Toward Gender Equity Online

Research with the Next Billion Users

April 2019

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Introduction

**A gender-equitable Internet
is good for everyone.**

The Internet is more affordable and accessible than ever before, but it is not gender equitable.[1] A billion more people from countries like India, Indonesia, and Nigeria are coming online. But there is a gender gap. The Information Telecommunications Union estimates that the proportion of men using the Internet is higher than women in two-thirds of countries worldwide.[2]

The United Nations' Sustainable Development Goal 5 calls for action to "achieve gender equality and empower all women and girls." The Internet's expanding reach makes it a critical tool in achieving that goal. As technology makers responsible for guiding the direction of online apps and platforms, it is our job to address this challenge. A gender-equitable Internet is good for everyone. When a diverse group uses the Internet, the online world becomes relevant and useful to more people.

In this report, we present global research insights on the experiences of the next billion women online. Gender is internal and non-binary. We spoke with people across the gender spectrum, including cis women, trans women, and men, to capture diverse voices. Based on the research, we identify core challenges to equitable participation and offer analysis to inform technology creators and the public. This report will further the conversation toward an Internet that is equitable for everyone.

*Participants are not reflected in the photos in this report. All names are pseudonyms.

1. ITU releases 2018 global and regional ICT estimates (2018, December 08). https://www.itu.int/ en/mediacentre/Pages/2018-PR40.aspx
2. ITU Facts and Figures (2017). https://www.itu.int/en/ITU-D/Statistics/Documents/facts/ ICTFactsFigures2017.pdf

Why does gender equity online matter?

Our research spans seven countries: Bangladesh, Brazil, India, Indonesia, Mexico, Nigeria, and Pakistan.

Our methodology includes interviews with 363 participants and surveys with 3,618 respondents. Participants range from new mothers to farmworkers to Ph.D. students. We include male partners, family members, coworkers, and friends in order to understand their roles in women's online experiences.[3] While most of our participants are cisgender, we also spoke with transgender women.[4] We draw from diverse voices and life experiences across gender and sexual identities, social classes, physical abilities, ages, locations, and value systems. For details on our methodology, refer to the report appendix.

What are the challenges facing gender equity online?

We highlight four main challenges to gender equity online from our research: Access, Content & Community, Privacy, and Safety.

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3. Our sample was roughly 80% people who identified as women and 20% men. Our results aren't comparative across women v. men, and the term "participants" refers to women participants unless explicitly stated. The research methodology is discussed in detail in the appendix.
4. Most of our interview respondents are cisgender women. We included respondents who self-identified as lesbian, gay, bisexual, trans women, or queer (LGBTQ+) when asked about their sexual and gender identities. We are faithful to the personal pronouns and identities used by participants when we quote them. Our study has low representation of LGBTQ+ individuals because we interviewed them only when we were confident about ensuring their safety in local contexts. Our analysis of gender and sexual identities is therefore only directional (refer to our research methodology for more details).

01 Access

Can women go online on their own terms?

Many women in our research have limited agency, mobility, and time to access the Internet. The Internet is sometimes perceived as a threat to women's roles and reputations. Accessing the Internet in low-connectivity regions often requires travel, but physical mobility can be constrained for women. Women with significant domestic responsibilities say they have little free time to spend online.

"If I go online in the middle of the night my boyfriend tells me, 'Oh, I saw that you were online really late.'… And now I don't go online much."

Maria-Ines, a 25 to 30-year-old lawyer in Colima, Mexico, on the perceptions women face when they go online.

02 Content & Community

When women come online, do they find relevant content?

The Internet is full of content and communities—blogs, videos, social media conversations, and more. But women often struggle to find relevant content or supportive communities online. The expectation of harassment and misogyny leads to less content creation by women. And even when content does exist, it can be hard to find because recommendation algorithms are often trained on male-majority data.

"I have not come out to my family. The Internet really helped me… I saw a lot of coming-out videos and felt there were people like me. Likes this is really me."

A woman in India who identifies as bisexual, on the difficulty of finding relatable role models online.

72% of women survey respondents said the online availability of a relatable role model would be useful.

03 Privacy

Do women feel in control of their online and offline identities?

Organizations commonly think of privacy as the management of online identity. Women often share their devices with friends and family and need to create privacy practices that allow them to share those devices comfortably. For example, women use app locks or delete their search history. And while many online experiences require personal information like name and phone number, women are often uncomfortable disclosing this information.

> "When I watch a video that is little bit not nice, then I search for 5-6 other videos on different topics to remove it."

Shaina, a 35 to 40-year-old medical representative in Kanpur, India, on algorithmic 'hacking' to manage recommendations on shared accounts.

Practices used to maintain device privacy

Both covert (e.g., deleting content) and overt (e.g., app locks) privacy practices are used in device sharing by men and women.

● Women ○ Men

Using a phone lock
50%
47%

Using app locks
41%
37%

Avoiding specific apps
38%
34%

04 Safety

Do women feel safe online and offline?

New technologies can improve the lives of women by giving them the tools they need to stay connected. But these tools can also create safety concerns. Women frequently experience online abuse like cyberstalking, impersonation, and personal content leaks. Consequences of online abuse can be severe, leading to real-world repercussions like reputation damage and physical violence. Physical harassment is a significant problem, especially in public spaces. Women rarely report abuse to online platforms or authorities. Instead they limit participation online and turn to family members for support.

> "Sharing a girl's picture online may not be a big deal for U.S. people, but a fully-clothed photo can lead to suicide here in conservative regions of Pakistan."

Raheela, a 25 to 30-year-old NGO staff member at a women's safety NGO in Karachi, Pakistan, on how material that is considered abuse varies globally.

Women's responses to digital abuse

Women rarely report online abuse to technology platforms. Instead, they rely on support from family and limit their online participation.

Inform family or friends
43%

Delete the post/account
23%

Report to platforms
15%

Moving Forward

How do we achieve gender equity online?

We offer four ways to frame the case for organizations to embrace and move toward gender equity online:

- **The ethical case:** Ethically speaking, organizations have an obligation to build an Internet that benefits everyone.
- **The recruiting case:** Powerful and meaningful work attracts the best talent.
- **The business case:** Inclusive design can enable product growth, benefitting the business.
- **The technical case:** Addressing gender equity fosters technical innovation.

We also offer actions organizations can take to educate themselves about gender equity:

- **Measure gender:** Gather qualitative and quantitative metrics to understand how usage differs by gender.
- **Conduct gender-focused research:** Facilitate gender-specific interviews, including speaking to allies, and work with local NGOs.
- **Analyze existing data:** Use a gender lens to examine the data you already have to complement new data you collect.

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01
Access

Can women go online on their own terms?

