

# Understanding the Gender Gap in the Global South



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TICs

DIRSI, LIRNEasia, Research ICT Africa



## ACKNOWLEDGEMENTS

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Numerous people have contributed to gathering the data and preparing this paper

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# EXECUTIVE SUMMARY

Central to the call for digital equality are claims that the Internet has the potential to be a driver of accelerated progress towards the achievement of the Sustainable Development Goals (SDGs) contained in the UN's 2030 Agenda for Sustainable Development. It is important to understand how these benefits are distributed between men and women and why there appears to be significant unevenness in adoption at a global and national level. Yet our ability to assess where we stand currently in relation to access and use of the Internet and the progress we are making to achieving SDG targets related to information and communication technologies (ICTs) is constrained by the dearth of reliable data. This is particularly the case in pre - paid mobile markets where supply-side data can tell us neither the number of unique subscribers nor can it be disaggregated demographically.

This research aims to address the data challenges involved in understanding gendered digital inequality through quantitative and qualitative analysis of not only ICT access and use in 16 countries across the Global South, but also the barriers to coming online and the limitations on optimal use. The nationally representative

*AfterAccess* 2017 household and individual survey was conducted using national census data as its sample frame. Households were sampled using simple random sampling and the head of the household interviewed to obtain household indicators. An individual, 15 years or older, was then randomly selected from each household and interviewed about their mobile access and usage. The findings highlight the significant demand-side challenges to achieving the SDG ICT goals including the affordability of devices and services, education and associated income levels, digital literacy, and the availability of local and relevant content.

Modelling of the data identifies the factors behind digital inequality often masked by aggregated descriptive indicators, revealing the real point of policy intervention to address gender inequality.

## ***Main findings and arguments***

The extent of mobile phone ownership and the gender gap broadly aligns with gross national income (GNI) per capita. South Africa and the five Latin American countries surveyed (Argentina, Colombia, Peru, Paraguay and Guatemala) are the richest among the countries surveyed and show the lowest gender gap. In contrast, the poorer

countries from Africa show high gender disparity in mobile ownership but particularly in Internet use. These, however, are lower than some of the higher income countries of Asia in which some of the greatest disparities in income are visible.

The GNI per capita in India and Bangladesh is similar to that of Ghana and Kenya, but both countries, together with Tanzania, have much lower gender disparities than in the Asian countries surveyed. There are some countries that buck the trend: although the overall mobile penetration rate is lower in Colombia than in its Latin American counterparts, it has gender parity in mobile ownership. South Africa, which has similar average GNI per capita to the Latin American countries surveyed, despite having one of the highest income disparities in the world, has more women who own mobile phones than men. Of all the countries surveyed India, Pakistan and Bangladesh have the highest mobile phone ownership gender gap.

Together with Rwanda and Nigeria, which has by far the largest population in Africa, (similar to that of Bangladesh) they also have among the highest gender gap in Internet use, though Rwanda has a fraction of the population and land mass of these large countries.

The regional studies examine different aspects of the research to provide insights

into the diverse findings. The section on Africa highlights some of the intersectional aspects of exclusion by looking at gender in relation to rural and urban location, education and income. It then moves beyond the descriptive indicators to identify the underlying factors contributing to digital gender inequality by modelling the data. It finds the education and associated low income to be the main determinant(s) of access to the Internet. This is explained by the fact that women are generally less educated, less employed and have lower income than men.

The section on Asia highlights the danger of thinking of “women” as a homogenous group and attempting to address barriers to their connectivity in a uniform way.

It shows that even the most basic disaggregation of women into rich vs poor introduces new classes of marginalisation and draws attention to the importance of intersectionality. In the section on Latin America, the main factors affecting the gender gap are investigated through an estimation of the effect of observable characteristics like age, occupation, and household characteristics. The effect of non-observed factors enabling the identification of country-specific policy interventions to diverse problems facing countries in the region are also investigated.



### ***Policy implications***

Effectively redressing the digital inequality will require transforming the structural inequalities that perpetuate economic and social exclusion and that are simply mirrored, and sometimes even amplified in the digital world. As women tend to be concentrated among the most marginalised in society, initiatives that make Internet use more affordable and accessible are likely to contribute to reducing the gender gap in Internet access.

**While affordability remains the primary barrier to digital inclusion from a policy perspective, it is clear that demand-side interventions are as critical to digital inclusion as supply-side measures.**

These will also have to extend way beyond the communications sector if we are to redress disparities between men and women's access to the Internet.

With education and income being the primary determinants of gender inequality in relation to access and use, far greater intersectoral state co-ordination will be required beyond the telecommunications sector. As countries evolve beyond consumptive measures of digital equality to production, inequality in access to education will become an even more significant factor in explaining gender inequity unless access to all levels of education and employment in developing countries is transformed.



Effectively redressing digital inequality will require transforming the structural inequalities that perpetuate economic and social exclusion



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## INTRODUCTION

Central to the call for digital equality are claims that the Internet has the potential to be a driver of accelerated progress towards the achievement of the Sustainable Development Goals (SDGs) contained in the UN's 2030 Agenda for Sustainable Development (UNGA, 2015). Goal 5b specifically identifies the enhanced 'use of enabling technology, in particular ICTs, to promote the empowerment of women, while SDG 9C is concerned with promoting universal ICT access, and SDG 17.6 with promoting global collaboration on and access to science, technology and innovation (UNGA, 2015).

Not only do we not have global data to establish baselines for many of these goals or to assess our progress towards targets, but we also do not have disaggregated data to assess the unevenness of access to and use of the Internet, particularly from the Global South, where inequality is greatest.

Limited and problematic as the empirical evidence available at the global level is, it indicates major differences between men and women in the volume, frequency, and quality of ICT access. The digital equality gaps are greatest in the Global South.

For example, the latest figures from the United Nations (UN) agency tasked with ICT issues, the International Telecommunication Union (ITU), indicate that Internet penetration rates are 12% lower for women globally, an increase of one percentage point from 2013, when it was 11% (ITU, 2017).

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. In least developed countries, only one out of seven women use the Internet, compared with one out of five men. The only region where a higher percentage of women use the Internet is the Americas (ITU, 2017).

Much of the quantitative research that is available 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. As the findings discussed below show, there is considerable disparity in access to the Internet positive and negative effects of ICTs for women's development amongst women within and across countries. Whether living in rural areas or city slums, women located at the intersection of other factors of exclusion, such as class, race (and associated marginalisation from education and employment), will experience even greater digital inequality than women generally.

**Before dealing with the challenges of trying to measure digital inequality, including the 'gender digital divide', it is important to recognise the relevance of equality in access to and use of the Internet to social and economic inclusion in the contemporary world.**

As there is growing evidence of the benefits of ICTs it remains important to understand why these benefits are not evenly distributed between men and women. Likewise, it is equally important to understand the less positive implications of ICTs for women. Some literature emphasises the negative potential of ICTs, including, for instance, the impact of surveillance or online abuse on

women's rights (e.g. Cummings & O'Neil, 2015:22; Garcia & Manikan, 2014).

A more holistic understanding of both the positive and negative effect of ICTs for women's development is also key to better comprehending the indirect effects that access has on women's wider communities, including those who remain unconnected. Empirical evidence supports the notion that social and welfare investments in women have positive multiplier effects on the wellbeing of all family members, broader communities, and society at large (Todaro, 2003, cited in Gillwald, 2009). Ending discrimination against women and girls is, therefore, not only a human rights issue but is also central to harnessing all available human resources for sustainable economic growth and development.

### **Research challenges**

The limited research available, especially in the Global South, on the access disparities between men and women has been contradictory.

Some qualitative studies support stereotypes about women being averse to technology as compared to men, while others argue that women embrace digital communication under certain circumstances (Cummings & O'Neil, 2015:9, Buskens & Webb, 2009).



Some qualitative studies support stereotypes about women being averse to technology as compared to men, while others argue that women embrace digital communication under certain circumstances (Cummings & O'Neil, 2015:9; Buskens & Webb, 2009). Little qualitative data delves beyond anecdotal accounts and few quantitative studies determine the factors of inequality and the scale of it - especially beyond connectivity. Quantitative research often raises more questions than it answers and for the development of a comprehensive evidence base for policy formulation, both qualitative and quantitative methods are time and required.

Since gender is constructed differently over locations and because it is impossible to separate from race, class, culture and religion, gender specialists have argued that it cannot be understood in terms of a discrete, quantifiable indicator or even area of social science. But, as Tepe-Belfrage & Steans (2016:2) 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'.*

While acknowledging the dangers of binary constructions such as male and female as if it were a 'coherent and stable category of

analysis', for the purposes of research-to-policy influence it is necessary to find a sufficiently reflective way so as not to reduce analyses to the crude forms of gender essentialism, which treat women's and men's attributes as universally feminine or masculine (Steans & Tepe-Belfrage, 2016:2).

Besides methodological and analytical challenges linked to how gender indicators are defined, other issues hampering efforts to better understand and address digital inequalities include:

- the relevance of ICT indicators in predominantly prepaid mobile markets in the Global South, against which gender inequality is being assessed;
- the relevance of existing targets to address gender access discrepancies, without baselines against which to measure them;
- the practical challenges of rigorous and timely data collection; and
- challenges associated with global comparability.

The survey results contribute to filling some of the information gaps that these challenges produce, particularly in the pre-paid mobile markets in the Global South.

In doing so, they build on previous studies attempting to grapple with the challenge of accurate data collection, including gender-disaggregated data, for the purpose of informing policy interventions in developing and emerging economies.

In Asia and the Pacific, LIRNEasia has surveyed access and ownership among the lower income segments in several countries over time. The gaps are especially large in South Asian countries compared to the Southeast Asian countries studied. Significant reliance on shared phones was observed among women, probably because of these gaps. By 2011, the little Internet use observed in South Asian countries was predominantly that of men (LIRNEasia, 2011; Zainudeen et al., 2010).

Similar national surveys conducted by Research ICT Africa across 17 African countries in 2008 and again in 2012 indicated that in 11 of the countries women generally had less access to ICTs than men (Deen-Swarray et al., 2016; Gillwald et al., 2010). While disparities between men and women in mobile phone ownership flatten out as more people come online, gender differences increase as the technologies and services become more sophisticated and expensive, requiring greater levels of income and education to access and operate them. This is because women are concentrated in the

lower income and education levels. The data from the surveys below build on these studies and provide some insights into the diversity between and within regions in the Global South.

The findings of the ICT access and use survey goes some way to addressing some of the problems identified above. **As the survey is nationally representative, the data can be disaggregated based on sex to provide an accurate picture of gender differences in access and – importantly – use, in prepaid mobile environments.**

The questionnaire has several questions that track some of the core indicators that have been collected in surveys in Africa, Asia and Latin America for over a decade. It also includes questions on income, education and expenditure that allow for data modelling that enables the identification of the real factors of gender inequality in a way that descriptive statistics cannot.

## Methodology

The *AfterAccess* Survey<sup>1</sup> (2017) of household and individual ICT access and use was conducted using enumeration areas (EAs) of national census sample frames as primary sampling units. The sampling was performed in four steps for households and five steps for individuals. The national census sampling frames were split into urban and



rural EAs, and EAs were sampled for each stratum using probability proportional to size. Two listings were compiled for each EA, serving as sample frames for the simple random selections. Households were then sampled using simple random sampling. An individual 15 years or older (which could include a visitor staying for the night at the house) was then randomly selected and interviewed from each household.

