearsay about married women "wasting" time chatting on social media, spouses getting into fights over each other's social media use, men falling prey to temptresses they met online, and other bad experiences that had led people to quit using the internet.

The tendency for social pressures to favor men's perspectives over women's is illustrated by one participant who recounted a story in which a wife, reacting to her husband's day-long use of WhatsApp by using WhatsApp herself all night, was advised to "just stop using internet so you can save your marriage. One day he will think about it and change his mind" (*Rural female nonuser2).* Nevertheless, both FGD participants and high-level roundtable discussants also observed that marital disputes did not always originate from women's use of the internet, but also from men's use.

5.2.5. Intersectional inequalities

i. Employment status and income

As already discussed, employment status is a critical factor mediating women's internet use. As such, similar to their male counterparts, employed women enjoy workplace internet access, are likely to invest in home internet access, and "may even develop internet skills more than a man" (*Urban female nonuser5*). This sets employed women slightly apart from unemployed women in terms of relative advantage.

Type of job and employment conditions also create different affordances as illustrated below.

> That person may for example sell fruits or other groceries at Mutangana's market. But it is a dense market, and it wouldn't be easy for a seller inside there to spare time to browse internet. As they leave that market, they are so tired and go to bed directly…That person is different from the one who gets a job that frequently requires mobile phone use…There are other employers who don't like to see their employees busy using internet during working hours. (*Urban mixed user3)*

This is closely linked to income, as covered in earlier sections. Notwithstanding the perceptions that men are more easily able to expend resources on internet bundles, even amongst men with jobs, insufficient income combined with family responsibilities inhibits internet use.

> It's all about lack of resources…when you think about your responsibilities at home, how you have to supply for your family, you can't spend the little amount you earn from small jobs buying a smartphone. We all desire to own a smartphone but we don't have means. (*Urban male nonuser3*)

> When someone is poor, you feel like there's no interest in the information. You only think about farming…you can't save enough to afford a mobile phone that costs between 9,000 and 10,000 Rwf…Let's say that you managed to save and bought it. But then you will have the issue of purchasing bundles. (*Rural male nonuser5*)

ii. Rural/urban

Rural dwellers noted the impact of poor network and social infrastructure on their ability to access and learn from the internet. Their situation is made worse by limited education and income generation opportunities.

> Our community is a rural place or semi-urban. Because of that, all the community members didn't have an opportunity to study. And that is why some lack internet use skills. (*Rural mixed user4*)

> …because most of them are farmers…It will not be easy to spend the little money they managed to get that day by purchasing internet bundles instead of buying salt. I think that is a major challenge. (*Rural mixed user6*)

Considering that women overall seemed to have time and income constraints on top of partner restrictions, being in a *rural* setting with poor infrastructure likely adds yet another barrier that leaves rural women more disadvantaged than urban women.

iii. Age

Age adds another layer of difference that could compound or mediate the gender disparity in internet use over time. On the one hand, young people were described as tech savvy and more likely to "get jobs that require internet use in an office" (*Urban mixed user3*). On the other hand, "young people don't have the purchasing power" for smartphones and regular internet bundles (*Urban male nonuser1*). The low purchasing ability of young people would narrow digital gaps between young women and young men. Conversely, if young men have greater access than young women to employment opportunities (and by inference, to internet resources, personal or at work) then gender gaps among the youth could be widened.

In contrast, older people (male and female) were seen as more technology averse or more resource-constrained than youth of the same gender. Older women were generally perceived as lacking interest, whilst older men were perceived as lacking resources or time to spend on digital tools. Children's access was presented as somewhat problematic, with parents urging them to focus on homework or trying to limit their exposure to undesirable content. In some cases, it was even suggested that parents stop using the internet themselves to protect their children from accessing inappropriate content. It was not clear whether male children were treated differently from female children in this respect.

Some participants suggested that current gender digital gaps were reflections of generational differences that would disappear over time – "the young generations will be different and will use it often. This issue will not rise in the future." (*Urban male nonuser 3*). However, this view does not take into account life course issues – as young women grow, expectations about their domestic roles and professional lives change, which could lead to previously active internet users becoming low or non-users. One urban male nonuser participant (disagreeing with comments that women don't use the internet because of preoccupation with household chores), noted that his daughters were heavy internet users to the extent of neglecting domestic duties, but also observed that adult women use the internet less because of household chores. Another rural user explained that girls are allowed to own and use a mobile phone, "but after she gets married, she loses her right to a mobile phone" *(Rural mixed user9*). Indeed, most of the gender restrictions discussed in the groups had to do with housewives.

6. Discussion: How gender digital equality is reinforced by gendered norms and perceptions

This section revisits the findings presented above and discusses how the qualitative study complements the quantitative data by surfacing social and cultural attitudes as potential explanations for the paradoxical state of gender digital equality in Rwanda. Still drawing directly on participants' own words, we outline some thoughts on how gender norms and perceptions shape attitudes towards women's use of the internet and are subsequently translated into real constraints on women's ability to access and use the internet. Some complementarities of the quantitative and qualitative findings are also discussed.

6.1. Gender norms, stereotypes and perceptions of internet use

The gendered experiences discussed above seem to emerge from **the interaction of economic (high unemployment) and socio-cultural environments** (gender norms, especially for married women) in which **men's use of the internet is associated with income generation and therefore prioritised over women's use**. Men link internet use with their work to justify the importance of access for themselves, while downplaying women's use on the grounds of its irrelevance for housewives.