We know from existing research that women have less access to the Internet than men due to factors including affordability, literacy, and social norms.[5][6] The size of this gender gap varies worldwide but it is most pronounced in South Asia, sub-Saharan Africa, the Middle East, and North Africa.[7] Today, access is commonly defined as having the ability to connect to infrastructure, and it is measured by metrics like the number of data subscribers and device owners.
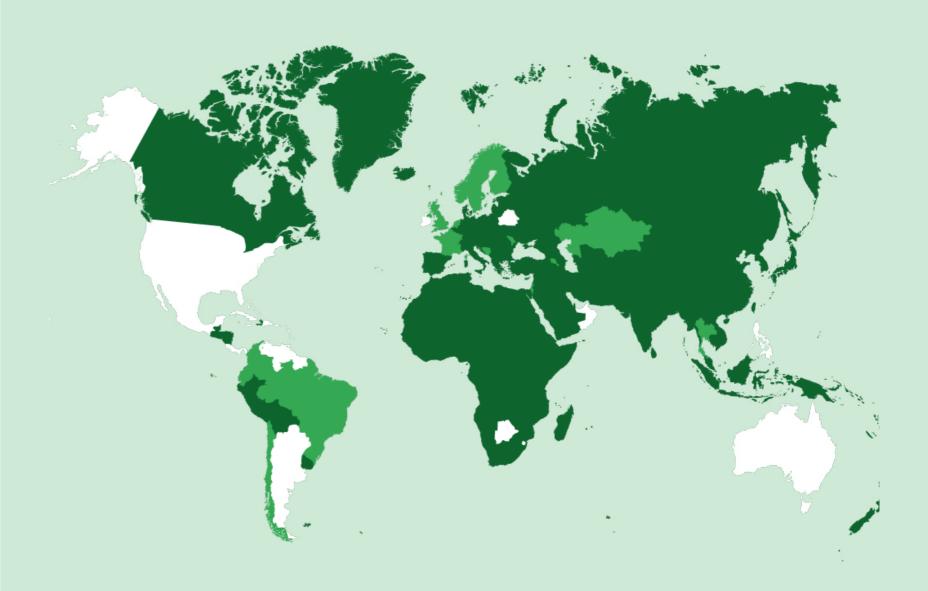
Our research reveals that this definition is inadequate. Having access to infrastructure isn't enough. Instead, we propose thinking about access as the ability to go online on one's own terms. A person should be able to control when, where, and how they connect. Moving beyond infrastructure, our research shows that a person's agency, mobility, and daily routine are critical factors that determine their ability to go online.
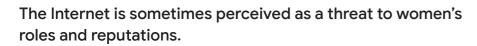
5. GSMA (2018). Connected women: The mobile gender gap [PDF]. Retrieved from https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2018/04/GSMA_The_Mobile_Gender_Gap_Report_2018_32pp_WEBv7.pdf

6. Intel (2013). Women and the web: Bridging the internet gap and creating new global opportunities in low and middle income countries [PDF]. Retrieved from https://www.intel.com/content/www/us/en/technology-in-education/women-in-the-web.html

7. ITU Facts and Figures (2017). https://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2017.pdf

Proportion of individuals using the Internet, by gender (ITU 2017)

This represents online gender gaps around the world as measured by the International Telecommunications Union. Higher and lower rates are defined as difference in reported usage.

● Higher rates males   ● Higher rates females   ○ Equal rates

ITU Facts and Figures (2017). https://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2017.pdf
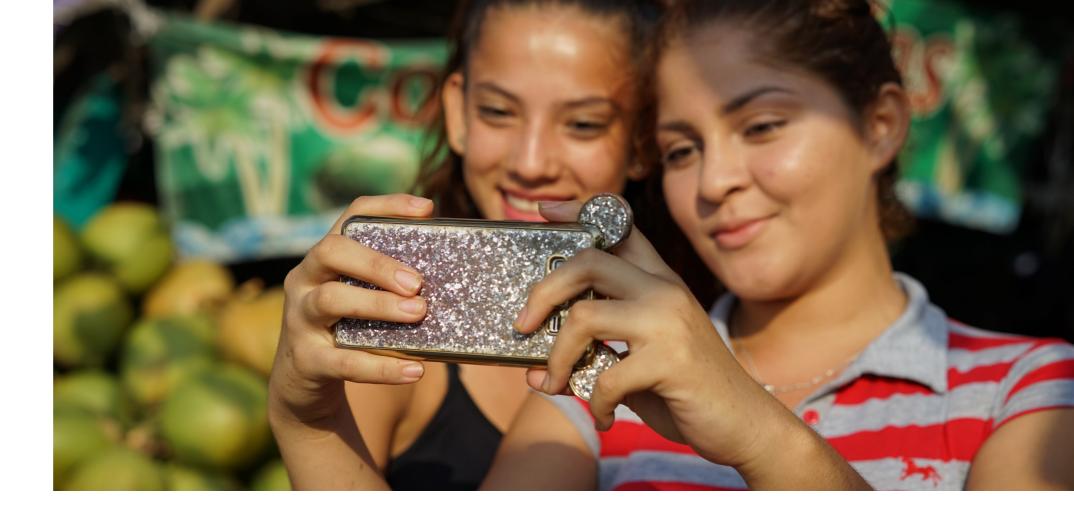
Agency constraints

The perception that the Internet provides greater agency leads to restrictions imposed on women's access.

The Internet is sometimes perceived as a threat to women's roles and reputations.

The Internet offers various benefits: it reduces time for tasks, allows access to more information, and enables us to connect with people across the globe. Yet the Internet can also be perceived as a threat. In our study, well-meaning family members worry about women's exposure to the broader world as well as their online safety and the potential for distraction from their socially-accepted responsibilities. In many cases, the women themselves worry about these things. These perceptions lead to restrictions that limit the agency of women online. Women's online time can be regulated, money for Internet usage rationed, and devices sometimes banned. These actions undermine women's ability to access the Internet. Women told us that they are often judged more harshly than their male counterparts for spending extended periods of time online, which manifests through verbal abuse and physical violence in extreme cases.

Exposure to social and user-generated content can be perceived as enabling young women to be promiscuous.

Some of our men and women participants think the Internet can "spoil" women, especially young women, via indecent use of social networks (like chatting with opposite-gender contacts), or seeing explicit content online (like a scandalous video). In extreme cases, Internet use is associated with promiscuous behaviors like having an affair. In these contexts, apps can develop reputations for enabling morally objectionable behavior.

Women face subtle, and sometimes overt, limitations to going online.

The time that women spend online is sometimes restricted by their family and community, often in subtle ways. When women hear comments about perceived inappropriate use, they often self-restrict their Internet time. Many women get around these social restrictions by using devices out of sight, such as when in-laws or husbands are in a different room. In severe instances, restrictions include limiting money to go online or even banning phone use.

How women go online when agency is restricted

- Saying they're going online to investigate topics deemed acceptable
- Going online in private spaces to avoid judgment from people nearby
- Relying on other people to access websites or apps on their behalf
- Avoiding going online

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8. All names are pseudonyms. Read more about our anonymization process in the appendix.

"If I go online in the middle of the night my boyfriend tells me, 'Oh, I saw that you were online really late.' Eventually he says, 'Who was writing to you so late? It's not a proper time to be online.' And now I don't go online much. Not because it is bad but to avoid suspicion from him."

Maria-Ines,[8] a 25 to 30-year-old lawyer in Colima, Mexico, on the perceptions women face when they go online.
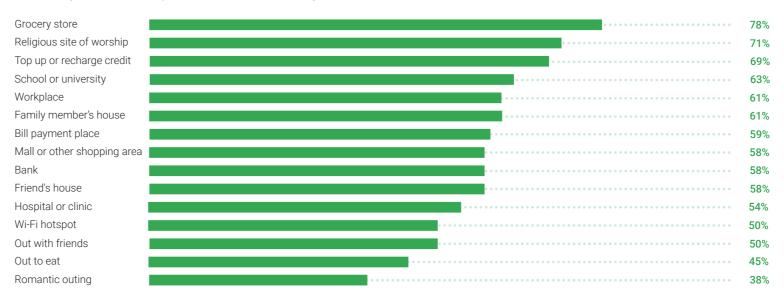
Mobility constraints

Limitations on women's physical mobility impact their ability to use outdoor services like Wi-Fi and their ability to find mobile data coverage.