The desired level of accuracy for the survey was set to a confidence level of 95% and an absolute precision (relative margin of error) of 5%. The population proportion  $P$  was set conservatively to 0.5, which yields the largest sample size (Lwanga & Lemeshow, 1991). Two weights were constructed for households and individuals, based on the inverse selection probabilities and gross up the data to national level when applied.<sup>2</sup>



<sup>1</sup>Visit [www.afteraccess.net](http://www.afteraccess.net) for more reports and data.

<sup>2</sup>For a fuller account of methodology, see <https://researchin africa.net/2017/08/04/beyond-access-surveys-questionnaires-methodology-and-timeframe/>.

# COMPARATIVE ASSESSMENT ACROSS THE GLOBAL SOUTH



# COMPARATIVE ASSESSMENT

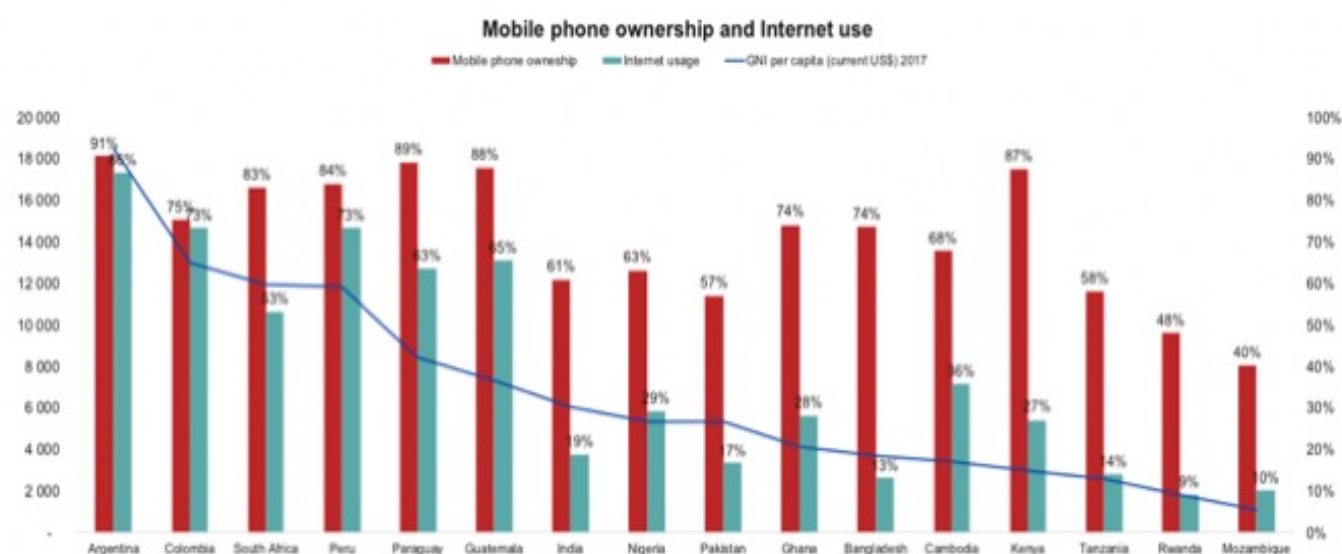
As Figure 1 shows, mobile phone penetration is broadly aligned with GNI per capita. Figure 2 shows that this pattern is broadly true of the gender gap also. Overall, the five Latin American countries surveyed, together with South Africa, are the richest among the countries surveyed and they show the lowest gender gap. In contrast, the poorer African countries show high gender disparity in mobile but particularly Internet use.

However, these disparities are lower than in some higher income Asian countries, where we see some of the greatest disparities in income. The GNI per capita in India and Bangladesh is more in line with that of Ghana and Kenya, but both countries, together with Tanzania, which is also among the poorest countries, have much lower

gender disparities than in the Asian countries surveyed.

However, we see interesting anomalies. Though Argentina's GNI per capita at over \$10 000 is more than double the other top performers that cluster around \$5 000 and which includes Colombia, Argentina performs only marginally better than Colombia in terms of mobile phone ownership gender parity. Although overall mobile penetration is lower in Colombia than its Latin American counterparts, it has gender parity in mobile ownership. South Africa, which has similar average GNI per capita to the Latin American countries, despite having one of the highest income disparities in the world, has more women who own mobile phones than men.

**Figure 1: Mobile phone ownership, Internet use and GNI per capita**



Source: After Access Survey, 2017; World Bank, 2017

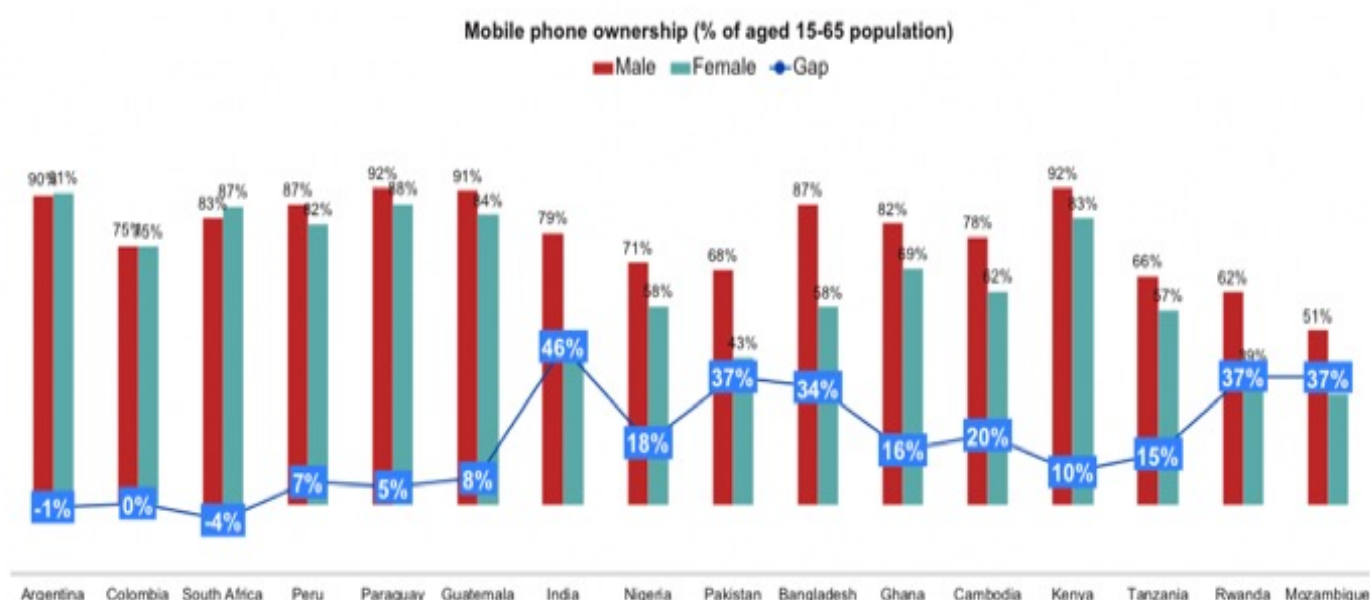
Cambodia has the lowest GNI per capita (and penetration rate) of the countries surveyed in Asia; more in line with Ghana and Kenya. Despite this, Cambodia's gender gap at 20% is by far the lowest of the Asian countries surveyed in relation to mobile phone ownership and Internet access. The Internet gender gap is a good 15% below Pakistan and Bangladesh and 25% below India. With the highest GNI per capita of nearly USD2000 in 2016, India has a staggering 46% mobile phone ownership and 57% Internet gender gap.

## Mobile phone ownership gap

Of all the countries surveyed, India, Pakistan and Bangladesh account for the highest gender gaps in mobile phone ownership (Figure 2). In India, women have less than half the number of phones men do.

These gender gaps are more than double the gap of a similarly populous nation in Africa, Nigeria and even the least developed countries in Africa such Tanzania, where the gender variance in mobile ownership is third of India's.

**Figure 2: Gender disparity in ownership of mobile phone<sup>3</sup>**



Source: After Access 2017: Nationally representative surveys in each country, 2017 (Myanmar 2016)

<sup>3</sup> The gender gap is determined by the gap between male mobile phone owners (or Internet users) as a percentage of the population and female mobile phone owners (or Internet users).



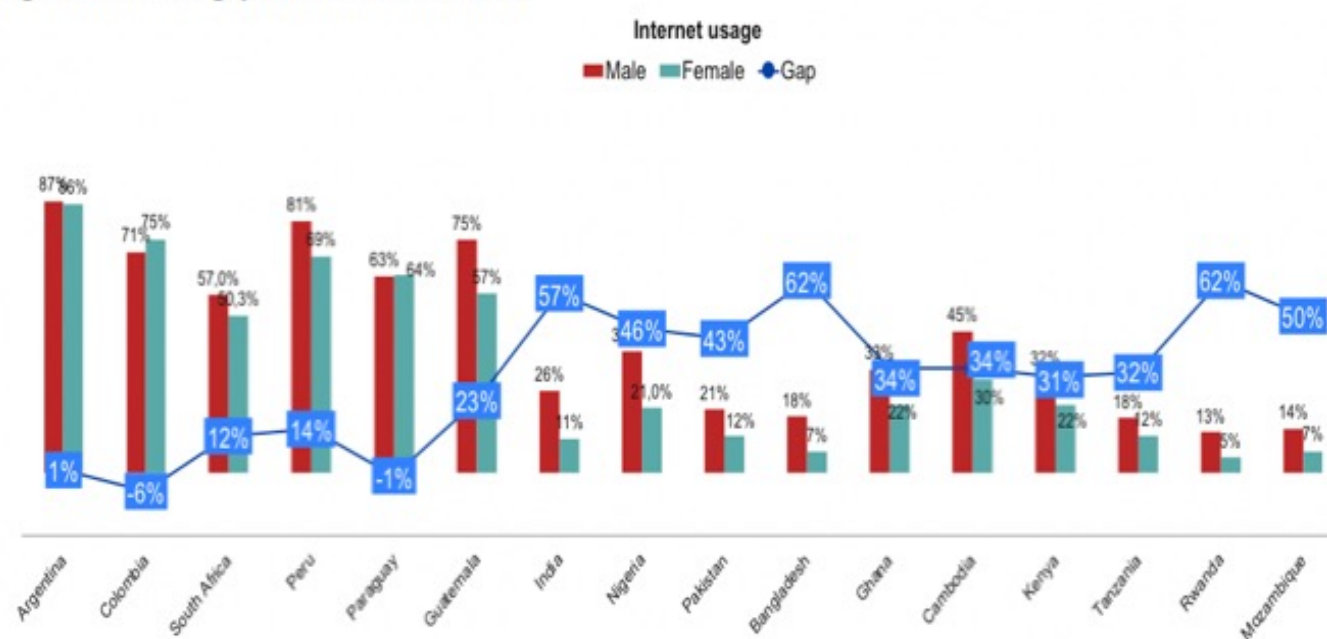
## Internet gap

Together with Rwanda and Nigeria, which has by far the largest population in Africa, similar to that of Bangladesh, they also have amongst the highest gender gap in Internet use (Figure 3). These populous nations therefore account for a large number of unconnected women in the Global South. The biggest Internet gender gap of all the countries surveyed is in Bangladesh, closely followed by Rwanda and then India, Mozambique and Nigeria. The gender gaps in Rwanda and Mozambique are double those of other developing African countries, yet in Tanzania with a GNI per capita not significantly above Rwanda, the gender gap

is half of its.