> I think that some men think that women don't need internet, that men are the only ones allowed to use internet. A husband leaves you home knowing that you will be busy doing your chores…thinks that internet access is not necessary to his wife…it is more like internet was created for men…He tells you that it is because of his work…That turns back to the status on unemployment, when you don't have a paid job and stay at home, in that case internet is not necessary. But on his side, he needs to talk to his colleagues, or to know job opportunities to apply for jobs. (*Urban female nonuser2)*

> …because of the lifestyle, the husband is always out there trying to make money from small jobs. And his mobile phone crashes, he takes the wife's telling her you are always here, and I need a phone. I want to keep working. Give me your phone. (*Rural mixed user8*)

> What I think is that in the society, men are always busy trying to make profits. And they make more benefits using internet. (*Urban mixed user4*)

The need for women to have internet access is further diminished by a perception that they have time on their hands in the home and can avail of radio and TV for their information needs, as one male participant notes: "*most of the time, she stays home and may have time to listen to that radio or watch that TV*" (*Rural male nonuser5*). As noted in Section 5.2.2. on gendered domestic roles, these attitudes can be traced to a **framing of unpaid domestic labour as lacking market value**. This is further rationalised by **essentialist views of women that either take gendered roles for granted** or **present them as a function of women's personal choices**.

> Men are different from women. Mostly men wake up and go to try to make some little money. But a woman can't just wake up and to go try to make some little money before she does some chores. That's where the difference lies…Because she is Mutima w'urugo [The heart of the family = carer of the family]. *(Urban mixed user3*)

> I also realised women prefer getting busy doing chores…they are always trying to make the household perfect, monitoring the household all times…When she has a regular job, as she comes back home, she finds herself wanting to make sure that everything is in order since she takes all the chores as her responsibilities. (*Urban male nonuser3*)

There was evidence of some truth to the view that women willingly devote their time to household chores or at least have been **effectively socialised to embody this norm**.

> There are jobs for women and jobs for men. What would my neighbour think if she comes home and finds my husband washing cooking pots?…It wouldn't make me happy. Imagine my husband bending over moping the floor…I can only let him do the chores that are reasonable in the eyes of the society. God created men with their respect. (*Urban female nonuser*5)

> You may go somewhere and finds a man doing the chores. And you feel ashamed to see him doing chores and try to stop him…There are households that we visit and see such situation. Then wonder how that man thinks. (*Urban female nonuser2*)
>
> Women are women even if they are leaders. A woman is always a woman…She must take care of her husband first, then take care of her children, then take care of her responsibilities. (*Rural female nonuser5*)

The influence of socialisation processes that may have groomed women from an early age was noted by a few participants:

> …when a girl is growing up, she knows the roles she learned from society. A girl was raised being told that she will just be staying home. She knew that she was supposed to go with her parents and her brother to the farm. When they come back, she starts chores when her brother goes to bed to nap. After she finishes cooking, she invites her brother to come to have lunch. (*Rural male nonuser9*)
>
> We grew up differently. When a girl is playing as a child, she plays by cooking small pots when a boy plays by building things or digging things. And as we grow up, our capacity for thinking is linked to our background. *(Rural male nonuser2)*

Another stereotype expressed by some participants was **the idea that women engage with digital technologies for frivolous reasons**. For example, one participant contrasts girls being "*interested to know about a movie, an artist, fashion, cooking*" with boys who would "*want to know what is happening abroad, want to get in touch with his friend who went to study abroad*" implying that the latter generates an affinity for using the internet *(Rural male* nonuser2). Another suggests that "*mostly, men try to make some benefits from it. A man may use it to advertise for his products on sale. But mostly women just communicate*" (*Urban mixed user5*), while a third explains that,

> women in general are the ones who own these tools even if they may not use the internet at a high rate…Sometimes your wife would tell you, "the wife of x man has a smartphone and I don't have one"…And because she keeps on insisting, you decide to buy it for her just avoiding her creating conflict. (*Rural male nonuser3*)

Such mindsets result in a situation where people would not find it unreasonable to think that women do not need the internet and in fact should not "waste" time or money using it. Related misconceptions about the impact of social media on marriages might further solidify this stance, even amongst women – similar observations were made by Wyche and Olson in rural Kenya[48] and Archambault in Mozambique[49].

Alternatively, amongst those who felt that women should use the internet, there were equally uncomplimentary explanations for the gender internet gap – they attributed it to women's lack of confidence, interest or motivation. A strong theme across all groups was **the idea that women suffer**

[48] Susan Wyche, 'Kenyan Women's Rural Realities, Mobile Internet Access, and "Africa Rising"', *Information Technologies* 14 (2018): 15.

[49] Julie Soleil Archambault, 'Breaking up "Because of the Phone" and the Transformative Potential of Information in Southern Mozambique', *New Media & Society* 13, no. 3 (1 May 2011): 444–56, https://doi.org/10.1177/1461444810393906

from low confidence, lack of motivation and lack of curiosity about the world around them. In contrast to the view that women do not need the internet, this perspective places the blame on individual women and assumes that the solution lies in fixing supposed personality flaws. Both male and female participants communicated this view, stating for example that "*there are also women who have upside down mindset.* Whenever they tell her about technology, they refuse to own it" (*Rural-female-nonuser4*); "women should develop the self confidence about technology use" (*Rural-female*-nonuser10); "these women are not curious to use these devices" (Urban male nonuser3); "she is scared to do it even if she can do it" (*Rural male nonuser2)* and;

> … our sisters don't dare to try; they don't have self-confidence. They prefer to stay home rather than walking in the village to know what is happening out there…It's not because of the chores. If they spend most of their time sleeping, never get out of the house to seek information about what's happening out there. If she doesn't have a smart phone to inform her, she should go out and meet people… (*Urban male nonuser5*)

Though infrequently mentioned, a few participants indicated that a mindset barrier existed in "people who think that ICT use belong to people who are highly educated. They think that people who have a low-level background are not made to use ICT devices". (*Rural female nonuser9*). There was also a view that educated people are able to make better use of the internet than uneducated people. Since women generally have lower education levels, as evidenced in the quantitative results, it is possible that this mindset barrier or lower expertise also inhibits their full engagement with digital technologies.