Women's mobility and solo travel

Percentage of female respondents who are free to go to each destination alone

Destination	Percentage
Grocery store	78%
Religious site of worship	71%
Top up or recharge credit	69%
School or university	63%
Workplace	61%
Family member's house	61%
Bill payment place	59%
Mall or other shopping area	58%
Bank	58%
Friend's house	58%
Hospital or clinic	54%
Wi-Fi hotspot	50%
Out with friends	50%
Out to eat	45%
Romantic outing	38%

"Which of these activities are you free to do alone when you want, which ones do you need to ask permission to do alone, which ones do you need to be accompanied, and which ones are you not allowed to do?" Responses shown for "free to go alone if I want." Other response options were "permission required, accompaniment required, and unable to do." n= 2,856 women across 7 countries. Unable to measure statistical significance since there is no comparison to men on this question. In general, travel to destinations that align with gender expectations (e.g., caregiving) is more acceptable than travel for entertainment. Our hypothesis for the difference between the numbers for mobile top ups and Wi-Fi hotspots is that top up shops are more ubiquitous than Wi-Fi hotspots, and Wi-Fi hotspots are located in public spaces that are often restricted to women.

> "We have an ACM programming lab. Boys can work up to 10 or 11 p.m., but girls can not. Provost gets angry [if they do]. There is a difference in social culture for girls. They can not move around at night."

A 50 to 55-year-old professor in Sylhet, Bangladesh, on unequal curfews for women hampering productivity and success.

Using the Internet often requires travel, but physical mobility is constrained for many women.

Internet access often requires travel to a physical place, especially in regions where Internet penetration is low or home broadband is unaffordable. In our research, some women need permission to participate in some activities outside the home. Permission often isn't required for socially acceptable tasks like grocery shopping, but tasks that aren't socially acceptable face higher mobility restrictions. For some women, Internet usage is not socially acceptable and travel to purchase mobile data or travel to visit Wi-Fi is more likely to be restricted. Technologies that depend on physical mobility are difficult to use for women who face mobility restrictions.

Concern for physical safety is a key factor in mobility restrictions.

Self and socially-imposed restrictions are frequently rooted in safety concerns such as a father setting a curfew for his daughter returning from studying at her college's computer lab. Internet access at home can help this studious daughter and other women facing similar safety issues. Using technology, women can accomplish tasks like banking, learning, and shopping at any time

of day, all from the comfort and safety of their home. But in this sense, home access can also continue to justify existing mobility restrictions. If women can accomplish tasks from home that previously required physical mobility, there is no need for them to venture into an outside world that is sometimes perceived as dangerous. Technology can be a simultaneous benefit and disadvantage.

Limited mobility can reduce financial independence.

When women's physical mobility is limited, their employment options are often restricted — they work fewer hours or commute shorter distances.[9] Sometimes employment is ruled out entirely. When employment is limited, there is less financial independence and fewer resources to use technology.

How women overcome mobility constraints

- Traveling with family members or companions
- Relying on others for tasks, such as buying top-ups or paying bills on their behalf
- Modifying behavior to travel during the daytime

9. India Spend. (2016, April 9). How To Get India's Women Working? First, Let Them Out Of The House. Retrieved from https://archive.indiaspend.com/cover-story/how-to-get-indias-women-working-first-let-them-out-of-the-house-74364

"I have to do all the housework, cleaning, bathing kids, teaching them. I am so tired... I really want to use my phone, but where is the time?"

Tasneem, a 35 to 40-year-old accountant in Karachi, Pakistan, on housework demands leaving little time for phones.

Time constraints

Women often have limited free time to go online due to gender roles.

Women who are caregivers report limited time to spend online.

Women in our research say they often have less time to go online than men. Women across social classes are typically responsible for housework and childcare even after a regular day's labor inside or outside the home. At lower incomes, women perform these tasks themselves out of economic necessity. At higher incomes, women often manage hired help and household labor.

How women overcome time constraints

- Going online when there's respite, such as noon breaks or after the entire household is asleep
- Using the phone as a background activity during tasks

Time spent on housework

Women	3.8 hours/day
Men	1.5 hours/day

"How much time do you spend on housework (including cooking, cleaning, laundry, childcare) in a day?" n=2,856 women and 762 men across 7 countries. Statistically significant at 95%. Compared to men, women spend significantly more time on household labor.

02
Content & Community

Can women find, create, and share relevant content online?

We define "content" as any kind of user-generated material: comments, posts, messages, videos, audio, blogs, articles, and more. But the mere existence of content is not sufficient. Content should be relevant and specific to its users. Relevant content — information that's available in the local language and specific to the region[10][11] — is typically measured by how much of it exists. We argue that other factors should also matter. Is the content fairly surfaced? Can all users create and interact with content comfortably? How easy is it to find a particular community online?

The type and amount of online content does not always mirror content in the physical world. Offline, we are surrounded by a wealth of content – from a physics teacher's explanations to a neighbor's gardening tips. To find content that's not readily available in the physical world, women often turn to the Internet. In our study, discoverability of relevant content is an issue for a variety of reasons, including the methods by which information is surfaced and the way search terms can differ by region. Additionally, women are hesitant to create online content. They refrain from posting on social media, commenting in forums, or asking questions online because of personal safety concerns.

In addition to informational content, female-centric communities that are often found offline, like housewives' circles and Ph.D. student groups, are less represented online. Since offline communities provide solidarity and support to members, they often produce valuable, trustworthy content. However, the content may not exist in abundance or is hard to discover online.

10. The inclusive Internet index: Measuring success 2018 (2018). Retreived from https://theinclusiveinternet.eiu.com/explore/countries/performance
11. GSMA. (2015). Bridging the gender gap: Mobile access and usage in low- and middle-income countries [PDF]. Retrieved from https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2016/02/GSM0001_03232015_GSMAReport_NEWGRAYS-Web.pdf

Worry about negative consequences when creating content online

● Women   ○ Men

Posting on a private social group
23%
20%

Posting on a public social group
23%
20%

Creating a social media post
21%
19%

Commenting on a social media post
20%
16%

Asking a question on social media
20%
15%

Commenting on a video
18%
15%

"How worried are you about negative consequences in doing the following online?" Responses shown for "very or somewhat worried." n=2,856 women and 762 men across 7 countries. Commenting on a social media post, asking a question on social media, and commenting on a video are statistically significant at 95%. Posting on a public social group is statistically significant at 90%. In general, women report greater hesitation in creating content like posts, comments, and questions.

Relevant content surfacing

Due to access gaps, relevant online content is not always surfaced to women.

Recommendation algorithms and human curation may bias towards men.

Optimizing for the aggregate user base inherently disenfranchises any minority group. In environments where men dominate the roles of author and audience, online curation—by a human, social network, or algorithm—biases toward them.[12] Machine learning typically uses large annotated data sets to train its algorithms. Since more men are online than women in many countries, these data sets are not created equally. Because machine learning is used increasingly in feeds, searches, and recommendations, these surfaces often favor men as the majority user. Human curation, by individuals or groups, can also lead to biased decisions if they are based on gender-imbalanced data or rooted in unconscious bias. What results is men's content preferences influencing the content recommendations presented to all Internet users. While relevant content for women may exist online, women's interests are down-weighted by curation that optimizes for total popularity.