Besides South Africa, of the African and Asian countries surveyed, the only country within range of the Latin American countries is Kenya, with a relatively low mobile phone gender gap of 10%. This correlation between higher mobile phone penetration and lower gender gap is also reflected in Kenya, where the mobile phone penetration rate is in line with the lower middle-income countries of Latin America. With a similar GNI per capita in 2016 to that of Kenya, Ghana follows with a gender gap of 16%. Nigeria, with a GNI per capita twice those of Kenya and Ghana, has a mobile ownership gender gap of 18% and an Internet penetration rate similar to Cambodia.

**Figure 3: Gender gap in the use of Internet**



Source: After Access Survey, 2017

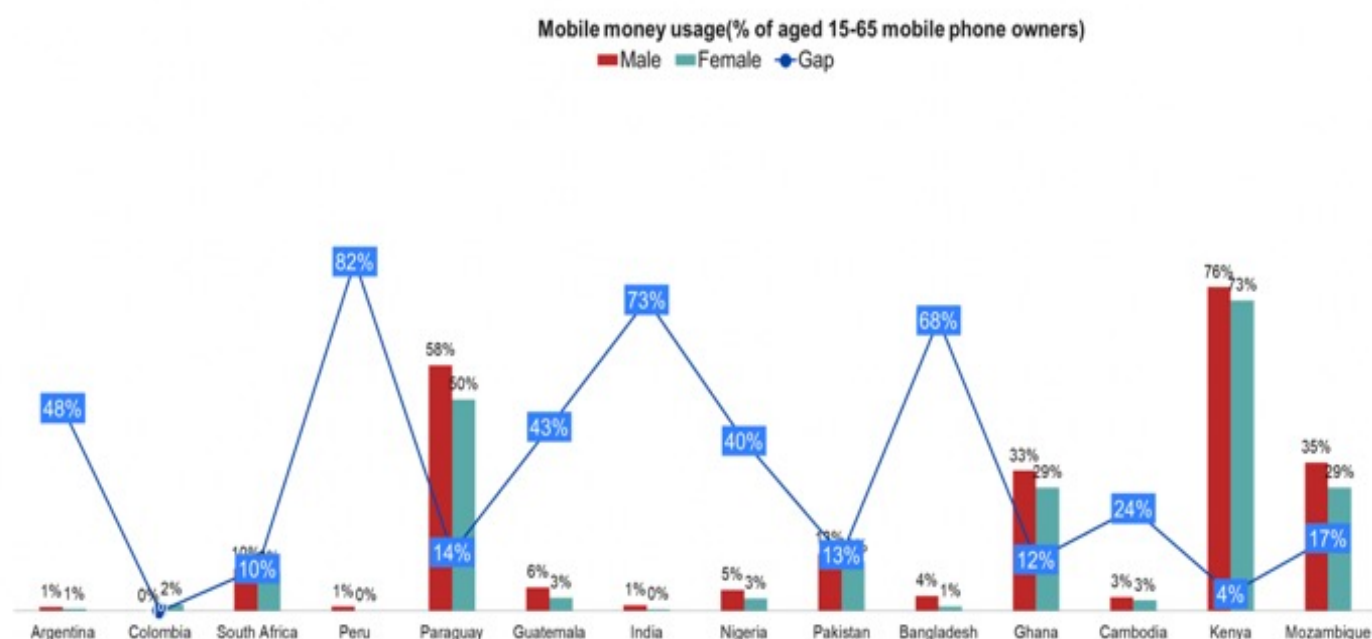
## Mobile Money Gap

The use of mobile phones for mobile money transactions is minimal and almost negligible in most of the countries surveyed. However, we do still see a gender gap in countries where mobile money is used (see Figure 4). In Latin America, it is only in Paraguay that over half of the men and half of the women make use of mobile money. Asia makes the least use of mobile money and even in Pakistan, which stands out among the Asian countries in terms of mobile money use, only 13% of the men and 12% of the women use this service. While much has been written

about the de-monetisation of currency notes of certain denominations in India and the resulting claim that the use of mobile money has sky-rocketed, our numbers do not show such use.

In Africa, especially East Africa, mobile money is widely used. With the now internationally renowned mobile money transfer service, M-Pesa, which makes up an overwhelming majority of the mobile money market share in Kenya, it is not surprising that over 70% of people in Kenya use mobile money. Yet, there is still a 16% gap between men and women using mobile money in favour of men.

**Figure 4: Gender gap in the use of mobile money**



Source: After Access Survey, 2017



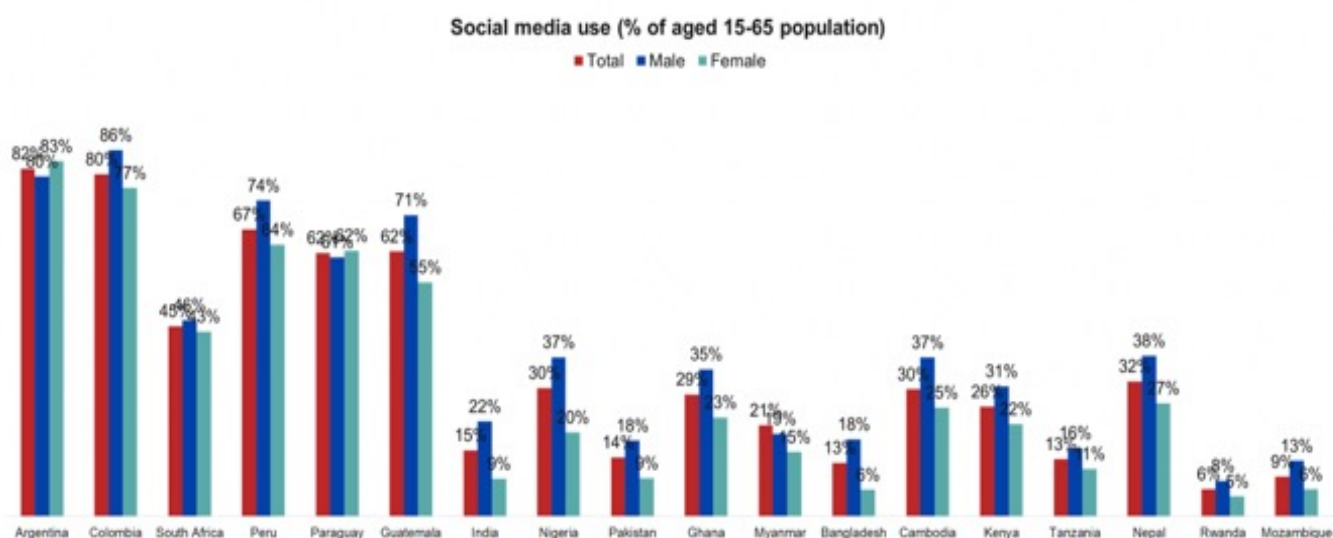
## Social networking gap

Social networking is driving Internet take-up in developing countries with most people spending more time on social networking than anything else online. Countries with higher penetration levels also have more equitable use of social media between men and women. Although across most countries men are generally more willing to share their real names on social media than women, it is reasonably equitable other than in countries with the lower penetration rates, such as India, Rwanda and Mozambique, where there is a slightly bigger gap of around 10%. In Columbia, Nigeria, Kenya and South Africa, marginally more women are willing to disclose their names and gender online than men.

In a number of countries women are more willing to share information when content concerns religion or posting pictures of themselves and family. Pakistan is the only country in which women on social networks are far less willing than men to disclose information like their name, gender and marital status, or political and religious views.

The variance between men and women in Pakistan is also by far the greatest of all the countries surveyed, with women being only half as willing as men in many instances to share information about themselves online. This suggests strong cultural rather than the economic factors and penetration levels that seem to explain differences in other countries.

**Figure 5: Gender gap in the use of social media**



Source: After Access Survey, 2017

Social media are used primarily for calls, chatting, staying in touch with friends and family by both men and women and relatively equitably. Indeed, women in several countries do more text chatting and make more phone calls than men.

More men than women use social media to get news updates and in, some countries such as Ghana, India, Nigeria, Pakistan and South Africa, more men use social media to make professional and business contacts.

In all countries other than Pakistan, the differences between men and women are within 10%. Considering the high gender gaps in these countries, the significantly higher use of social media by women in Bangladesh, Rwanda and Tanzania for professional and business purposes was less anticipated. This is the case too for the marketing of products and services for Bangladesh, India, Ghana, Mozambique and Tanzania.

**Table 1 – Social media sharing of information**

	Argentina		Colombia		South Africa		Peru		Paraguay		Guatemala		India		Nigeria		Pakistan		Ghana		Bangladesh		Cambodia		Kenya		Tanzania		Rwanda		Mozambique	
	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀
Real Name	92%	87%	86%	90%	72%	75%	91%	88%	92%	93%	85%	78%	89%	74%	88%	93%	75%	47%	85%	80%	98%	88%	67%	69%	80%	81%	86%	81%	91%	88%	72%	65%
Gender	96%	94%	86%	88%	62%	64%	95%	94%	93%	93%	95%	91%	87%	72%	98%	100%	66%	47%	91%	91%	97%	92%	74%	75%	89%	91%	91%	84%	90%	89%	75%	72%
Age	91%	83%	84%	83%	57%	56%	87%	84%	90%	87%	84%	76%	84%	72%	79%	70%	71%	51%	72%	70%	93%	87%	56%	49%	67%	66%	60%	49%	84%	70%	74%	71%
Marital status	84%	77%	75%	76%	45%	48%	82%	78%	84%	79%	74%	65%	73%	66%	85%	85%	61%	43%	56%	62%	78%	71%	46%	44%	74%	69%	66%	63%	82%	84%	65%	59%
Mobile Number / Email address	43%	29%	46%	32%	38%	35%	49%	36%	56%	40%	48%	34%	74%	62%	83%	74%	64%	34%	72%	61%	72%	59%	72%	62%	65%	59%	42%	49%	56%	47%	45%	35%
Pictures or videos you and your family and friends	79%	81%	71%	86%	54%	53%	82%	87%	85%	87%	70%	75%	65%	60%	87%	86%	53%	50%	88%	85%	79%	64%	85%	83%	73%	85%	79%	79%	82%	88%	73%	64%
Religion	28%	34%	49%	41%	25%	31%	44%	52%	27%	31%	50%	54%	58%	55%	80%	78%	68%	48%	72%	70%	78%	77%	32%	26%	63%	77%	41%	49%	63%	70%	32%	33%
Political views	25%	21%	27%	11%	14%	9%	32%	29%	16%	16%	24%	15%	39%	40%	50%	29%	54%	33%	23%	21%	35%	28%	13%	9%	46%	34%	24%	12%	27%	19%	11%	7%
Sexual orientation	25%	17%	24%	18%	14%	9%	28%	23%	17%	12%	19%	12%	25%	29%	23%	19%	37%	18%	25%	20%	22%	28%	9%	11%	27%	16%	4%	7%	31%	22%	8%	8%

Source: After Access 2017



Less than half of social networkers use it to follow governments sources or look for jobs other than in Kenya, Rwanda and Tanzania. It is in these countries that more women use social networks for these purposes. Although only around a quarter of social media users do so to follow government sources in Bangladesh, there are also slightly more women doing so than men.