6.2. Divergent perceptions of gender equality in Rwanda

The failure of policy to achieve gender digital equality despite a variety of supply-side measures indicates the need for serious reflection **on the vision versus the reality of gender equality**. The FGDs provided an opportunity for such reflection from the standpoint of citizens, and they revealed a striking **divergence in the views of the female groups compared with those of the male and mixed groups**. While participants across the board acknowledged exceptions to the rule, both rural and urban **female groups generally concurred that in their environment, there was little gender equality** and that it was a long way from being achieved. Rural women were particularly expressive on this point. Within the urban female group, issues of gender equality mostly came up in relation to the distribution of household chores and technology access, while in the rural female group a wider range of issues were mentioned, including household chores, property rights and domestic violence. The perspectives of rural women (on gender equality in general as well as with reference to technology) are worth presenting in some detail. They reinforce accepted knowledge that rural women experience more unequal social relations than do urban women[50]:

> The major challenge that women face is mindset that men have. And that mindset is related to gender equality (*Rural female nonuser3*)

[50] Wyche, 'Kenyan Women's Rural Realities, Mobile Internet Access, and "Africa Rising"'

> I don't have rights to the property that we acquired together. She said again, "Women here in the rural, we are oppressed. If we could get some advocacy to show our husbands how we are oppressed. They say that we achieved gender equality, but the reality is the opposite." (*Rural female nonuser7, recounting a conversation she had had with another woman*)

> And about gender equality issue, there are people who think that all electronic house assets belong to men. That is the issue about women who don't have rights to property. The wife lives in a family like if she was a maid…I always receive complaints where women come to see me telling me that their husbands crashed their phones or husband accusing them that they sent some message. The only solution is to let the husband take the phone away. I know a woman; her husband forbade her to seek for a job…Out there, women believe that staying safe and married is the best option they have. She expects him to be the breadwinner...In that case, if she needs to use a phone, she has to ask him to use his phone. He will be the one loading the calling bundles. He owns the bank booklet since wives don't have right to own a bank account…with that mindset related to the past implies that you must abandon everything to a husband showing respect to him. (*Rural female nonuser5*)

> So, men believe that if women start to use WhatsApp, they develop their mind and start to disrespect men. In fact, that is a point saying that if a woman develops the knowledge about her rights, she will start to disrespect her husband. (*Rural female nonuser3*)

Conversely, the views expressed in the **male and mixed groups mostly suggested that gender equality has been achieved** and as noted in Section 5.1.1. ii, participants tended to attribute gender differences to individual choice. For example, in response to a facilitator prompt about gender roles, participants in the rural mixed user focus group mostly insisted that there are no gendered roles and that tasks are shared based on physical strength: "… a girl can't cut firewood if you are there. In that case, you share chores according to your physical strength. She prepares food and you cut firewood" *(Rural mixed user1*). In somewhat contradictory perspectives, one male participant stated, "I think that that kind of thinking was in the past. Today in Rwanda… it's no longer applicable" (*Urban male nonuser4*). However, this participant then went on to qualify his viewpoint, explaining that he only does household chores because he lives in a household in which there are no women. It is thus unclear the extent to which gender norms are only perceived to be changing versus actually changing.

It is also possible that public education is needed on the concept of gender equality itself as one comment indicated **a potential lack of understanding of what gender equality is or what the government policy is targeting**.

> Our government encourages us to work together and equally. It doesn't mean equality of genders, but equal opportunities between children and parents. (*Rural mixed user5*)

Considering the relatively young age of both male and female FGD participants, these contrasting views about the existence of gender inequalities do not bode well for the elimination of gender norms that hold women back socially and economically. The critical issue here is that these perceptions seem to frame attitudes towards women's access to and use of the internet and possibly blind sections of the population (including women themselves) to the reality and sources of ongoing social inequities that then impinge on digital inclusion.

6.3. Complementarity of the quantitative and qualitative findings

The focus group and high-level roundtable discussions were intended to contribute insights to help understand the internet gender gap identified in the survey data (which showed that being a female was associated with a 6.4% decrease in the probability of using the internet). The combination of multiple data sources sheds light on issues hidden from the survey lens, but also validates some of the survey findings. Just as qualitative data helps to uncover influences that are not easily captured by quantitative research, the survey data illuminates large-scale trends that are difficult to observe in qualitative studies, but that may be evidence of the entrenched impact of social and cultural norms. An illustrative selection of these areas is discussed below.

Survey finding: Education and income are key determinants of Internet use. The survey data showed that education, especially secondary level and above, is a strong determinant of internet use. Additionally, at higher levels of education, there are higher proportions of female than male internet users. It is likely that women with higher levels of education are better placed to have more access and more opportunities resulting from more exposure to the internet, more knowledge and digital skills, and higher levels of independence and autonomy. In the qualitative study, however, education and skills were infrequently mentioned by participants as factors affecting their internet use. However, a few participants felt that a mindset barrier existed in "*people who think that ICT use belong to people who are highly educated. They think that people who have a low-level background are not made to use ICT devices*". (Rural female nonuser9). There was also a view that educated people are able to make better use of the internet than uneducated people.