Algorithm workarounds may arise from unclear control options.

Women may be uncomfortable providing feedback to algorithms, so curation bias persists. Women's discomfort often stems from technical literacy constraints or hesitation to offer personal feedback. For example, Shaina, a mother in Kanpur, India, finds it difficult to control a video site's recommendations after watching risqué videos. Shaina "searches for five to six other videos on different topics" to stop the site from recommending more risqué videos.

Even when content exists, semantic mismatches may reduce discovery.

Semantic mismatches between how platforms and users describe content can increase the challenge of finding relevant content. What a system might categorize as "domestic violence" content, a user in Nigeria might refer to as "beating."

How women find relevant content

- Relying on friends and family for content
- Sharing content targeted to their needs only with other women

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12. Sambasivan, N., Holbrook, J. Towards Responsible AI for the Next Billion Users. ACM interactions 26(1), 68-71.

"I was looking for makeup ideas for babies for birthday parties. I didn't find anything I liked online so I asked my friends to send photos of their baby parties."

Kalaiselvi, a 30 to 35-year-old bank employee in Chennai, India, on the challenges of finding relevant content online.

Community as content

Offline communities are not easy to
create or find online.

"I have not come out to my family. The Internet
really helped me. I felt very alone and asked
if I was normal. I saw a lot of coming-out
videos and felt there were people like me.
Like this is really me."

A woman in India who identifies as bisexual,[13] on the
difficulty of finding relatable role models online.

**Online communities offer women emotional support
and niche information, particularly for marginalized
communities.**

Communities support us by reflecting shared values and by acting as
trustworthy sources of important information. Online communities, when
available, allow people to make connections not possible in the physical
world: a tennis player in Surabaya, Indonesia can connect with international
sportswomen; a physics Ph.D. student in Lagos, Nigeria can meet global
science colleagues.

Online communities often provide more confidentiality for discussion.
Since offline communities can be reluctant to discuss socially-sensitive
topics like education, motherhood, and sexual health, women turn to online
communities to learn more.

In Nigeria, for example, some participants describe getting critical
medical advice from private HIV-positive digital communities. In India,
LGBTQ+ members from smaller towns describe how finding a community
online was transformational.

**72% of women survey respondents said
the online availability of a relatable role
model would be useful.**

"How useful would it be for you to have role models like this available on
an Internet site or via an app?" Responses available were "very useful,
somewhat useful, slightly useful, and not at all useful." Responses shown
for "very or somewhat useful." n=2,856 women across 7 countries.

But many women in our study are unable to find online communities
discussing these important issues because those groups usually thrive on
social media platforms. Discovering groups on social media can be more
difficult than finding them on the open Internet. Online communities can also
present new risks to already marginalized groups, like issues with the law and
the stigma associated with greater visibility.

Relatable and local role models are hard to find online.

Women often have role models from their social circles who share similar
values, such as being a good mother or keeping to a tight budget. But there
aren't many role models for upward mobility or aspirations. Online content
often features Western women and does not speak specifically to local
concerns. The situation is more acute for women making nontraditional
social, education, or career choices. Role models show concrete examples
of success in these new frontiers for a woman, her family, and her social
circle. For more on the importance of relatable role models for women in
STEM fields, see other work from this research team.[14]

How women create community as content

- Seeking out women-only groups and safe spaces via moderation
- Inviting members by signaling, e.g., signs for HIV-positive or LGBTQ+
  through subtle profile images

13. We take extra steps to protect sensitive identities by using pseudonyms, age ranges, and
    reporting country names only.
14. Thakkar, D., Sambasivan, N., Kulkarni, P, Kalenahalli Sudarshan, P., & Toyama, K. (2018, April).
    The Unexpected Entry and Exodus of Women in Computing and HCI in India. In Proceedings
    of the 2018 CHI Conference on Human Factors in Computing Systems (p. 352). ACM.

Content creation reluctance

Women often are supported in consuming rather than creating content due to fear of harassment, misogyny, and limited community online.

Abuse and harassment of women discourages content creation.

In our research, women are more comfortable consuming and sharing content, rather than producing it. Even in Brazil and Mexico, where there is equal Internet access between genders, women express discomfort with creating online content, which curtails their online participation and makes them less visible online.

Women often face harassment, judgment, and other antagonistic behaviors when they create content, especially in forums open to public comment and response. Many women are more comfortable posting in closed groups rather than in open platforms due to a sense of control of the audience. Women are commonly concerned about trolling, misogyny (especially for feminist views), and unsolicited sexual advances.

Women frequently choose to create content in safe, closed spaces, or they reduce their participation.

Women feel safer asking questions in invitation-only chat groups with familiar members (like women-only groups), rather than the open Internet. This reality

reinforces the lack of relevant content on the open web. Many women think twice before posting in forums and make sure before they post that they will not be harassed. Some women report that their male family members influence their online contributions by asking the women to post "safe" content. Because they engage less frequently, women are less visible online. Furthermore, women have little incentive to become more visible on various platforms given digital harassment risks. NGOs offer good content for female communities but often struggle with online visibility and digitization. In this way, the creation issue becomes cyclical – content created by men tends to draw a male audience.

How women overcome content creation reluctance

- Asking male contacts to post on their behalf
- Posting through pseudonyms or anonymous IDs
- Moderating comments aggressively in closed groups

"I write a beauty and diet blog. I often get dick pics and sex messages in comments. If I reply I will get some more. Sometimes I regret having the blog."

Valentina, a 25 to 30-year-old blogger in Vittoria, Brazil, on online harassment on her blog posts.

Suggested content gaps to cover

Based on our research, here are some content topics to create and surface more often. This list is by no means exhaustive.

Empowering content

Money and livelihood
Internet job searches are reported to rarely result in jobs because the opportunities were scams, offered inflexible work hours, or led to vulnerable situations like rape or kidnapping. Women are often looking for ways to make money from home or work part-time. Basic financial literacy, savings practices, and how to keep money secure and private needs to be surfaced more often.

Education and skill development
Women are typically responsible for their children's education, including daily tutoring, exam preparation, school selection, and career decisions. It would be helpful to surface information about developing their caretaking skills, as well as basic career skills. There's little content available on how women can start and sustain small businesses, but such information is necessary if women are to overcome societal obstacles. Women role models with successful careers can also be hard to find online. In addition, it would be helpful to surface educational content. Many women are looking for formal and informal training to upskill in their free time (for example, tailoring, soapmaking, and crafts).

Sensitive content

Health and wellness
Women are sometimes responsible for the family's health needs, and they often desire local remedies. For example, a woman in Colima, Mexico might prefer a headache remedy that makes sense in her region rather than relying on general information found online. Similarly, women have their own health needs and often struggle to make time for their well-being. Certain life stages and events, such as becoming sexually active, deciding to have a sex transition, or experiencing menopause, are lonely and taboo to discuss. Many women fall back on hearsay advice. Facts and local information are needed, as inaccurate information is rampant for high-risk health needs.