Well over half of social media users access networks for educational purposes, with this figure being as high as 70% in India, 60% Bangladesh and over 50% in Pakistan and Rwanda. What is interesting is that more women than men in India, Pakistan, Rwanda - the countries with the greatest Internet gender gap - use social media to access educational content.

**Table 2 – Use of social media by gender**

	South Africa		India		Nigeria		Pakistan		Ghana		Bangladesh		Cambodia		Kenya		Tanzania		Rwanda		Mozambique	
	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀
Reading news	66%	58%	80%	70%	89%	78%	54%	48%	81%	78%	74%	70%	86%	85%	83%	75%	95%	93%	93%	82%	83%	59%
Chatting [text]	93%	93%	90%	77%	98%	95%	71%	79%	92%	99%	93%	95%	69%	75%	96%	96%	100%	99%	96%	100%	93%	93%
Making calls	77%	69%	86%	76%	57%	60%	68%	77%	80%	82%	77%	82%	76%	76%	60%	65%	69%	74%	78%	80%	71%	75%
To play games	52%	40%	66%	64%	42%	37%	55%	49%	54%	53%	41%	46%	36%	29%	46%	45%	46%	29%	46%	44%	49%	44%
to stay in contact with friends and family	79%	76%	92%	88%	95%	97%	72%	72%	91%	93%	94%	93%	79%	80%	92%	91%	86%	87%	89%	92%	89%	91%
To make professional and business contacts	34%	26%	58%	54%	48%	46%	44%	25%	44%	49%	36%	41%	31%	21%	52%	49%	37%	48%	41%	48%	40%	32%
To market your products/services	18%	8%	44%	49%	27%	23%	37%	26%	27%	28%	28%	32%	11%	8%	33%	29%	17%	26%	19%	15%	20%	21%
To follow government Social media pages (to look for jobs or updates on policies)	27%	23%	60%	55%	53%	33%	39%	37%	44%	44%	34%	36%	45%	35%	59%	50%	57%	50%	52%	58%	28%	17%
To make new friends	65%	62%	74%	55%	88%	94%	62%	49%	95%	91%	78%	68%	64%	58%	94%	88%	92%	86%	85%	86%	89%	73%
To follow local politicians	24%	19%	51%	40%	38%	17%	43%	37%	37%	31%	35%	25%	48%	38%	62%	50%	55%	54%	55%	51%	19%	16%
To get opinions / share your experience	44%	41%	66%	55%	77%	73%	49%	44%	75%	71%	59%	52%	55%	53%	79%	80%	69%	71%	70%	63%	55%	47%
To share videos/ pictures/ music	72%	59%	78%	64%	83%	82%	65%	58%	87%	86%	68%	64%	70%	64%	81%	87%	90%	86%	79%	87%	82%	77%
To share my produced content	27%	16%	57%	50%	28%	26%	43%	49%	45%	40%	50%	56%	49%	50%	45%	37%	30%	44%	45%	40%	50%	40%
To look for educational content	43%	45%	70%	72%	75%	70%	50%	55%	77%	76%	57%	60%	52%	48%	74%	67%	59%	54%	43%	59%	72%	69%

Source: After Access 2017

## REGIONAL INSIGHTS



## REGIONAL INSIGHTS: AFRICA

The next sections of the paper go on to examine different aspects of gender digital inequality in the three regions. The section on Africa tries to highlight some of the intersectional aspects of exclusion by looking at gender in relation to rural and urban location and income and then seeks to move beyond the descriptive indicators to identify the underlying factors contributing to digital gender inequality, by modelling the data. The section on Asia highlights the danger of thinking of women as a uniform group and attempting to address barriers to their connectivity. It shows that even the most basic disaggregation of women into rich vs poor brings about whole new classes of marginalisation and draws attention to the importance of intersectionality. Finally, the section on Latin America provides an analysis of the factors that determine the gender ICT gap, integrating the different dimensions that ICT use involves.

### *Africa*

A comparison of descriptive data across the seven African countries surveyed shows that there are gender disparities in ICT access and use, with women mostly on the lower end. The study further shows that women who are more educated, with higher incomes, living in urban areas are likely to

have greater access to the Internet than women in rural areas, even if they have similar education and income; and certainly, their access to the Internet is greater than that of poor, less educated women and men.

South Africa, with one of the highest GNI per capita in Africa, has the highest Internet penetration and the lowest gender gap of the countries surveyed. With a population size four times that of South Africa, Nigeria has less than half the penetration and the second highest Internet gender disparity of the African countries surveyed (46% in favour of men). Kenya has the highest mobile phone penetration (approaching 90%) and a mobile gender gap of only 10%. Internet penetration in Kenya is, however, much lower at 25% and more in line with Ghana, with both having much higher Internet gender gaps at around 32%. Interestingly, the Internet gender gap in Tanzania is more like that of Kenya and Ghana with their more developed and dynamic economies (from an ICT perspective), than its least developed peers, Mozambique and Rwanda, countries that have the highest gender gap in Africa.

Despite being renowned for its prioritisation of ICT and supply-side interventions, Rwanda's gender gap in mobile phone ownership and Internet penetration is pronounced.

In South Africa, despite a considerably higher Internet penetration rate (nearly 50%), the gender gap has grown from the 2012 survey, when the variance was minimal, to 12% in favour of men in the 2017 survey. On the contrary, in the nearly saturated mobile phone market, the gender gap has shifted in favour of women. There is, however, not much variance between the sexes in lower income categories, which supports the notion that there are no differences between men and women in terms of affordability amongst the poor.

Though Internet use is still relatively low in most countries, there has been an increase from 2008 to 2017. For less developed countries like Rwanda, Tanzania and Mozambique, where Internet use was less than 3% in 2008 for both sexes, Internet use now ranges between about 9% and 20%. In South Africa, where Internet uptake is highest for both men and women in comparison to other countries, the use of Internet among women increased at a faster pace than that of men.

Whilst Internet use among men in South Africa almost doubled from 2008 to 2012 and then again from 2012 to 2017, for women it more than doubled in the same periods.

### **Barriers to Internet access**

In Africa the cost of devices is the primary barrier for those who are not connected,

while for those who are connected the reason for low usage is the price of data services. These continue to be the biggest challenges to overcome from a policy perspective. In many countries, however, particularly in the predominantly rural populations, access to electricity is a greater challenge than not having mobile coverage.

Both men and women adopt multiple strategies to access the Internet, but the greater use of free public Wi-Fi by women suggests greater price sensitivity. The use of free Wi-Fi is common in Rwanda and South Africa, which have rolled it out as part of national access strategies. In both countries, more women than men use free public Wi-Fi (47.1% and 31.2% respectively) to save on data charges. Men are more generally aware of the Internet than women in the African countries surveyed, supporting the hypothesis that education is one of the major determinants of women's access to and use of the Internet.

However, it is the biggest challenge for the West African countries surveyed (Nigeria and Ghana) and for women in Kenya. In Ghana and Nigeria, the gap is not very wide between the men and women who say they do not know what the Internet is, but in Kenya the number of women who indicate this as a barrier is more than double that of men.



The gender gap in the access to and use of ICTs is evident in both rural and urban locations, with more men than women having access to or using a particular ICT. The gender gap for mobile phone ownership is slightly higher in urban than in rural areas. Smartphone ownership shows a wider

difference (6.5%) in rural areas than in urban areas, where 4.1% more men than women own a smartphone. Knowledge of the Internet is lowest among women in rural areas, where less than 35% of women indicate that they know what the Internet is.

**Table 4: Main reasons cited for not using the Internet**

Country breakdown by gender		Do not know what the Internet is	No access device (computer/smartphone)	No interest/not useful	Do not know how to use it	Not available in my area (no mobile coverage)	Too expensive
Rwanda	Male	11.5	34.7	7	1.3	0	34.4
	Female	6.1	51.4	0.5	4.1	0	31.4
Tanzania	Male	1.3	62.8	16.5	12.2	0.6	3.4
	Female	0.3	64.4	13.9	12.9	0	1.2
Kenya	Male	15.9	24.7	29.4	13.6	2.8	4.6
	Female	35.3	18.9	23.5	10.2	1.9	3.4
South Africa	Male	0	38	15.1	11.7	2.4	11.1
	Female	0	34.9	16.1	7.1	3	17.8
Mozambique	Male	0	74.4	2.9	14.8	0.6	0.1
	Female	0	77.4	3	13.4	0	1.2
Ghana	Male	44.1	19.2	8	12.7	4.2	2.9
	Female	42.9	23.8	10.2	15	0.8	1.6
Nigeria	Male	33.3	17.4	10.2	22.2	6	3.6
	Female	44.7	10.2	9.8	21.8	2.8	4.4

Interestingly, there is also a difference in ICT access and use among women in different locations. Women in urban areas are exposed to and use ICTs more than women in rural areas. The difference is more than double across all indicators except for mobile phone ownership.

The gender difference is not always in favour of men, especially when the disaggregation is location-specific. Table 2, which aggregates urban and rural across all countries surveyed, shows that women in urban areas access and use ICTs more than men in rural areas. This indicates that the gender gap is not necessarily because of the sex of an individual, but could be due to many other factors, such as location. **Where women are at the intersection of multiple factors of inequality, they are the worse off.** Rural women are worse off than urban women, as well as rural men.

Guided by the descriptive statistics discussed above, the study further analyses the data using binary regression techniques. The logistic regression models developed allow the investigation of the factors affecting ICT access and use and to establish the direction of the relationships. The study models the probability of ICT access and use, using the binary variables, mobile phone ownership and Internet use, against selected demographic and socioeconomic variables.

### **Mobile phone ownership**

While there is a significant and negative correlation between sex and mobile phone ownership for six of the countries studied, in South Africa the relationship is a positive and significant one, an indication that women are more likely to own a mobile phone than men in this country, unlike in the other countries surveyed.

**Table 5: Urban-rural gender comparison on ICT access and use**

	Rural			Urban		
	National	Male	Female	National	Male	Female
Do you own a mobile phone?	58.8	64.7	53.1	79.8	84.9	75.5
Is your mobile phone a smartphone?	18.5	21.5	15.0	42.8	44.9	40.8
Do you know what the Internet is?	41.0	49.2	33.2	67.4	74.3	61.4
Have you ever used the Internet?	16.9	21.5	12.4	43.1	52.3	35.2
Do you use social media?	15.4	19.7	11.1	40.4	48.5	33.4

*Source: After Access Survey, 2017*



Despite the difference in direction of the relationship, the significance of the relationship implies that sex determines the probability of an individual owning a mobile phone. As was the case in the 2008 and 2012 studies, this study shows that the higher the levels of income and education, the more likely it is for an individual to own a mobile phone with education maintaining a positive and significant correlation throughout. Location and age are also significant influencers of mobile phone ownership. The study finds that those living in rural areas are less likely to own a mobile phone than those in urban areas, and in most countries younger people are more likely to own a mobile phone.

The analysis shows that in rural South Africa, having a higher income does not necessarily translate into increased mobile phone ownership, indicating that factors associated with urban or rural location, such as proximity to infrastructure, can strongly influence Internet access. A woman is more likely to own a mobile phone, than a man. In Kenya, while it is generally less likely for a woman than a man to own a mobile phone, analysis of the data by location shows that women in urban areas are more likely to own a mobile phone than men in urban areas<sup>4</sup>.