The regression analysis suggests that the higher one's income is, the more likely they are to use the internet, and the descriptive analysis of the survey data shows that a relatively higher percentage of women (about 28%) fall in the lowest income category. The focus group discussions suggest that income is generally more of a constraining factor for women than for men, due to women's limited access to personal income. The two main reasons mentioned by women as barriers to accessing the internet were lack of an access device to go online and cost of services. Both reasons relate to money, which as the qualitative analysis has shown is a resource that women particularly lack. The survey data shows that a higher share of people in Rwanda make use of free public Wi-Fi, in order to help them save on data charges and more of the women surveyed indicated that this is what they do to save on cost. It was not surprising to observe the extent to which the qualitative research found that women were mostly housewives who depended on their husbands for financial support, as in the survey results, only 10.4% of women indicated that they were formally employed, whilst about a third of them stated that they were engaged in unpaid housework.

Interestingly, our regression analysis indicated that employment was not a significant determinant of internet use. And several scholars have cautioned against the economic determinism that characterises many technology-related women's empowerment initiatives.[51] However, women's education, income

[51] Cynthia M. Caron and Shelby A. Margolin, 'Rescuing Girls, Investing in Girls: A Critique of Development Fantasies', Journal of International Development 27, no. 7 (2015): 881–97, https://doi.org/10.1002/jid.3146

and access to assets has an impact on their bargaining power in the household,[52] and gender relations "are dynamic and respond to economic incentives and opportunities",[53] so any initiatives (such as increased employment) to boost this bargaining power could also contribute to boosting their ability to use the internet. This will not necessarily be enough—enabling economic opportunity for women could go a long way to narrow gender digital gaps, but not automatically erase them. According to Porter et al, despite the promise and some benefits (including social rearrangements) of mobile technology, "pre-existing gendered power structures…look disturbingly stable in the long term."[54] This is borne out by our observations in Rwanda.

Survey finding: Only 4.4 of women consider time constraints to be a barrier to internet use. Whilst the survey data showed that relatively few women stated that 'having no time or being too busy' was a barrier to using the internet, the qualitative data reveal that this is in fact a major barrier. This difference could be more an artifact of the survey design than an indication of the magnitude of this barrier - the survey required choosing one out of several potential main barriers and so whilst time constraints might have been a significant barrier for many women, given a single choice, the issue of access device and cost may have been the highest priority for them. It should be noted that though time constraint was mentioned by less than 5% of the women in the survey, it was the fourth main barrier mentioned, following 'lack of access device', 'cost of services' and 'not knowing what the internet is'. Also, in comparison to the share of men who mentioned this as a constraint, the proportion of women was slightly higher.

Furthermore, drawing from the qualitative findings, the norms and attitudes around household chores, could be a contributing factor to why survey respondents focused on cost and access devices rather than on time constraints. Most women accept household chores as their duty and as such possibly did not factor time constraints into their consideration of barriers. The opportunity for reflection provided by the FGDs may have enabled this issue to rise to the forefront, consistent with Kabeer's proposition that "where women's notions of selfhood and social identity are formed through highly unequal and largely 'given' relationships of family and kinship, they need to attain a reflexive distance from these relationships in order to assess what they value about their lives and what they would like to change".[55] Also, as one of the FGD participants noted, without the cost challenges, women might be motivated to find time to use the internet. This is an indication of how related many of these issues are and the knock-on effect that one could have on others.

[52] Cheryl Doss, 'Intrahousehold Bargaining and Resource Allocation in Developing Countries1', The World Bank Research Observer 28, no. 1 (1 February 2013): 52–78, https://doi.org/10.1093/wbro/lkt001

[53] Cheryl R Doss, 'Designing Agricultural Technology for African Women Farmers: Lessons from 25 Years of Experience', World Development 29, no. 12 (1 December 2001): 2075–92, https://doi.org/10.1016/S0305-750X(01)00088-2

[54] Gina Porter et al., 'Mobile Phones, Gender, and Female Empowerment in Sub-Saharan Africa: Studies with African Youth', Information Technology for Development 26, no. 1 (2 January 2020): 180–93, https://doi.org/10.1080/02681102.2019.1622500

[55] Naila Kabeer, 'Between Affiliation and Autonomy: Navigating Pathways of Women's Empowerment and Gender Justice in Rural Bangladesh', Development and Change 42, no. 2 (2011): 499–528, https://doi.org/10.1111/j.1467-7660.2011.01703.x

Survey finding: Older and married individuals are less likely to use the internet. Analysis on the age category reveals that the share of women in the younger age bracket (15-34 years) use the internet more (69.4%) and have knowledge of the internet (72.3%) compared to women in the (35+ years) age bracket who indicated that they use the internet (30.6%) and know about it (27.6%). The FGDs further revealed that there is the possibility that priorities will change as women grow older, such that active young female internet users might decrease their usage patterns, as they grow older and take on household or marital responsibilities. This, though not unique to the female category, is in line with the regression analysis which shows that in general the probability of using the internet increases up to a certain age, after which it begins to decrease. The descriptive survey data also shows that the share of unmarried women (i.e. single, divorced or widowed) that use the internet or know about the internet is higher than for married. The regression analysis further confirms this, showing that women who are married are less likely to use the internet when compared to those who are not married. As findings from the FGDs show, whilst young girls can use mobile phones without restrictions, this changes once they get married.

Survey finding: Less than 1% of women say the internet is not useful/they have no interest in it. The share of women who own a mobile phone is almost half of the share of men who indicated that they own a mobile phone. Smartphone ownership among women according to the survey data stands at 3.4%. As the qualitative study highlights, men are perceived as using their phones for more economically beneficial purposes—therefore, where the family's access to a mobile phone is constrained, the man is given priority. The notion is that men need the mobile phone more. However, contrary to the opinions expressed by focus group participants that women lack interest in or do not need the internet, in the surveys, less than 1% of women stated that they do not find it useful or that they have no interest.