Relationships, identity, sex, and abuse
Women may be particularly hesitant to open up about the topics of sex and domestic violence which leads to vulnerability because knowledge is assumed. Discussing sexuality and identity can have legal consequences (LGBTQ+ relations are criminalized in 70 countries[15]), and concerns that a discussion will lead to blackmail are high. Legal rights, medical procedures, and communities are hard to access. Support systems like NGOs are great but not always discoverable or available. Finding a larger community for sensitive groups is important as long as it protects participants from shaming and threats. The Internet can be a safe haven here.

Online safety and privacy
As women are especially prone to abuse and risk, tips on maintaining online safety and privacy may be keen needs. Related information and tools are often technical. This is discussed more in the next two chapters.

Cultural content

Forms of cultural expression such as food, beauty, clothing, and decoration, were top information needs in our study. Women also exhibit a significant need for information about religion. When shopping online, discounts, limited-time offers, and good-quality products aren't easy to find. In societies where women are typically tasked with cooking, easy and efficient recipes play an important role.

15. Mendos, L. (2019). International Lesbian, Gay, Bisexual, Trans and Intersex Association. State-Sponsored Homophobia. Retrieved from: https://ilga.org/downloads/ILGA_State_Sponsored_Homophobia_2019_light.pdf

03
Privacy

Are women in control of their online and offline identities?

Although "privacy" has several definitions, it's generally understood to be a person's right to control access to their personal information.[16] The desire for privacy remains true even as *what* is considered private varies by context.[17] In our research, many women see a relationship between their online identity and offline experiences. Some women report that revealing their full name online could lead to stalking online and offline. Others worry that friends or family members will react negatively if their devices show that they have viewed sensitive information. For example, if a woman browses images related to her body online, it could be perceived by people around her as a violation of gender expectations. Whether or not a particular online action is a violation relies on the social norms and the varying sensitivities of a particular setting.

To maintain their privacy, women generally self-regulate and manage their digital information (e.g., the things that make you, *you;* like name and gender) and content traces (e.g., the things that you do; like the websites visited or videos watched) online and on their devices.

By and large, the phones of the women in our study are shared, mediated, or monitored by family members. This is especially true across lower to middle incomes. When sharing devices, privacy is a constant concern.

Privacy for digital technologies is usually designed in accordance with an organization's values, but these values differ around the world. In our study, we found that even the term "privacy" had varying connotations and associations. In South Asia, our research showed that "privacy" can be associated with Westernization and is in conflict with local sociocultural values like sharing and openness. Despite these views, women still use various privacy practices.

16. Westin, A. F. (1968). Privacy and freedom. Washington and Lee Law Review, 25(1), 166.
17. Nissenbaum, H. (2004). Privacy as contextual integrity. Washington and Lee Law Review, 79(1), 119.

62% of women had someone else set up their smartphone, compared to 36% of men.

"Who set up your smartphone?" Myself: 38% women, 64% men. Other options were "someone at the store, my spouse or girlfriend/boyfriend, other family member or friend." n=2,738 women and 741 men across 7 countries. Statistically significant at 95%.

Discomfort with sharing personal information online

● Women   ○ Men

Phone number
53%
38%

Full name
43%
27%

Gender
26%
12%

"How comfortable do you feel revealing the following information about yourself online?" Responses shown include very and somewhat uncomfortable. Women report they are uncomfortable sharing personal identity information online. n=2,856 women and 762 men across 7 countries. Statistically significant at 95%. An expanded version of this chart is available later in the "Online Privacy" section.

"When I watch a video that is little bit not nice, then I search for 5-6 other videos on different topics to remove it."

Shaina, a 35 to 40-year-old medical representative in Kanpur, India, on algorithmic 'hacking' to manage recommendations on shared accounts.

Device Privacy

Women create practices and workarounds to maintain privacy on devices that are shared, mediated, or monitored.

Devices are often shared, mediated, or monitored.

In our study, personal devices are rarely used by only one person. Due to gender norms and expectations, women share their phones frequently with family members for a variety of reasons. As a result, most women in our study create strategies to help them manage their individuality and privacy. These strategies uphold social norms but still provide individual privacy. For example, some women in our study delete their search queries immediately after browsing sensitive information to make sure the next person using the phone would not see their search results.

Three primary behaviors motivate device privacy:

- **Shared use:** Shared device use can be beneficial, as it increases access in a family and aids in technology literacy through peer-to-peer learning. These activities, however, may also foster intentional or unintentional monitoring.
- **Mediated usage:** Women often give their phone to a person with more technical skills to set up or enable a digital experience for them (e.g., a daughter might search for and play a video for her mother). For some women in our study, it is common for a husband or brother to load content for her. In these instances, mediated usage enables women to access technology, yet their autonomy and privacy is still potentially reduced by creating dependencies.
- **Monitoring:** Some women don't view monitoring (when someone checks on a device) as surveillance. Many women say that monitoring - frequently conducted by men and elders in our study - is acceptable because it wards off online abuse or provides tech help. In other cases, women modify behaviors to prevent monitoring, for example, using an app in their bedroom to avoid attention from mothers-in-law.

Women who share devices have a range of on-device privacy strategies.

When devices are shared with spouses, in-laws, children, or friends, our research participants often use a repertoire of mostly covert and some overt techniques to maintain individuality and privacy. The privacy practices are *performative* because they allow women to preserve privacy in line with social expectations. Commonly used privacy techniques in our research include phone and app locks, deleting files, and more. Privacy features are valuable but hard to discover. Technique usage varies based on the socio-economic and technological background of the participant. For more on device privacy practices, especially in the South Asian context, see other work from this research team.[18]

Shared usage challenges personal identity and account models.

The fundamental features and models of technology, such as user accounts, personalization, and metrics, are built around the paradigm of "one user, one account." Such models often fail in device-sharing situations.

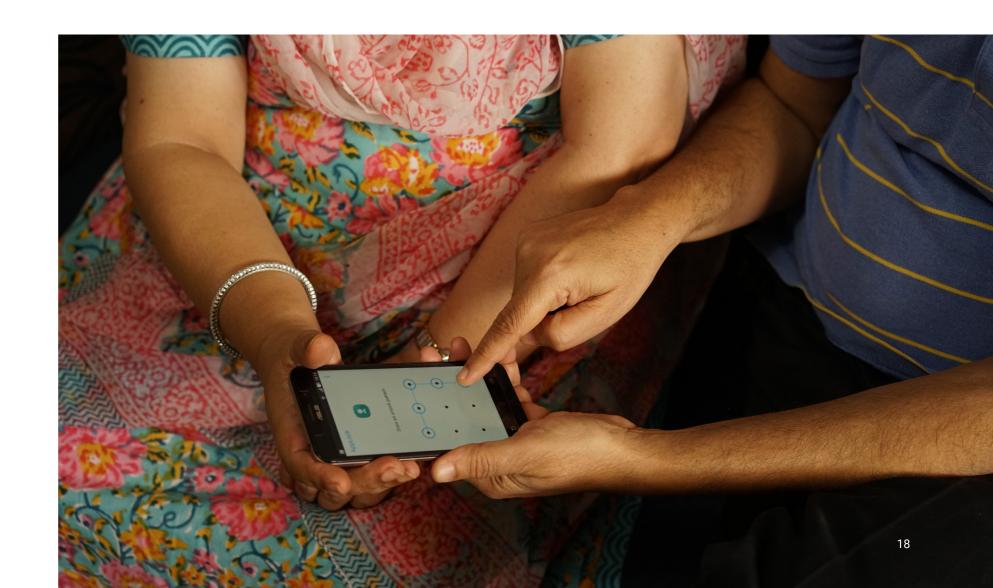**How women maintain device privacy in shared use**

- Using phone locks, which are effective if the device is stolen
- Using app locks to prevent access to specific apps, folders, and content
- Deleting queries and browser history, although finding the tools can be difficult
- Using private modes
- Avoiding the issue by not installing certain apps or engaging in certain activities

18. Sambasivan, N., Checkley, G., Batool, A., Ahmed, N., Nemer, D., Gaytán-Lugo, L. S., Matthews, T., Consolvo, S. and Churchill, E., (2018). " Privacy is not for me, it's for those rich women": Performative Privacy Practices on Mobile Phones by Women in South Asia. In Fourteenth Symposium on Usable Privacy and Security ({SOUPS} 2018) (pp. 127-142).