## **Internet access and use**

The regression analysis shows that sex, income, education and location are all significant determinants of whether people use the Internet. In terms of sex, women have a lesser chance of using the Internet, which supports the descriptive findings that women lagged behind men in Internet use in all seven countries surveyed. People with higher levels of income and education are more likely to be online than those with lower income and education levels. Also, those in rural areas stand a lower chance of being connected. These may be contributing factors to the gender disparities in Internet use, as more women tend to fall into these categories.

Although the modelling shows that the main determinants of this digital gap are education and income, these are themselves likely to be determined by cultural and social factors, which are more likely to be captured by qualitative research. In 2017, Research ICT Africa ran focus groups as a pre-test on matters arising from the 2012 surveys that the data had not answered in Kenya, Nigeria, Rwanda and South Africa.

The focus groups were structured into men and women groups and mixed groups in urban and rural areas.

*4: This may be as a result of not being able to use a mobile device or there not being a good signal available (though this would only pertain to very remote areas as there is over 95% 3G coverage in South Africa).*

From the focus groups granularity to the gender relations in relation to barriers to Internet use that quantitative data cannot. Time to use the internet and time spent online was a challenge for women in family settings.

*For instance a woman in the village even if she wanted to use a cyber [café], she will not do that. Imagine being in the cyber at 7 pm and you are expected to be at home cooking, taking care of cows, etc. Even if you have a child abroad and you want to communicate with them, it becomes very difficult... Peri-urban female Internet user, Kenya (Chair, 2017:34)*

As the quote above reflects, the fact that women had other family responsibilities meant they could not spend as much time as they wanted to online. The internet, specifically social media, was seen to be a threat to relationships by both men and women. In rural areas, women reported their partners refusing for them to be on Facebook. While in peri-urban areas, men and women recognised the tension from being online was problematic to relations. A male respondent in peri-urban South Africa questioned:

"No, my point is what is she going to do there, what do married people want on WhatsApp?". However, this question was

posed in a mixed focus group to which female respondents stated that it went both ways.

In rural areas, power relations between men and women was reflected in internet use for women in particular. In Kenya, one respondent stated that women feared their husbands' response to them accessing or using the Internet. Respondents in rural South Africa and Kenya said that partners felt uncomfortable with them being on social media sites due to jealousy or fears that they would be unfaithful: "I also do not go on social networks at night because that is creating problems to my relationship. I stopped him from being on WhatsApp at night, so I had to do the same."- Female Respondent Deep rural South Africa.

As social media are used primarily as a substitute for expensive voice and text services, the denial of women's rights to such services, which are mostly practice in rural areas where people are generally poorer, means that women experiencing this deprivation are more likely to be paying more for communications.

Sexual advances were perceived more as irritations by men but for women it was a different experience. Male respondents in South Africa stated that they simply ignored



or blocked people, male or female who were trying to have a relationship with them. Some women felt they could not block people they knew, other women did not know how. One female user resorted to changing numbers after having received sexual advances from a stranger.

Where Internet use is below the 20 percent believed to be critical mass required to enjoy the network effects and positive multipliers associated with economic growth and

individual wellbeing, the disparity between men and women online and their use of the internet beyond passive consumption will be greatest.

While digital inequality is essentially an issue of poverty, those women, who are located at the intersections of other factors of marginalisation – whether locational (rural), uneducated, unemployed, from a particular ethnic group or in terms of their non-binary sexuality.





## REGIONAL INSIGHTS: ASIA

The five Asian countries surveyed present a sobering picture of gender disparity. Two of them, India and Pakistan, account for the highest gender gap in mobile ownership among all countries surveyed. Bangladesh is not far behind in poor performance (see Figures 1 and 2). Given the large populations in India, Pakistan and Bangladesh, these gender gaps account for a disproportionate share of the overall Global South gender gap.

These three countries have often been considered highly 'affordable' markets for mobile voice and data services for nearly a decade<sup>5</sup>. Yet, when income is disaggregated by gender, we see the affordability disparity.

For example, women in India on average

earn four times less than men, making mobile services significantly unaffordable to them, even without taking income decile into account.

Gaps in education often cause and exacerbate these income disparities: the mean number of years of education women in India receive is half that of men, as can be seen in Table 3. Even when the education gap is not significant (e.g. Bangladesh), the income gap remains: men earn almost twice as much as women. These income statistics are for women who earn. Labour force participation is lower among women than men. Therefore, both employed women and those not formally employed are less able to afford ICTs.

**Table 6: Income and education statistics disaggregated by gender**

Country	Mean years of schooling		Estimated GNI per capita (2015, PPP, 2011 international \$)		Labour force participation, 15–64 years population (2017; ILO modelled estimate)	
	Women	Men	Women	Men	Female	Male
India	4.8	8.2	2 184	8 897	29%	82%
Pakistan	3.7	6.5	1 498	8 376	26%	86%
Bangladesh	5	5.6	2 379	4 285	35%	82%
Cambodia	3.7	5.5	2 650	3 563	83%	90%
Myanmar	4.9	4.9	4 182	5 740	55%	84%

5. These three countries were among the first to drop below USD5 total cost of mobile ownership (including monthly rental, voice, SMS, connection and handset costs) in 2009. As per the 2017 ITU price database (unpublished) within the region, Bangladesh is placed 3<sup>rd</sup>, while India and Pakistan are placed 6<sup>th</sup> and 7<sup>th</sup> respectively when comparing the cost of 1GB of data. More recent benchmarks by the Alliance for Affordable Internet show that Pakistan is close to meeting its target of 2GB of data under 1% of GNI, with the costs coming in at 1.2% of GNI.

Analysis using nationally representative survey data showed how much education and income inequalities contributed to mobile phone non-ownership among women. A binary logistic regression model, where mobile adoption is modelled as the dependent variable, taking a value of 1 for adopters and 0 for non-adopters, gives the change in the odds (directly related to the probability) of mobile adoption due to a unit increment of the independent variable. The model (detailed in Perampalam et al., 2016) showed that the completion of secondary and tertiary education is a significant predictor of mobile phone adoption.

For Myanmar, the completion of secondary education leads to a 55% increase in the odds of mobile adoption, while the completion of tertiary education, albeit by a small percentage of the population, leads to a 378% increase in the odds of adoption. Similarly, being employed leads to an 84% increase in the odds of mobile phone adoption. However, the same binary logistic regression model for phone ownership showed the complicated and intertwined nature of ICT access with gender, income and cultural factors. Even after accounting for all independent variables that have a statistically significant impact on mobile phone adoption (such as secondary and tertiary education, proportion of friends with mobile phones) and others that are

direct or indirect indicators of wealth (such as employment status, monthly household expenditure, TV and electricity in the household, age, etc.), there was a gender disparity. After controlling for all these factors mentioned, being a woman in Myanmar still reduces the chance of mobile phone ownership by 42%.

This finding was surprising, since the important status of women in Myanmar's society – at least in comparison to its South Asian neighbours – is well documented (see among others, Sein, 1972; Ikeya, 2005/2006; Kawanami, 2007). Ethnographic observations detailed in Zainudeen and Galpaya (2016) showed how women are the 'chief financial officers' of the family, receiving money from employed family members, and allocating and managing the budget. A woman determines when her family has sufficient funds to purchase a phone. Yet, because these women have little technical knowledge and few opportunities to obtain it, they are not involved in the decision on which phone to purchase. Furthermore, when the phone is purchased, it 'travels' with the person who works or studies outside the home. When non-users were asked about the reason for not using the Internet, a considerably higher percentage of poor women than rich women stated that they did not know what the Internet is (Figure 5).



Similarly, in Pakistan nearly 30% of poor women found it challenging to afford the device (phone, computer) required to get online, while this was a problem for only 6% of richer women (Figure 5).

When women finally do get online, gender impacts their online experience, how much they are online and what content they access. As a follow-up to the Myanmar survey, in 2017 we conducted semi-structured interviews with 98 men and women who have been using the Internet for at least a year. Both men and women reported that their social media accounts (mainly Facebook) were regularly hacked. In fact, not everyone even knew that Facebook required a password. Many men and women had their Facebook account (username and password) created by the shop workers who sold them their phones.

While hacking was the main challenge for men, the women worried about more varied online challenges. In particular, many women worried about a stranger downloading a photo from their Facebook feed, editing ('photoshopping') it to impose a naked body or manipulating in other ways and circulating it via social media in a manner that would draw attention or shame to them, often as a precursor to extortion.

The result was that women self-censored their online behaviour by limiting or avoiding the posting of photos of themselves,

or by only posting photos that they believed could not be manipulated. So, even if a woman is working from home, and also managing the family finances, she is unlikely to have access to the phone for significant hours each day. The gender gap lies at the intersection of other forms of marginalisation: gender, income, education, urban vs rural and cultural. This means that it is not useful to focus only on men vs women as if either were a homogenous group. When our survey data is disaggregated by income, the chasms between 'rich' women (those earning above the national mean income) and 'poor' women (those earning below the national mean income) become apparent.

*"It is pretty rare that a full body image pictures [is posted by me]. Maybe just my head or only the upper part of my body... I have heard that it is easier to make photoshop out of full body images."*

*- Female, 25 years, Yangon, Myanmar*

*"A friend of mine likes to wear trendy revealing clothing, and her pictures are used by people with bad intentions. Through the messenger, they threaten her by using pictures of her. They said they will change it into pornographic picture. She got that a couple of times."*

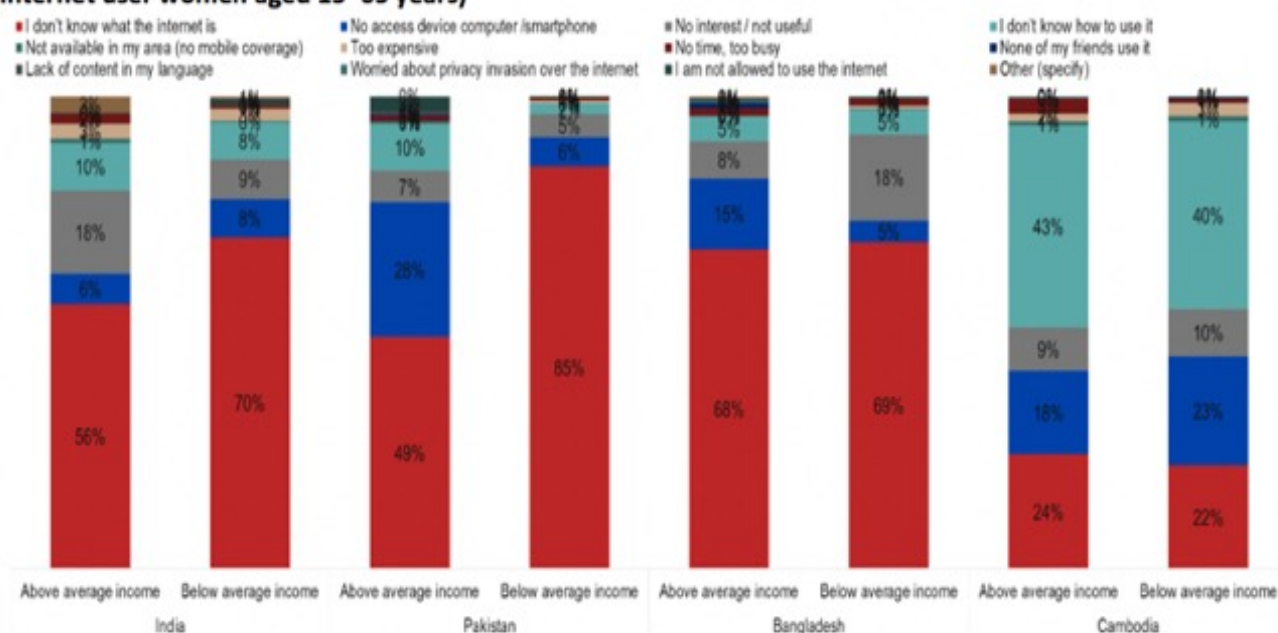
*- Male, 28 years, Yangon, Myanmar*



Many respondents, men and women, had multiple Facebook accounts in order to navigate multiple identities. Women did so by creating a separate account and listing their gender as male or adopting a male name, or by posting their husband's photo as their profile picture. Other women signalled they were 'unavailable' for advances and harassment by (often unknown) men by posting photos of their husband and children. Others simply avoided opening an account for themselves at all and preferred to share the account of a male relative and limit their use to simply browsing the news feed.