Survey finding: Less than 1% of women consider spouse/parent restrictions to be a barrier to internet use. The FGDs show that spousal restrictions on internet use for women was a major challenge in general, though more so in rural areas, sometimes even resulting in abuse and domestic violence. As noted above, the nature of the survey question on barriers allowed for a single response and the results show that less than 1% of female respondents cited 'restrictions from spouse or parents' as a major barrier to their use of the internet. While not conclusive, the issue of spousal restrictions could be related to the high financial dependency on men. As both the quantitative and the qualitative findings have shown, fewer women are engaged in income-generating activities and as a result seem to be concentrated in the lower income brackets in comparison to men. Limited resources can hinder women's capabilities and pose restrictions on their independence and decision-making autonomy. This depicts how intertwined the issues affecting internet use by women are.

7. High-level roundtable: feedback and validation

The high-level roundtable discussion largely confirmed the findings from the focus groups reflecting the views of FGD participants, with few substantive points of departure. The general tone of the roundtable was more optimistic than that of the focus groups and in particular the women only focus groups, where participants highlighted gender and rural/urban digital inequality, without much prospect of improvement.

Infrastructure challenges. Participants verified the extreme rural/urban divide in digital access and use, and especially the challenges of weak mobile phone signals, poor internet connectivity, unequal access to electricity, and affordability (linked to unemployment) in rural areas. They, however, also noted that there are several ongoing government initiatives to address existing problems, such as the Rwanda Utilities Regulatory Authority (RURA) collaborating with telecom companies to improve rural and urban connectivity; and other partnerships between government, telecom companies and other stakeholders to expand broadband internet access and promote digital literacy—with latest results showing rural connectivity at 60%, which participants considered to be going in the right direction. Participants also noted that it would be important to have discussions with telecom service providers to understand their challenges as well.

Gender digital inequality. On unequal access and use of the internet by men and women, some discussants suggested that although gender gaps existed, they were not large, pointing, for example, to recent statistics from FinScope that placed female mobile phone ownership at 84% compared to 90% for males. This is borne out in the After Access data and as pointed out in this report as the mobile market moves toward saturation and the 'long-tail' of those socially and economically marginalised from services (significant numbers of whom are women) come online. However, with the early stage take up of the Internet, primarily driven through mobile smartphone access, there is greater ownership of smart devices by men (with greater access to education and income to purchase and utilise a phone). Amongst efforts to increase women's access to internet access devices, participants mentioned a government initiative distributing smartphones to people in rural areas, with priority given to women. As a result, there are expectations to see a lot of changes in accessibility over the coming year. Another example given was that use of mobile phone-based financial services by females currently stands at 60% while that of males stands at 80%—although this is statistically a very significant gap, this was positively considered a sign of a reduction in the exclusion of women from access to digital financial services.

Gender norms and power relations. There was particular interest in the findings on gender norms and power relations, which generated several requests for clarification. Amongst these, participants wondered who exactly was prohibiting women from using the internet and how that would manifest. Some were surprised to hear that internet use could instigate violence amongst spouses or have other negative impacts on marriages. A few participants reacted strongly to the finding that some FGDs suggested that women take on the burden of domestic work by choice. One participant stated their disagreement with that view, asking, "do men offer to help and women refuse?" (*Roundtable participant1*). Conversely, another participant, stated that "our culture really was affecting us", also suggested that "things have changed in Rwanda, women are now coming up, we are getting more engineers, people who are in the ICT sector…" (*Roundtable participant2*).

To address various social and labour force-related challenges, it was noted that the government is establishing centres around the country where parents can take their children to be taken care of during the day, thereby freeing up women's time for other activities. Gender mainstreaming strategies are also being developed to ensure that challenges are addressed across different ministries. And the Gender

Monitoring Office is aiming to bring institutions in the ICT sector into its Gender Equality Seal Certification Programme that works with private sector companies to promote gender-responsive working environments. Overall, roundtable participants were of the view that although there is still a lot to do, some progress has been made and Rwanda was on the right track.

Recommendations put forth mostly aligned with those suggested by FGD participants, with slightly greater emphasis on stimulating private sector involvement. Proposals included:

- trying to understand private sector challenges and concerns;
- incentivizing telecom companies to contribute to solving consumers' challenges;
- promoting more inclusive digital literacy initiatives;
- fostering higher participation of females in STEM education and career domains;
- finding ways to reduce the burden of domestic and care work for women;
- and more sensitization on the importance of gender equality.

It was suggested that the challenges identified should be allocated to specific, identifiable actors (institutions or persons) to make them easier to address.

8. Conclusions

This study set out to explore what issues affect internet access for women and men, and what issues need to be addressed to ensure equitable access and use of the internet. These questions were examined in the context of the very high gender internet gap between men and women found in the 2017 After Access survey, despite a policy and telecom industry environment that seems to have the relevant components to foster gender digital equality. A combination of quantitative and qualitative methods was used to examine the research questions.

The results show that structural (paid and unpaid labour), institutional (family and organisations), and cultural (gendered norms and values) combine to place women in a position of digital disadvantage relative to men. Both the qualitative and quantitative analyses have shown that women on average earn less than men resulting in their dependency on male partners in general. This creates a major barrier to internet use for women and makes them susceptible to the gender norms and perceptions identified in this study.