Practices used to maintain device privacy

● Women   ○ Men

Using a phone lock
50%
47%

Using app locks
41%
37%

Avoiding specific apps
38%
34%

Using incognito mode
30%
31%

Deleting content
23%
21%

"Please tell us how often you may do the following in case someone borrows your smartphone?" Responses include net of daily, weekly, and less than once a week. Base = Own a smartphone. n=2,738 women and 741 men across 7 countries. App lock is statistically significant at 95%; phone lock is statistically significant at 90%. Both covert (e.g., deleting content) and overt (e.g., app locks) privacy practices are used in device sharing by men and women.

Online Privacy

Women manage and control their online information (often to maintain their offline identities). These practices reflect various user values and understandings of online privacy.

"I am afraid that my photo will get copied and circulated in men's private groups. I don't put up my face on social apps."

Lavinia, an 18 to 25-year-old student in Vittoria, Brazil, on fears of expressing herself online.

Women are often more uncomfortable revealing personal information online than men.

In Western culture, digital privacy anxieties often center on the information that institutions and governments might learn about users. For women in our study, online privacy is largely a concern about *who* can access their information. The majority of women in our research worry about family, community members, and strangers having access to their online data and identity. Women with higher incomes, advanced degrees, or technology backgrounds are also concerned about institutions having that access, but this is less common.

Technologies make certain assumptions about what is acceptable for users to share. Full names, mobile numbers, and location are often deemed reasonable to disclose. Such information is used in basic features such as mobile numbers for account registration, real-name policies for profiles, and location for personalization. Yet women in our study are often uncomfortable with revealing personally identifiable information including names, gender, and location, due to fears of online attacks and threats. Norms, values, and assumptions vary across social contexts, and may be mismatched with the expectations of technology creators.

When compared to men, women more frequently withhold information or use non-identifying details.

Women frequently withhold information when signing up for apps or services by using fake names, borrowed phones, or throwaway SIM card numbers. 68% of survey respondents had a profile picture that didn't show their face. Many women described using a non-face photo to avoid photo manipulation harassment and uphold social norms.

App privacy features are not used regularly or discovered early enough.

Despite having acute online privacy needs, women in our study typically underutilized privacy features or tools, such as modifying profile settings. Instead, many women used workarounds during sign-up flows, like not giving their full name, providing a throwaway SIM card number, or using a partner's phone number. These women worry that other Internet users will gain access to their personal information through observable traces like profiles. Many women discover privacy settings only after certain negative incidents, like online stalking or unwanted attention. Women often employ local lingo borrowed from apps and services to refer to privacy features such as "blocking" and "deleting." Visual cues for maintaining privacy, such as prominent X's to delete, are more easily discovered and used. But the mechanisms to achieve privacy aren't always discoverable, made well-known, or appealing to various value systems.
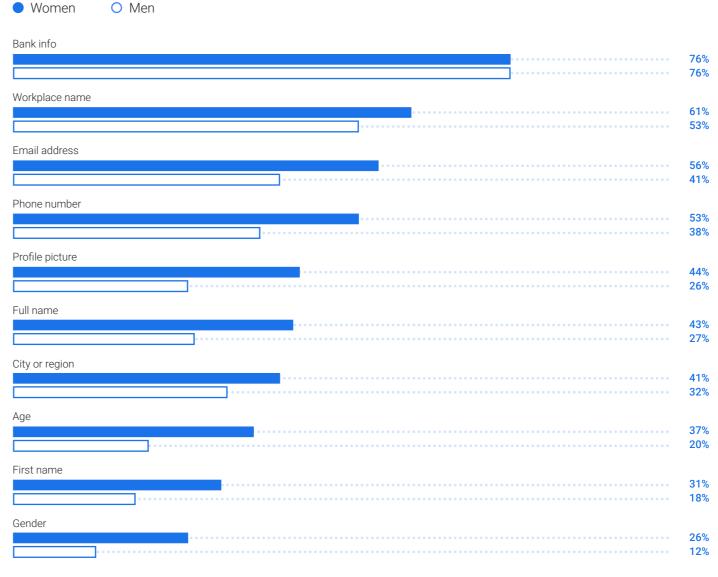
Family and friends often help manage privacy settings and defaults.

Family and friends play a crucial role in protecting privacy. Many women in our study report that concerned siblings, partners, or friends offer them privacy guidance. Such support structures are well-accepted, desired, and often provide care and protection. At the same time, such practices often put the onus on women to control and withhold themselves for safety reasons.

How women maintain online privacy

- Withholding information about self, e.g., not giving full name or phone number
- Providing inaccurate information about self, e.g., providing a throwaway SIM number
- Using a pseudonym or nickname
- Avoiding certain apps or websites because of privacy concerns
- Modifying privacy settings

Discomfort with sharing personal information online

● Women   ○ Men

Bank info
76%
76%

Workplace name
61%
53%

Email address
56%
41%

Phone number
53%
38%

Profile picture
44%
26%

Full name
43%
27%

City or region
41%
32%

Age
37%
20%

First name
31%
18%

Gender
26%
12%

"How comfortable do you feel revealing the following information about yourself online?" Responses shown include very and somewhat uncomfortable. Women report they are more uncomfortable sharing all forms of information online except for financial information (where men and women are equally uncomfortable). n=2,856 women and 762 men across 7 countries. Statistically significant at 95%. Top reasons why women are uncomfortable are unwanted attention from strangers, public abuse of personal data, and in-person attacks.

04 Safety

Do women feel safe online and offline?

Safety has been generally considered an afterthought in digital technology. But online and offline safety is an everyday challenge in most women's lives. Many women we spoke to have experienced or heard of someone enduring online abuse like sexual comments, unwanted requests, photo morphing, and rape threats. In public spaces, 52% of women have experienced physical safety-related incidents in the form of stalking, lewd comments, nonconsensual physical contact, and more. As a result, women take proactive and reactive steps to ensure safety online and offline.

While technology regularly connects women across the globe and allows them to share information, the Internet can also be used to threaten women. Apps increasingly intersect with the physical world and can make daily life easier for women, but these same apps also introduce the potential for harm by asking that women interact with unfamiliar service providers like taxi drivers or delivery agents. While technology can be a force for good and even offer a degree of protection for women (for example, enabling women to take photos of taxi license plates quickly and easily), we must also acknowledge that the Internet can pose safety threats to women.