Many felt it was easier to engage in certain public online conversations while using their 'male' accounts, even when they had another female account which was used to connect with friends and family. More specifically, it was 'easier' to engage in sensitive conversations related to religion and politics if one was seen to be a male of the main ethnic group, Bamar. For example, many Kachin women and men, whose Kachin ethnicity can be often identified with their name, had an account in a non-Kachin, Bamar name. So, in fact, Kachin women are harassed online both as women and as Kachin (minority ethnicity) – highlighting that 'women' is not a single, uniform category.

**Figure 5: Reasons for not using the Internet among women, disaggregated by household income (% of non-Internet user women aged 15–65 years)**



Source: After Access Survey, 2017

The Asian findings point to the fact that, from a gender perspective, there are issues to be tackled on multiple fronts, in order to achieve equitable and meaningful access for all. The gaps in mobile and Internet access seem to be worse in the Asian countries than in Africa and Latin America. Key challenges for women in the Asian countries relate to skills (related to education) and economics. The lack of skills is a particular barrier, preventing them from getting online; for those who are online, it can leave them vulnerable to privacy and safety threats.

Affordability, as measured by average data prices as a percentage of per capita income, is a particular barrier for 'average' women, who often earn less than men, or don't have their own incomes at all, and potentially the situation could become more worrying if lower income deciles are analysed.

While disparities in education and income may explain a large component of the gender gap with regards to mobile and Internet access, as the Myanmar case demonstrates, the 'pure gender effect' still plays a role in determining women's access in Asia. Deeply entrenched in this effect are the social and cultural norms and attitudes that are not measured in the other quantitative explanatory variables.

What this means is that there are greater and

deeper concerns that need to be addressed in these societies: change is needed in the attitudes and perceptions that shape the ways in which women gain access to technology and are able to make use of it. While attitudes and perceptions are not easy to change in the short term, a good starting point may be to focus on more tractable solutions that can help women to become and stay affordably connected, and to provide them with the skill set to make use of the host of services and platforms offered through mobiles and the Internet in a safe and secure way; perhaps even earning a living from these.



## REGIONAL INSIGHTS: LATIN AMERICA

Women represent more than 50% of the total Latin American population<sup>6</sup>, and here, as in many parts of the world, they face a set of barriers that result in unequal conditions for them, relative to their male peers. Particularly in this region, women are overrepresented in lower income quintiles, informal labour sectors and low-payment activities. According to the International Labour Organization (ILO, 2016) the unemployment rate for women is around two times higher than for men, they receive lower wages in all occupational segments, and they face worse labour conditions.

Although there have been significant advances towards gender equality at the basic levels of education, women remain underrepresented in STEM fields (science, technology, engineering and mathematics). Furthermore, these differences are more critical at the highest levels of academic and professional hierarchies (Castillo et al., 2014).

Gender disadvantages are also evident in other social and cultural contexts. Women face entrenched discriminatory social norms and persistent structural barriers, such as early motherhood, gender-based violence and gendered division of household labour, among others (UNESCO, 2015).

The ICT field is not an exception. Opportunities to access and use the Internet are not evenly distributed between men and women (Gray et al., 2016) and factors such as the ones mentioned above could play a fundamental role in explaining gender differences in ICT use (Robinson et al., 2015). However, the existing literature about this topic is scarce, especially in Latin America, and such an analysis becomes more challenging when attempting to include all the different dimensions that ICT use involves (mobile ownership, mobile use experience, mobile apps use, e-banking and e-commerce, Internet use, type of Internet use, among others).

In this section of the paper, we analyse the factors that determine the gender gap in ICT use, integrating these different dimensions. We first describe the components of the proposed ICT index and estimate its value for each country in the *AfterAccess* Latin American sample. Then we briefly describe the quantitative methodology used to identify the factors underlying the ICT gender gap and provide the most important results. We conclude the section by explaining the ICT gender differences.

<sup>6</sup> World Bank Indicators (2017) <https://datacatalog.worldbank.org/dataset/world-development-indicators>



## **An ICT index for five Latin American countries**

The ICT index for the Latin American region consists of two sub-indexes and eight indicators. The first sub-index is related to mobile phone use, and includes the following variables: smartphone ownership, mobile use experience, mobile application use and mobile banking and e-commerce. The indicators in this sub-index are mainly related to more modern uses of mobile phones. For example, it includes only smartphone ownership (excluding 'basic phones' with no Internet access). It also takes into account the use of a wide variety of mobile applications (nine different types). Similarly, the second sub-index includes Internet use, and has the following four indicators: Internet use, Internet use experience, Internet devices and online activities.<sup>7</sup>

Figure 6 shows the average values of the ICT index for each country of the Latin American *AfterAccess* survey, including

values by gender; this could provide an approximation on the indicators described above. In particular, Argentina and Colombia have the highest average values for the index, which means that both countries have a wider variety and higher intensity of ICT use.

These countries show more advanced use in terms of mobile phones (ownership and number of applications used), Internet and social media. On the other hand, Paraguay and Guatemala show the lowest relative levels of use in the region.

In terms of gender differences in the ICT index, Peru and Guatemala exhibit the largest disadvantages for women. In both countries, women's use of mobile phones, Internet and social media is about 18% lower than their male peers; in contrast, Argentina, Colombia and Paraguay show a difference of just 5%. The main objective of this section is to identify the major factors underlying this gender inequality.<sup>8</sup>

<sup>7</sup>The ICT index is the simple average of the eight normalised indicators. The normalisation process is needed to make sure that all the indicators are in the same scale, and it follows this formula:

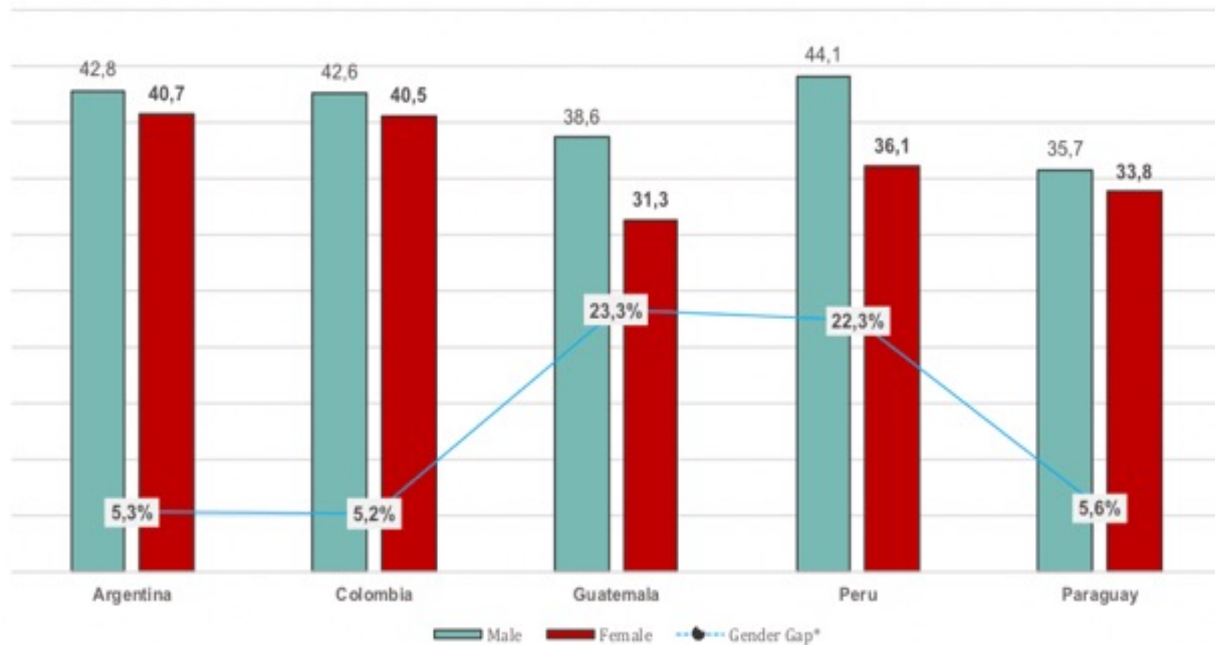
<sup>8</sup>The definition of the ICT gender gap used is the same as proposed in the previous sections.

**Figure 6: The % ICT index by country and gender (average values)**  
Figure 6 (a): By country



Source: After Access Survey, 2017. Authors' own elaboration

**Figure 6 (b): By country and gender**



### **Explaining the ICT gender differences**

Adapting the methodology used by Ñopo (2008), who analyses gender wage gaps in Peru, we identify the factors behind the differences between men and women in the ICT index for each of the five Latin American countries under analysis. Ñopo's methodology provides the estimation of the effect of observable characteristics (such as age, occupation, household characteristics, among others) and the effect that is related to non-observable factors.<sup>9</sup> In the same way, we suggest there are two main components of the gender gap:

1. The explained component: This is the share of the gap that is attributed to differences in observed characteristics (such as education, occupation, household characteristics, among others).
2. The unexplained component: This is the share of the gap that cannot be attributed to differences in observed characteristics (such as discrimination, cultural factors, sexism, racism, etc.).

In particular, the following observed variables are taken into account: age, education level, the presence of children and youngsters in

the household, location, language, socioeconomic level and occupation. These variables have been documented extensively in the literature as important determinants of ICT use: see, for example, Mendonça et al. (2015), Wang (2015), Barrantes (2007). Descriptions of the indicators are presented in Table 4.

Table 5 shows the kind of relationship found between the ICT index and the variables described in Table 4. In particular, people in higher socioeconomic and education levels and those who live with children and young adults show advantages regarding mobile, Internet and social media use.

In contrast, being an older adult, speaking a local language and living in a rural location show a negative relationship with the proposed ICT index. Regarding occupation, there are different types of relationships for each employment category, but the outstanding ones are related to 'employer' with a positive relationship, and 'non-active people' with a negative one.

The 'non-active people' category refers to those who are currently not working, not looking for work and not studying.<sup>10</sup>

<sup>9</sup> It is important to note that we have over-simplified the explanation of the methodology to make it more appropriate for a wider audience. For a more detailed explanation of the method see Ñopo (2008).

<sup>10</sup> The 'non-active people' category refers to those who are currently not working, not looking for work and not studying.