In societies and economies that are not too constraining on the participation of women, technology adoption and diffusion through commercial models tends to reflect highly educated, high-income early adopters with relatively low levels of gender variance. As more users come online, the disparities in ICT access and use may reflect disparities between women and men in relation to education and income (employment). But as the cost of devices and services come down, more poor people (who are disproportionately women) come online, and markets begin to saturate, the figures for men and women tend to equalise. Initiatives that make Internet use more affordable would lower the income barrier for men and women and thereby reduce the gender gap in internet access.

Relative to other African countries, Rwanda may have strong foundations in place to make digital access affordable for all. However, gendered division of labour and power relations in the household in many ways set a precedence that seems to contribute to a lingering gender imbalance in internet access and use, resulting from the intertwining impacts of paid employment, access to personal income, access to internet facilities at work and perceptions of the need for internet access at home. It is likely that these imbalances have worsened over the COVID-19 pandemic months, making it even more critical that corrective measures are introduced as quickly as possible.

The results further show that the experiences of women (and men) are not homogeneous and that an accurate reflection of the state of gender equality benefits from an intersectional lens. Both male and female focus group participants as well as high-level roundtable discussants confirmed a wide range of similar constraints for men and women; however, people in different conditions, such as rural based, married or unemployed experienced these constraints in different ways or to greater degrees. In addition, the divergent views expressed about gender-based constraints to internet access and use (and gender equality in general) highlight the importance of considering multiple variables simultaneously (whether quantitatively or qualitatively) when assessing digital inequality and its causes.

Reflection on the qualitative studies also suggest that alongside policy measures and infrastructure developments, subtle cultural and individual transformations (such as changing perceptions of domestic roles) might be taking place that could in the long-term lead to broader social transformations of gender roles and expectations, moving the society towards greater equity. Several participants noted that gender norms around domestic roles were malleable in different family circumstances.

However, waiting for such transformations to happen organically or take root more widely could mean waiting centuries in some cases. As noted in the most recent Global Gender Gap report,[56] at current rates, it would take over 250 years to achieve gender parity in economic participation and opportunity. Therefore, it is imperative that all sectors of society work together to identify what measures can be taken to reconfigure the pace of change. The issues we have identified as impinging on gender digital equality – employment, income, education, demands of unpaid domestic labour, perception of internet relevance, perception of skills, gender norms and stereotypes, misconceptions about the internet are heavily intertwined with social and cultural structures and challenging to address in isolation. Effectively redressing digital inequality will require transforming the (analogue) structural inequalities that perpetuate economic and social exclusion and that are simply mirrored, and sometimes amplified in the digital world.

9. Recommendations

The policy implications of these findings are that interventions aimed at addressing the digital divide in terms of bringing those marginalised from ICT services, primarily the poor, online are likely to be inclusive of women as women are concentrated among the poor and least educated, determinants of

[56] 'Global Gender Gap Report 2020', World Economic Forum, accessed 16 March 2021, https://www.weforum.org/reports/global-gender-gap-report-2020/

internet access. To redress digital inequality however, intervention that look beyond connectivity, to enable citizens to affordably and meaningfully use the Internet to improve their lives and life opportunities. For greater parity between men and women other measures will nevertheless be needed to target root causes of gender inequality within the institutional structures of society. With that in mind, we propose some strategies for different actors.

For policymakers and telecom industry

As already noted, in theory, the policy landscape in Rwanda is conducive to gender digital equality. Therefore, deeper reflection is needed to determine the sources of the vast gender internet gap. While the research shows that supply-side interventions alone will not solve gender digital inequality, the telecommunication industry also has an important role to play in addressing those constraints that exacerbate already existing gender gaps. Eliminating those barriers will make it possible for policy actors to direct their efforts more productively towards the remaining causes of inequality.

Revisit implementation of gender and digital technology policies. Policymakers should examine the current policies to assess why they have not generated the expected outcomes. This includes identifying whether there are implementation or other gaps that have weakened the influence of the policy in practice, and whether definitions of digital equality need to be upgraded to reflect not just physical access but meaningful access (the ability to translate access into benefits). In addition, improving rural infrastructure in general would eliminate the geographical layer that compounds other types of marginalisation that rural women face.

Deepen public education on the meaning of gender equality. Develop public education campaigns to improve understanding of gender equality (in theory and practice), break gender stereotypes and provide more economic and social opportunity to people of all backgrounds. This includes incorporating gender awareness and empowerment into all institutions from schools, to workplaces and religious formations to traditional leadership structures.

Institute measures to increase higher education and employment in general and female labour force participation. Increasing education and employment opportunities for women will in theory expand their access to income, which the study shows are two of the key enablers of internet use. Indications are that some of these efforts are already underway. However, expectations should be tempered with an understanding that economic measures alone will not transform the patriarchal structures that sustain gender discrimination.

Institute measures to value unpaid domestic and care work. To mitigate the apparent link between gender digital inequality and perceptions that unpaid domestic work is economically unproductive, avenues should be sought to demonstrate the economic *and* social value of the labour of housewives and other unpaid domestic and care workers and their critical role in the reproduction of labour. This would contribute to breaking down the artificial distinction between productive and reproductive work and changing the continued reliance on economic rationales for promoting human development. Broad social change is also needed to correct the imbalance in the amount of time that women (compared to men) spend on unpaid housework versus paid work.