We find that online abuse leads to consequences of high severity, like financial harm, reputation harm, and even self-harm. This is because online activities have offline repercussions especially as women's activities online are often closely scrutinized by family and society. When online abuse happens, women are often viewed as having violated certain social protocols. Due to the high usage of social media platforms, damage (e.g., morphed photos) travels virally through society, causing further harm. As a result of the negative ripple effects that can happen offline, women in our study take particular care online to reduce their exposure to potential harms. Some practices include limiting their content creation, engagement through comments, and expression of their identities.

The women in our study place limited trust in authorities like international companies, police, or enforcement teams as these groups are seen as ineffective or as perpetrators of crime themselves. Consequently, women rely on informal means of support like their family, friends, and more rarely, NGOs.

Percentage of profile pictures with non-face photos, like flowers and pets

● Women   ○ Men

████████████████ ·········	68%
███████████████ ·········	49%

"On the social network that you use the most, what is your current profile picture?" Base = All survey respondents. Responses shown include bundle of "far away picture of face, me with spouse or partner, me with children, me with friends or family, a cartoon, landscape, a child, a picture of someone else, flowers, quotes, and other." n=2,856 women and 727 men across 7 countries. All differences here are statistically significant. % not using a face photo: all women, 68%; all men, 49%. In India: women, 58%; men, 35%. In Pakistan: women, 94%; men, 53%. In Bangladesh: women, 81%; men, 23%

81% of women have phones on them during harassment incidents, of which **53%** use them to feel safe.

"Do you have your phone with you usually when these incidents occur?" Base = Women respondents harassed and with a phone. n=1,476 women across 7 countries. "Do you use your phone to feel safe during these situations?" Base = Women respondents harassed who have their phone with them when incidents occur. n=1,191 women across 7 countries.
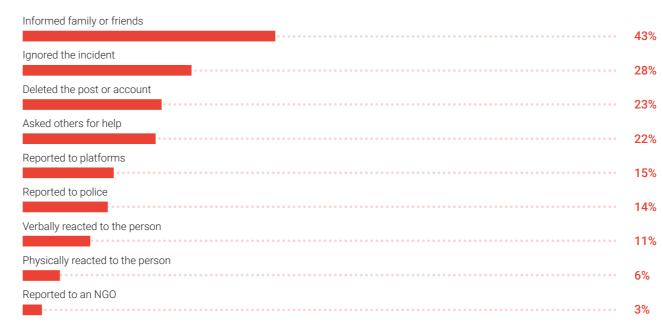
Online safety

Online abuse has high prevalence and leads to serious consequences for many women.

Women's responses to digital abuse

Informed family or friends
43%

Ignored the incident
28%

Deleted the post or account
23%

Asked others for help
22%

Reported to platforms
15%

Reported to police
14%

Verbally reacted to the person
11%

Physically reacted to the person
6%

Reported to an NGO
3%

"If you, a family member, or a close friend have experienced an incident such as those (whether mild or severe) mentioned previously, how did any of you respond?" Previous question included abuse types. Survey respondents could choose multiple answers. n=1,780 women who said they had experienced or were aware of an online incident; 1,249 women were aware of or experienced a mild incident; 1,372 were aware of or experienced a moderate incident; 851 were aware of or experienced a serious incident. The items were gathered independently, across 7 countries. Considering that a respondent may mention multiple incidents and multiple reactions, we can look only for broad correlations between incident severity and the actions taken. Women rarely report online abuse to technology platforms. Instead, they rely on support from family and limit their online participation.

> "Sharing a girl's picture online may not be a big deal for U.S. people, but a fully-clothed photo can lead to suicide here in conservative regions of Pakistan."

Raheela, a 25 to 30-year-old NGO staff member at a women's safety NGO in Karachi, Pakistan, on how material that is considered abuse varies globally.

Online abuse is common and carries serious impacts for women.

Online safety is cited as one of the biggest barriers to gender equity online.[19] Consequences of online abuse can be extreme in regions like South Asia. For example, Qandeel Baloch, a social media celebrity in Pakistan, was murdered by her brother in 2016 for posting selfies that he perceived to mar their family's honor.[20] In another incident, a woman in India named Vinupriya committed suicide after her social media profile photo was stitched to a semi-nude body and spread virally.[21] Naina Rahman of Bangladesh attempted suicide after a similar impersonation incident in 2017.[22] Many South Asian participants refer to these events as cautionary reminders of why online self-expression needs to be carefully controlled. While reputation damage incidents like these are rare, news about the damage circulates through social networks and causes women in our study to curtail their Internet use. In other regions, consequences like physical assault, emotional harm, and excessive sexualization of women's identities are brought up as concerns online.

There are three main types of online abuse that are often amplified by social media platforms.

Online abuse is a regular occurrence in our study contexts. Women report online abuse occurring primarily on social media platforms from both strangers and casual acquaintances. More marginalized communities, like gender minorities and lower income women, report greater abuse. For example, because LGBTQ+ relationships are often criminalized, online blackmail threats to reveal sexual identity, or sexual online abuses, are reported to have severe consequences.

19. GSMA. (2018). Connected women: The mobile gender gap [PDF]. Retrieved from https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2018/04/GSMA_The_Mobile_Gender_Gap_Report_2018_32pp_WEBv7.pdf
20. DAWN. (2016, July 16). Qandeel Baloch murdered by brother in Multan: police. Retrieved from https://www.dawn.com/news/1271213
21. Express News Service. (2016, June 28). Girl commits suicide after morphed pics appear on Facebook. Retrieved from http://www.newindianexpress.com/states/tamil_nadu/Girl-commits-suicide-after-morphed-pics-appear-on-Facebook/2016/06/28/article3503206.ece
22. The Daily Star. (2017, December 26). The spectre of online sexual harassment. Retrieved from https://www.thedailystar.net/opinion/society/the-spectre-online-sexual-harassment-1510252

We collate the abuse threats into three main types. Other vectors like trolling, hate speech, and extortion are reported, but less commonly.

- **Cyberstalking:** Women receive constant unwanted romantic, sexual, or personal attention online. For example, some recieve "I love you" messages from strangers attached to friendship requests. Cyberstalking is the most common threat in our study.
- **Impersonation:** Abusers create a malicious likeness of the victim without their consent. Two main impersonation types are reported. Synthetic porn: attaching pornographic imagery to someone's picture and circulating it virally to cause harm. Faking one's profile: faking an individual's profile to damage their reputation or befriending them through a fake profile.
- **Personal content leaks:** Abusers non-consensually expose the participant's online activity in unwanted social contexts. For example, fully-clothed photos are posted in undesired contexts, like porn sites, to implicate women.

To read more on online abuse in the South Asian context, see other work from this research team.[23]

Instead of using online reporting tools or going to the authorities, women often cope with online abuse through informal support like family.

Women cope with online abuse in a variety of ways. Families and friends provide the most common support systems when reporting the incident. In a few cases, we heard of family members physically retaliating against perpetrators. Women also deal with abuse by ignoring incidents or deleting online accounts.

Abuse-reporting tools aren't easy to discover because they are often buried under navigation hierarchies, or because they aren't translated into user-friendly terms. Even when the tools are found, reporting abuse to apps is often considered futile. In Brazil and Mexico, we heard that reporting is not likely to result in action because the creators of the product are physically far away from the communities.

Abuse prevention measures rely on limiting participation and expression online.