**Table 4: Determinants of ICT adoption**

Indicator	Description
Age	It takes the value of 1 if the respondent is less than 18 years old; 2, if he/she is between 18 and 25; 3, if he/she is between 26 and 39; 4, if he/she is between 40 and 59; and 5 if he/she is more than 60 years old.
Education	It takes the value of 1 if the respondent has less than complete secondary education; 2, if he/she has complete secondary education; and 3, if he/she has higher than secondary education.
Child	It takes the value of 1 if there is at least one under-aged person in the household, otherwise 0.
Rural	It takes the value of 1 if the respondent lives in a rural location, otherwise 0.
Local Language	It takes the value of 1 if the respondent affirms that the language that he/she speaks in his/her house is a native language, otherwise 0.
SEC	Socioeconomic Level index in quintiles
Occupation	It takes the value of 1 if the respondent is unemployed; 2, if he/she is a student; 3, employee; 4, employer; 5, independent; 6, non-active.

**Table 5: Preliminary analysis – Observed effects of independent variables**

Independent variables / Dependent variable: The ICT index	Observed effect
SEC	+
Education	+
Age	-
Occupation: (Employers (+) & Non-active people (-))	¿?
Local language	-
Rural	-
Children	+

These results show the strong association between the variables related to digital disadvantages (low educational levels, rural location or ethnic issues, as shown in Table 5) and those related to social disadvantages in general. As Kularski and Moller (2012) highlight, digital exclusion is caused (and reinforced) by traditional dimensions of inequality, such as socioeconomic level or race. Nevertheless, the digital divide is a complex phenomenon, and social and digital inequalities do not always go in the same direction (Bauer, 2016). An interesting example is the fact of having children in the household. According to Ñopo (2010), having children could imply a significant negative effect for women in terms of wage and labour status. However, regarding technologies, younger people in the household could have an important role in the process of Internet adoption by other older household members (Barrantes & Cozzubo, 2017).

On the other hand, it is important to highlight that the types of relationships shown in Table 5 are relevant to a better understanding of how personal and household characteristics contribute to widening or narrowing the ICT gender gap. For example, being highly educated represents an advantage in terms of the ICT index; in this sense if women are less educated than men, education would be a

factor that contributes to widening the ICT gender gap.

Figure 7 shows the contribution of each independent variable to the ICT gender gap. Therefore, bars with positive values indicate the percentage increase in the ICT gender gap when including a particular factor. For instance, women's different occupations contribute to increasing the gap to 2.5%; this means that if there were no differences in occupation between women and men the gap would be 7.5% in the five Latin American countries (the actual gap is of around 10% in the region – the average gap in Figure 6b). Conversely, the negative sign means that the particular factor reduces the ICT gender gap. As indicated in Figure 7, education, socioeconomic level (SEC), occupation and having children in the household are factors that contribute to widening the ICT gender gap, to the detriment of women. The first three factors are well-documented in the literature (Castillo et al., 2014; ILO, 2016; UNESCO, 2015).

Women in the region have fewer education opportunities, are in lower SECs and are overrepresented in informal and low-profit labour segments. On the other hand, the effect of having children in the household is not one-directional, as can be inferred from the small magnitude of the percentage.

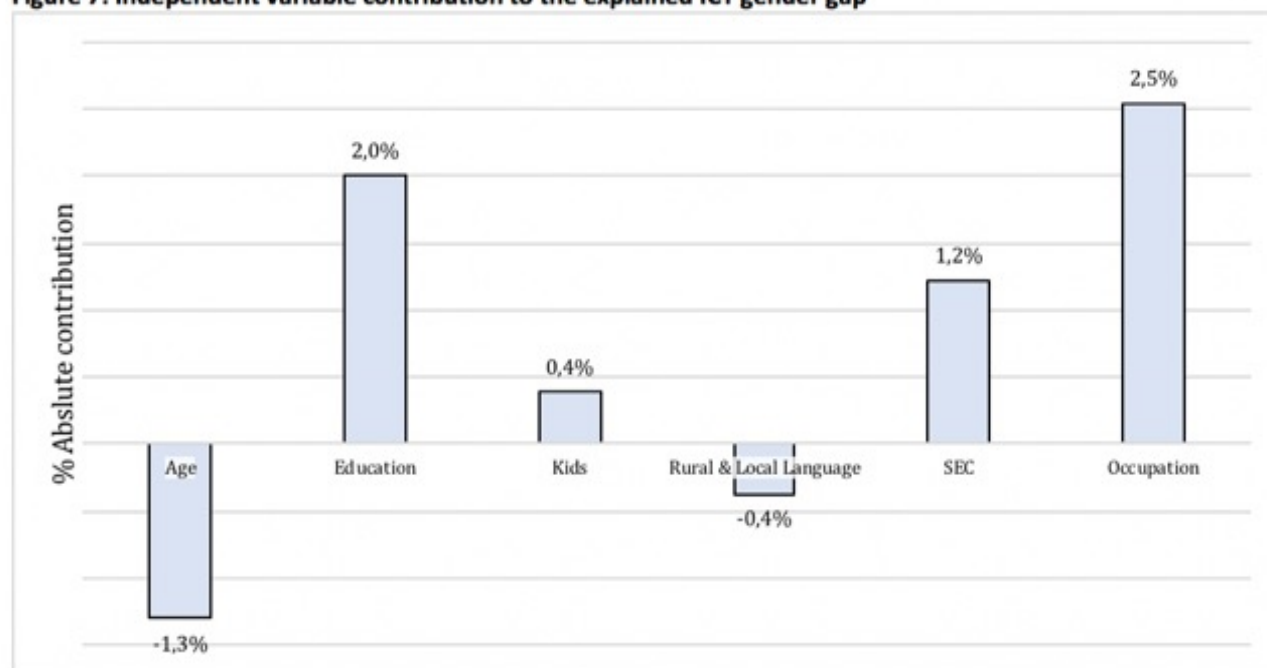
Children may have an important positive role in the process of technology adoption and use by other older household members (Barrantes & Cozzubo, 2017). However, since women are disadvantaged in terms of domestic division of labour, and children in the household imply significantly more use of women's time, this results in less free time for women (Beltran & Lavado, 2014), which means they have less time available for informational development.

The results in this case indicate that the second effect prevails, in other words having children in the house widens the gap to 0.4%, as can be seen in the third bar in Figure 7. Finally, regarding Figure 7, men in the sample were, on average, older than

women, in rural areas and spoke native languages, and these factors tend to reduce the ICT gender gap.<sup>11</sup>

This analysis is not just an academic exercise to identify the main factors explaining the ICT gender gap. On the contrary, highlighting these factors could help policymakers understanding the policy (or combination of policies) for reducing the ICT gender gap that fits best in each country. For example, in Argentina, Colombia and Paraguay the focus should be related to improving the educational and labour opportunities for women. Conversely, in Peru and Guatemala, changing gender stereotypes and sexism are more urgent.

**Figure 7: Independent variable contribution to the explained ICT gender gap**

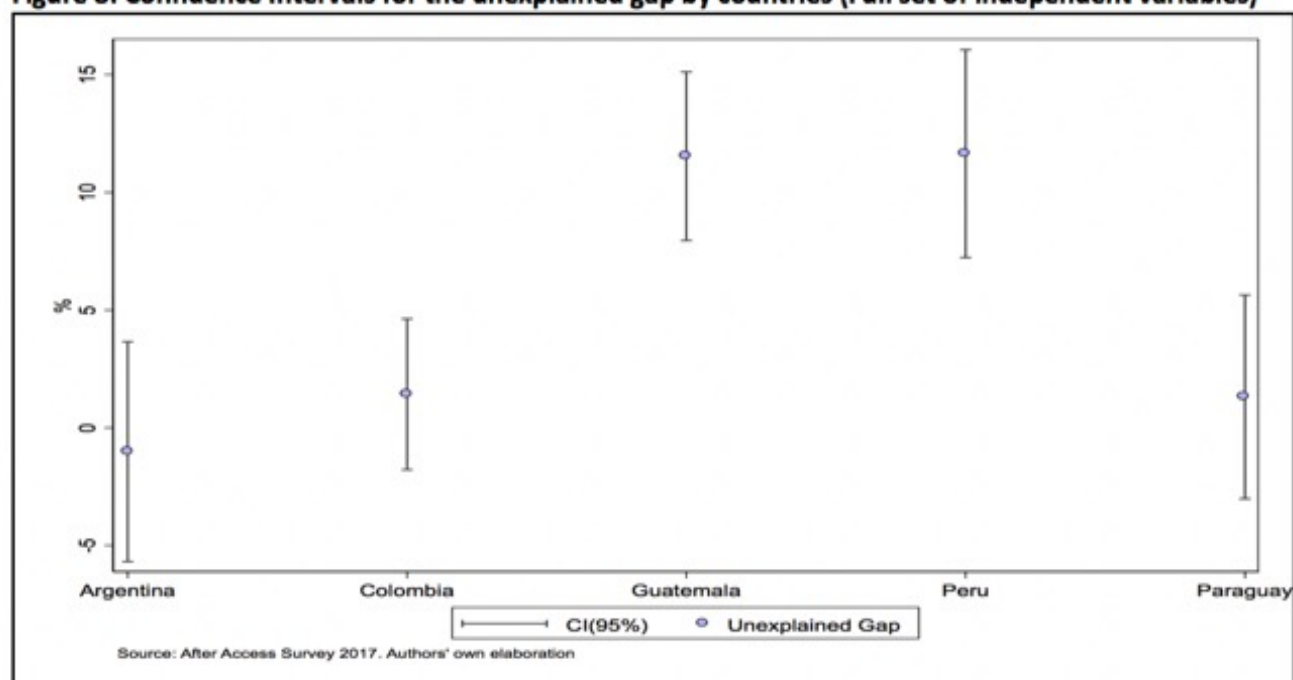


**Source: After Access Survey, 2017**

<sup>11</sup> It is important to note that these results do not change the fact that older women who speak a native language and live in a rural location are generally at a disadvantage, as compared to men with these characteristics.



**Figure 8: Confidence Intervals for the unexplained gap by countries (Full set of independent variables)**



## CONCLUSION AND RECOMMENDATIONS

Nationally representative surveys enable the disaggregation of indicators to show the disparities between men and women. In prepaid mobile markets, even with SIM card registration, this is the only way to obtain sex-disaggregated data. Supply-side data that measures active SIM cards in a market cannot identify unique subscribers as the surveys show individuals in such markets have multiple SIMs as part of their access and affordability strategies. For the same reasons that one cannot isolate the unique identity of the SIM user, one is unable to identify the sex of the user. Descriptive indicators reported at the national level only can also mask digital inequalities between men and women and other factors determining the uneven take-up of ICTs, including inequalities that exist amongst women and amongst men. It is only through a survey that sex-disaggregated data can be linked to other indicators, such as income, education, location, age – all critical for identifying exact points of policy intervention required to address the ICT gender gap.

Although not as stark as this in all countries, what the data does show is that even when those currently marginalised from services – disproportionately women in most countries surveyed – are connected, digital inequality will not be redressed.