Policy experimentation: Although Rwanda has amongst the lowest data prices on the continent and one of the lowest GNI per capita, affordability remains a challenge for many. It is clear that current high-

end technology operating and spectrum licences are simply not affordable at the lowest operating costs for most Rwandans. Rwanda should embark on low-risk licensing and regulatory experimentation that will enable the entry of multiple smaller, lower cost technologies and offerings including community network operators, micro cell users and dynamic spectrum operators in unused rural bands who are able to operate around the tenth of the cost of GSM operators. They should also require 5G spectrum operators to share spectrum to reduce their licensing fees and explore other novel interventions. In addition to government policy interventions, telecom service providers can also work with technology developers and regulatory agencies to identify additional ways to lower the cost of smartphones and data to increase the opportunity for more people of all demographic backgrounds to own and use the internet.

Stimulate demand. Government needs to balance supply-side infrastructure and service measures with strong demand-side measures such as stimulating local content in local languages, supporting local apps development, digital literacy as well as fundamental education and specialised tertiary education that will drive take-up of the internet not only for passive consumption but also production, affordability, use innovation. Interventions should account for intersectional identities to avoid assuming one-size-fits-all solutions. Service providers should review structures (such as expiry dates and the tiered options for data packages) that purposely or inadvertently inhibit use by making it difficult for people to purchase packages that are most suited to their needs, usage patterns and resource levels at different points in time. To help consumers make optimal use of the data they purchase, service providers should increase the transparency and simplicity of their individual cost structures and reduce false advertising.

For Researchers

This study has demonstrated that there are still multiple issues that need deeper investigation, especially to generate credible evidence to establish or unpack both taken-for-granted and unexamined gender dynamics and their technology-related outcomes in African contexts. Amongst other possibilities, we recommend that researchers:

Conduct further research into the relationship between gender power relations and technology access and use in Africa. There is a surprisingly limited amount and variety of published research examining the intersection of gender, power, and technology in African countries. As new technologies continually transform the digital landscape, it is important to generate more empirical local knowledge and evidence to feed into policymaking processes that, as our research has shown, might not be fully grasping the nature of the challenges standing in the way of true gender digital equality.

Investigate intersectional inequalities more deeply. Immersive and long-term research approaches are particularly needed, to enable the experiences and voices of marginalised groups and individuals to emerge in context – such as the interaction of ICTs, gender and rurality. Quantitative studies can also play an important role if conducted with appropriate samples to enable regression analyses of intersectional inequalities at a more granular level. In countries where it is possible, researchers (including national statistics departments) should develop tools to collect and disaggregate their data by nonbinary gender identities, taking into consideration the political sensitivities around nonbinary gender identities and the risk to partners and research respondents.

Examine gender digital inequality amongst children. This is a largely overlooked area of research, even though childhood is the stage at which certain gender expectations become internalised. Efforts to break gender stereotypes could begin and be most impactful during these years. Extensive research on children and the internet in Africa would provide insights on how gendered perceptions of equality, the right to internet access and the relevance of internet access based on employment status are socialised from an early age and become intractable. For example, the perception of the internet as dangerous to children could translate in later life to perceptions that it is more dangerous (or dangerous in different ways) to the girl child than the boy child.

Include **research with a greater focus on masculinity**. Considering the hints of less-discussed pressures on men to be the breadwinners, addressing social constructions of masculinity needs equal attention if gender inequality is to be addressed in a holistic manner.

Strengthen methodologies for conducting research remotely. As a result of the mobility restrictions imposed by the COVID-19 pandemic, it is clear that new research methods and approaches to fieldwork are needed to enable studies to advance with rigor irrespective of the physical presence of the core research team. This process should include supporting in-country capacity towards meeting research goals. Strategies to foster the emergence of lay researchers could also prove fruitful in this respect.

Annex 1: Quantitative method: demographic profile in Rwanda and survey sample characteristics

Age and marital status

The majority of those interviewed, about 68.9% fall within the 15–44 age brackets whilst 17% are 55 years or older, an indication that Rwanda's population is a more youthful one. There are more women than men who are among the 15- to 44-year-old category and more men among the older category (i.e., 45 years and above). Over half of the women are married, about a quarter of them single and about 15% widowed. Marital status is taken into account to help us understand the context in which women and men may or may not make use of the Internet. There is an even spread of women and men living in rural and urban areas with the majority of the population in rural areas.

Table 12: Demographic Profiles of Survey Sample

Variables		All	Female	Male
Age categories	15-24	25.5	25.5	25.4
	25-34	20.9	21.1	20.6
	35-44	22.5	24.8	20.0
	45-54	14.1	11.7	16.9
	55 and above	17.0	16.9	17.1
Location	Rural	78.4	78.0	78.9
	Urban	21.6	22.0	21.1
Marital status	Married	59.4	53.4	66.2
	Single	27.4	24.9	30.2
	Widowed	9.1	15.4	2.1
	Divorced	2.8	4.3	1.2
	Other	1.2	2.1	0.3

N = 1217 (Male: 572; Female: 645)

Source: Research ICT Africa Database 2017

Level of education

Few people attain higher levels of education in Rwanda. About 21% have no form of schooling, amongst these, 18.8% are men whilst 22.5% are women. The majority have attained a primary level education as their highest education completed (58.8% for men and 57.8% for women, very close to parity). Less than 20% for both sexes indicated secondary as the highest level completed (18.1% for men and 16.3% for women), whilst less than 5% have tertiary education as their highest level completed (4.3% for men and 3.4% for women).

Table 13: Educational attainment of people in Rwanda

Educational Level	All	Female	Male
None	20.8	22.5	18.8
Primary	58.3	57.8	58.8
Secondary	17.2	16.3	18.1
Tertiary: diploma/certificate	1.5	1.9	1.2
Tertiary: bachelors	2.0	1.3	2.8
Tertiary: masters	0.2	0.2	0.3

N = 1217 (Male: 572; Female: 645)

Source: Research ICT Africa Database 2017

Only 6.5% indicated that they have a vocational or professional certificate, with more men (7.3%) than women (5.7%) indicating that they have a vocational/professional certificate. Those who stated that they were enrolled in a course to further their education were only about 7%. Although this figure is very low overall, it is here that we see a significant disparity with only half the number of women (only 4.9%) enrolled to further their education as opposed to 9.5% for men indicating that they plan to further their education.

Economic activity

The survey findings show that in Rwanda, the majority of people are self-employed without employees (29.8%). About 13.3% are unemployed and looking for a job, whilst only 12.7% are employed. Only about 9.1% are engaged in education and there are slightly more men than women who reported that they are students/pupils. As in most countries, women in Rwanda are more engaged in unpaid housework (over 30%) and only about 10.4% are formally employed (i.e., they receive a salary/wage), while another 11.2% are not employed and looking for a job. Most women are also engaged in entrepreneurial activities, as about 27.9% indicated that they are self-employed but without employees. Whilst 6.6% of men in Rwanda are self-employed with employees, only 1.4% of women are self-employed and employ others as well. The source of livelihood for women is taken into consideration to highlight paid and unpaid labour opportunities for women.

Table 14: Main activities engaged in by gender

Main activity engaged in	All	Female	Male
Student/pupil	9.1	8.4	9.8
Unpaid housework (e.g. housewife)	21.1	31.1	9.9
Retired	2.0	2.1	1.8
Unemployed, seeking a job	13.3	11.2	15.6
Unemployed, not looking for a job	5.0	4.2	6.0
Disabled and unable to work	3.2	3.3	3.1
Employed	12.7	10.4	15.3
Self-employed with employees	3.9	1.4	6.6
Self-employed without employees	29.8	27.9	31.8

N = 1217 (Male: 572; Female: 645)

Source: Research ICT Africa Database 2017

Level of income

The reported total income for individuals interviewed was put into categories to assess the share of individuals that earn within an income bracket. The total income is considered to be income earned from not only salary/wage, but from other sources including but not limited to property income, investment, etc. The data shows that more females are in the lowest income bracket, whilst more men are in the highest income bracket. This could be a reflection of the low levels of education that women attain and the economic activities that they engage in compared to men as shown in Tables 13 & 14 above.

Table 15: Share of individuals in income categories by gender

Income categories	All	Female	Male
0 - 1000	23.9	***28.0***	***19.5***
1001 - 5000	9.0	***8.8***	***9.2***
5001 - 10000	10.2	***12.8***	***7.2***
10001 - 20000	17.5	***17.7***	***17.4***
20000 and above	39.4	***32.7***	***46.7***

N = 1217 (Male: 572; Female: 645)

Source: Research ICT Africa Database 2017

Annex 2: Focus group sample characteristics

Focus group	Age range	Education level	Employment status	Marital status
▪ Rural female nonuser	▪ 20s – 5 ▪ 30s – 5 ▪ 50s – 1	▪ High school – 7 ▪ University – 4	▪ Employed – 3 ▪ Unemployed – 8	▪ Married – 7 ▪ Single – 4
▪ Urban female nonuser	▪ 20s – 2 ▪ 30s – 4 ▪ 40s – 2	▪ Primary school – 1 ▪ High school – 2 ▪ University – 5	▪ Employed – 3 ▪ Unemployed – 5	▪ Married – 6 ▪ Single – 2
▪ Rural male nonuser	▪ 20s – 8 ▪ 30s – 2	▪ Primary school – 8 ▪ University – 2	▪ Self-employed – 9 ▪ Unemployed – 1	▪ Married – 4 ▪ Single – 6
▪ Urban male nonuser	▪ 18/19 – 3 ▪ 20s – 3 ▪ 50s/60s – 2	▪ High school – 6 ▪ Vocational – 1 ▪ None – 1	▪ Employed – 3 ▪ Unemployed – 1 ▪ Student – 4	▪ Married – 2 ▪ Single – 6
▪ Rural mixed user ▪ 6 female, 4 male	▪ 20s – 8 ▪ 30s – 1 ▪ 40s – 1	▪ Primary school – 1 ▪ High school – 7 ▪ University – 2	▪ Employed – 5 ▪ Self-employed – 2 ▪ Unemployed – 3	▪ Married – 3 ▪ Single – 7
▪ Urban mixed user ▪ 5 female, 3 male	▪ 20s – 5 ▪ 30s – 1 ▪ 50s – 2	▪ High school – 5 ▪ University – 3	▪ Self-employed – 3 ▪ Unemployed – 2 ▪ Student – 3	▪ Married – 3 ▪ Single – 5

Annex 3: Suggestions from FGD participants

Participants identified several potential courses of action to improve internet access, though several related to improving broad-based accessibility more so than gender-based inequalities per se. Their suggestions range from individual to industry to social interventions.

Training

1. Teach digital/internet skills (via ICT courses) in all primary and secondary schools.
2. Train schoolteachers and/or provide specialist trainers for ICT courses.
3. Provide digital skills training in communities.

Industry

4. Lower or subsidise cost of smartphones.
5. Lower cost of internet bundles.
6. Address false advertising or eliminate need for intermediary services like Irembo.

Macro-economic

7. Enable higher levels of labour force participation for women (along with changing expectations around domestic roles).

Socio-cultural

8. Tackle gender norms that assume women (especially without paid employment) do not need internet access (and associated domestic abuse), e.g., through sensitization campaigns about the role of women in development.
9. Build women's confidence.
10. Mobilise men to change perceptions and increase appreciation of women's roles in domestic maintenance, and promote gender equality.
11. Sensitise society in general to the importance of the internet for all.