From a policy perspective it is clear that demand-side interventions that address not

only affordability but also e-literacy and education more widely are as critical to digital inclusion as supply-side connectivity measures. Moreover, as the Asian and Latin American cases have shown, deeply entrenched factors, such as social and cultural norms, as well as attitudes towards women need to be taken into account when analysing women's access to and use of ICTs. Although further investigation is needed to understand this better, technology adoption and diffusion through commercial models reflect early adopters being more educated, high income users with low levels of gender variance in societies and economies do not constrain the participation of women. As more users come online, the disparities in ICT access and use reflect disparities between women and men in relation to education and income (employment), but as prices of devices and services come down and poorer people (disproportionately women) come online, markets begin to saturate and the figures for men and women tend to equalise.

Initiatives to make Internet use more affordable, including the reduction of taxes and duties on devices and taxes on social networking that stimulate demand for local content and thus lowers the income barrier for men and women to come online would at the same time reduce the gender gap in Internet access as more people come online.



### ***Recommendations for practitioners and policymakers***

Effectively redressing digital inequality will require transforming the structural inequalities that perpetuate economic and social exclusion and that are mirrored, and sometimes amplified in the digital world. As women are concentrated among the most marginalised in society, initiatives that make Internet use more affordable and accessible are likely to contribute to reducing the gender gap in Internet access. While affordability remains the primary barrier to digital inclusion from a policy perspective, it is clear that demand-side interventions are as critical to digital inclusion as supply-side measures.

These will also have to extend way beyond the communications sector if we are to redress disparities between men and women's access to the Internet. With education and income being the primary determinants of gender inequality in relation to access and use, far greater intersectoral state co-ordination will be required beyond the telecom sector. As we move beyond consumptive measures of digital equality to production, inequality in education will become an even more significant factor in explaining gender inequity unless access to all levels of education and employment in most developing countries is transformed.

### ***Recommendations for researchers***

The dominant research on ICT and gender is binary in its conceptualization with gender relations reduced to those of women and men. Finding ways of developing indicators for others than can be safely gathered, especially where they are marginalised and even victimized on the grounds of their sexuality, presents a challenge that the UN as a rights-based body needs to address with the support of research communities. Within the narrow confines of gender as currently defined there is still a dearth of rigorous quantitative research on the digital inequality between men and women that delves beyond descriptive statistics and models the data available in order to understand factors of exclusion and better inform policymakers. Further, many gender research questions cannot be answered by quantitative analysis and require qualitative and hybrid research approaches.

Deeply entrenched factors such as social and cultural norms and practices are best explored through qualitative research and theory. Effectively redressing digital inequality will require transforming the structural inequalities that perpetuate economic and social exclusion and that are mirrored, and sometimes amplified, in the digital world.



Political economy research that examines relations of power and interests in relation. gender can provide insights into the nature of

digital inequality and how it might be structurally addressed.



# REFERENCES

After Access (2017). Household, Individual and Business Surveys. DIRSI, LIRNEASIA, Research ICT Africa. [www.afteraccess.net](http://www.afteraccess.net)

Aker, J., & Mbiti, I. (2010). Mobile phones and economic development in Africa. *Journal of Economic Perspectives*, 24(3).

<https://doi.org/10.1257/jep.24.3.207>

Beltran.A., & Lavado, P. (2014). El impacto del uso del tiempo de las mujeres en el Perú : un recurso escaso y poco valorado en la economía nacional.

Barrantes Cáceres, R. (2007). Digital poverty: Concept and measurement with an application to Peru. Kellogg Institute Working Paper #337. [https://kellogg.nd.edu/sites/default/files/old\\_files/documents/337\\_0.pdf](https://kellogg.nd.edu/sites/default/files/old_files/documents/337_0.pdf)

Barrantes Cáceres, R., & Cozzubo Chaparro, A. (2017). Age for learning, age for teaching: The role of inter-generational, intra-household learning in Internet use by older adults in Latin America. *Information, Communication & Society*, 1–17. <https://doi.org/10.1080/1369118X.2017.1371785>

Bauer, J.M. (2016). Inequality in the information society. Quello Center Working Paper. <http://ssrn.com/abstract=2813671> or <http://dx.doi.org/10.2139/ssrn.2813671>

Buskens, I. & Webb, A. (Ed.) (2009). African women and ICTs : Investigating technology, gender and empowerment: Creating new spaces with technology. London: IDRC, ZED

Castillo, R., Grazzi, M., & Tacsir, E. (2014).

Women in science and technology. What does the literature say? Inter-American Development Bank Institutions for Development, Technical note No.

IDB-TN-637

Chair. C, (2017) Internet use barriers and user strategies: Perspectives from Kenya, Nigeria, South Africa and Rwanda. Beyond Access Public Policy Paper series: Policy paper 1. [online] Available at:

<http://www.researchictafrica.net/home.php?h=205>

Cummings, C. & O'Neil, T. (2015). Do digital information and communication technologies increase the voice and influence of women and girls? A rapid review of the evidence. ODI. Available:

<https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/9622.pdf>

Deen-Swarray, M. Gillwald, A. & Morrell, A. (2012). Lifting the veil on ICT gender indicators in Africa. Evidence for ICT policy Action: Policy paper 13. Available at: [www.researchictafrica.net](http://www.researchictafrica.net)

Ganesh, M.I. (2016). The new green: The landscapes of digital activism (Editorial). In: *Arrow for Change* 22(1): Sexuality, Sexual and Reproductive Health and Rights, and the Internet. Asian-Pacific Resource & Research Centre for Women. [www.arrow.org.my/wp-content/uploads/2016/08/AFC22.1-2016.pdf](http://www.arrow.org.my/wp-content/uploads/2016/08/AFC22.1-2016.pdf)

Mendonça, S., Crespo, N., & Simões, N. (2015). Inequality in the network society: An integrated approach to ICT access, basic skills, and complex capabilities. *Telecommunications Policy*, 39(3–4), 192–207.

<https://doi.org/10.1016/j.telpol.2014.12.010>



Garcia, L.S. & Manikan, F.Y. (2014). Gender violence on the Internet: The Philippine experience. APC/FMA/Dutch Ministry of Foreign Affairs.

<http://www.genderit.org/resources/gender-violence-Internet-philippine-experience>

Gillwald A (2009). Wire Less: A decade of telecommunications reform in South Africa. Doctoral thesis, Witwatersrand University (unpublished).

Gillwald, A., Milek, A. & Stork, C. (2010). Gender assessment of ICT access and usage in Africa 2010. RIA Policy Paper, Vol 1 Paper 5.

<https://goo.gl/8behvk>

Gray, T., Gainous, J., & Wagner, K. (2016). Gender and the digital divide in Latin America. Social Science Quarterly, 98(1).

<https://doi.org/10.1111/ssqu.12270>

Ikeya, C. (2005/2006). The 'traditional' high status of women in Burma: A historical reconsideration. Journal of Burma Studies, 10, 51–81

ILO (International Labour Organization). (2016).

Las mujeres en el trabajo: Tendencias de 2016. Organización Internacional Del Trabajo International Telecommunication Union (ITU). (2017). ICT Facts and figures 2017. <https://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2017.pdf>

Jensen R. (2007). The digital provide: Information (technology), market performance, and welfare in the South Indian fisheries sector. Quarterly Journal of Economics 122 (3):879-924.

Kawanami. (2007). The bhikkhuni ordination

debate: Global aspirations, local concerns, with special emphasis on the views of the monastic community in Burma. Buddhist Studies Review 24 (2): 226–244

Kovacs, A. (2017). 'Chupke, Chupke': Going behind the mobile phone bans in North India.

[https://genderingsurveillance.Internetdemocracy.in/phone\\_ban/](https://genderingsurveillance.Internetdemocracy.in/phone_ban/)

Kularski, C. M., & Moller, S. (2012). The digital divide as a continuation of traditional systems of inequality. Sociology, 5151(December), 1–23.

<https://doi.org/10.1017/CBO9781107415324.004>

LIRNEasia. (2011). Teleuse at the Bottom of the Pyramid 4 [Dataset]. Available from <http://lirneasia.net/farmhouse/projects/2010-12-research-program/teleusebop4/>

Lwanga, S.K.; Lemeshow, S. & World Health Organization. (1991). Sample size determination in health studies : a practical manual / S. K. Lwanga and S. Lemeshow. Geneva : World Health

Organization. <http://www.who.int/iris/handle/10665/40062>

Ñopo, H. (2008). Matching as a tool to decompose wage gaps. The Review of Economics and Statistics, 90(2), 290–299  
Perampalam, S., Zainudeen, A. & Galpaya, H. (2016). Understanding gender variance in mobile ownership in Myanmar. Paper presented at

CPRsouth 2016: Inclusive Innovation, 8–10 September 2016, Zanzibar.

[http://www.cprsouth.org/wp-content/uploads/2016/09/CPRsouth-2016\\_PP88\\_Perampalam.docx](http://www.cprsouth.org/wp-content/uploads/2016/09/CPRsouth-2016_PP88_Perampalam.docx)



Robinson, L., Cotten, S. R., Ono, H., Quan-Haase, A., Mesch, G., Chen, W., Schulz, J., Hale T.M. & Stern, M. J. (2015). Digital inequalities and why they matter. *Information, Communication & Society*, 18(5), 569–582.

<https://doi.org/10.1080/1369118X.2015.1012532>

Rohman, K.I. (2012). Will telecommunications development improve the quality of life in African countries? *Info*, 14(4): 36–51

Roller, L. & Waverman, L. (2001).

Telecommunications infrastructure and economic development: A simultaneous approach. *The American Economic Review*, 91(4): 909–923

Sein, D.M. (1972). Towards independence in Burma: The role of women. *Asian Affairs* 3(3).

<https://www.tandfonline.com/doi/abs/10.1080/03068377208729635>

Sridhar, K.S. & Sridhar, V. (2008).

Telecommunications infrastructure and economic growth: Evidence from developing countries. *Applied Econometrics and International Development*, 7(2).

<https://ssrn.com/abstract=1250082>

Tepe-Belfrage, D. & Steans, S. (2016). The new materialism: Re-claiming a debate from a feminist perspective. *Capital & Class*, vol. 40(2): 305-326.

UNESCO (2015). *CONNECTing the dots: Options for Future Action* (Outcome document). Paris: UNESCO.

UNGA (United Nations General Assembly). (2015). 2030 Agenda for Sustainable Development. United Nations General Assembly resolutions.

<http://www.un.org/en/ga/72/resolutions.shtml>

Wang, R. (2015). Internet use and the building of social capital for development: A Network Perspective. *Information Technologies & International Development*, 11(2).

<file:///C:/Users/LizSparg/Favorites/Downloads/1395-3883-1-PB.pdf>

Zainudeen, A. & Galpaya, H. (2016). Mobile phones, Internet, and gender in Myanmar. Report of a joint GSMA Connected Women-LIRNEasia study. London: GSM Association.

<http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2016/02/Mobile-phones-Internet-and-gender-in-Myanmar.pdf>

Zainudeen, A., Iqbal, T. & Samarajiva, R. (2010). Who's got the phone? Gender and the use of the telephone at the bottom of the pyramid, *New Media and Society*, 12: 549

66. <http://nms.sagepub.com/cgi/content/abstract/12/4/549>

Zainudeen, A., Galpaya, H., Hurulle, G. and Perampalam, S. (2017). Mobile phones, Internet, information and knowledge: Myanmar 2016. <http://lirneasia.net/wp-content/uploads/2017/09/Mobile-phones-Internet-information-and-knowledge-Myanmar-2016.pdf>

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