Various technology practices are used to prevent abuse. Practices include looking for mutual friends, limiting self-disclosure online, using non-face photos, using false and male identities, and avoiding platforms. Many participants across the various countries say that limiting their online presence would prevent undesired abuse.

How women maintain online safety

- Relying on family and friends for emotional support and resources
- Working with NGOs to take down abusive content and legal support
- Avoiding posting revealing personal content or information like photos online
- Using creative modes of self-expression, like puppy profile photos
- Deleting their accounts
- Creating fake profiles to avoid harassment and safely express themselves online

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23. Sambasivan, N., Batool, A., Ahmed, N., Matthews, T., Thomas, K., Gaytán, S., Nemer, D., Bursztein, E., Churchill, E., & Consolvo, S. (2019). " They Don't Leave Us Alone Anywhere We Go": Gender and Digital Abuse in South Asia. Upcoming in 2019 CHI Conference on Human Factors in Computing Systems. ACM.

Physical safety

Physical harassment is common; apps and online services can introduce new physical safety concerns for women. At the same time, technology can also help keep women safe.

Women's technology strategies in reaction to physical safety incidents

Percentage of female respondents who took each action in the previous 6 months

Called someone on the phone — **46%**

Pretended to call someone on the phone — **39%**

Called the police or other authority — **18%**

Took a picture of the abuser — **17%**

Took a picture of the license plate — **15%**

Tried to capture an audio/video recording — **13%**

Used a women's safety app — **13%**

Used location tracking on transport apps — **5%**

Used maps to know their location — **5%**

"How do you react when physical safety incidents occur?" Survey respondents could choose multiple answers. This question was asked of respondents who reported experiencing a physical safety incident in the last 6 months and used their phone to feel safe. n=633 women across 7 countries. Women's safety apps were mentioned most in Bangladesh (13%), Pakistan (22%), and India (24%), and included OLA/Uber, WhatsApp location sharing, Bsafe, Shake2Safety, Himmat, Smart24x7, Raksha, and Safetipin.

Physical safety threats are persistent and frequent. They also shape mobility, education, and employment.

In our survey, 52% of women experienced some physical safety-related incident in the past six months. In 18% of those instances, the threat was severe, like stalking.[24] A majority of these incidents occur while walking, while using public transit, and while in public spaces. Across the seven countries, women describe planning their lives around physical safety concerns; they limit travel, limit commuting, and limit their employment outside the home. Women say they are more cautious when leaving their homes in the early morning or late at night.

Phones are used as safety companions: phone calls, photos, and videos are used to deter threats and feel safe.

Calling and fake-calling are the most common strategies used by women in our survey to feel safe. In Nigeria, Zainab, a mother from Abuja, recalls an evening when she lost track of time while visiting friends. She ordered a ride-sharing taxi but worried about kidnapping since it was late at night, saying, "I checked the boot and back seat to see if anyone was hiding in there." To feel less vulnerable, she called her husband and talked to him until she reached their home. Using technology as a companion and tool for making distress calls is quite common. In our survey, 53% of women with phones on them use technology to feel safe when threatened.

Other practices like taking a photo of the potential abuser or vehicle number plates, calling authorities, and using location tracking are also used to feel safe. Such strategies deter threats, build self-confidence, enable asking for help, and provide evidence should a woman be attacked.

Police and one-touch help are often seen as corrupt, insensitive, and ineffective, and are not the first resort for safety issues.

Panic buttons (one-touch emergency buttons) that connect users to police are consistently unused or untrusted in our study (similar to other studies[25]) due

"Public spaces are scary for us. People are so transphobic, they abuse or stare at you. When I have to go home late from work in an auto, I act like I am on a call but there is no call. I say, 'Yes, daddy, yes, mummy, are you near the bus stand? I'll be there in 10 minutes.' I don't trust the police for help here. They are very negative to us, asking for sex."

A 25 to 30-year-old trans woman in India, on harassment in public spaces and from authorities.

24. "Which of the following incidents, if any, have happened to you in the past 6 months?" Options were a list of 12 real-life incidents. 52% represents respondents who answered yes to any option. Severe incidents were "men masterbating in public, men flashing their private parts, men touching your body, men stalking/following you." n=2,856 women across 7 countries. There is no statistical significance because there was no comparative question for men.

25. Karusala, N. and Kumar, N (2017). Women's safety in public spaces: Examining the efficacy of panic buttons in New Delhi. Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems, 3,340-3,351.

to perceptions of low efficacy, poor timeliness, or the sexual intent of some authorities. NGOs provide crucial safety services, especially to marginalized groups like transgender and gender non-binary people, who report discrimination from law enforcement and other formal authorities.

Apps and services that provide helplines and operate crisis centers are trusted and provide peace of mind. For example, a bus-booking service in India prints tickets with a women's helpline on top, which is appreciated by some participants in our study.

New digital services create new safety challenges by connecting women with more strangers.

As apps increasingly digitize offline activities, technology introduces new safety issues via new interactions with people and spaces. To name a few: ride-sharing apps worry women because they will be alone with a driver who will know where they live. Convenience apps that send delivery agents to women's homes to drop off groceries or medicine raise similar concerns. And some women express distrust of algorithms that allocate train and bus seat assignments without considering passenger safety.

How women maintain physical safety

- Calling or pretending to call people to show the potential harasser that there's a companion or trusted contact
- Recording identifiers like photos of people and vehicle number plates and sending this information to contacts in an attempt to create accountability for the harasser
- Using location sharing to allow close contacts to follow along
- Using maps to identify nearby safe spots, usually in unknown neighborhoods
- Listening to music or reading jokes to divert the mind from unpleasantness
- Ignoring the harasser
- Verbally and physically responding

81% of women have phones on them during harassment incidents, of which **53%** use them to feel safe.

Steps toward gender equity online

Getting support for gender equity initiatives

Gender equity can be an important aspiration for any technology. But framing gender-inclusive technology design solely as a moral obligation can feel vague and hard to prioritize against other organizational interests. We offer four ways to frame the case for gender equity online in organizations: ethical, recruiting, business, and technical opportunities.

The ethical case: Building for everyone.

Organizations have an ethical obligation to build for online equity so that all subgroups can benefit from technology.

- **Online equity advances human rights:** Building for online equity ensures that digital spaces aren't new areas of political and economic exclusion. Building equal opportunities online can disrupt existing gendered hierarchies of power.
- **A gender lens benefits everyone:** Using a gender lens in technology allows us to serve all people equally. For example, making privacy improvements from gender insights can benefit survivors of domestic violence, regardless of gender.
- **Intentional gender design overcomes bias:** If we don't take an intentional gender lens, we unintentionally skew experiences toward majority populations.

The recruiting case: Meaningful work attracts talent.

An organization's commitment to gender-equitable products communicates positive values.

- **Hiring:** Organizations can attract talented recruits with gender-equitable work.
- **Motivation:** Gender equity can inspire employees to contribute meaningfully and positively.
- **Retention:** When employees love the work they do, they're more likely to remain with organizations.

The business case: Inclusive design drives product growth.

Gender-inclusive design can be a good strategy for organizations to increase user bases or expand into new segments.

- **Relevance to more women:** Women are a large and fast-growing consumer base,[26] and technologies need to be relevant to them.
- **Growth beyond women:** Designing technologies that appeal to women can also appeal to other user groups.
- **Product quality:** With a reduced risk of digital harassment, more women will likely contribute more content, benefiting all users.

The technical case: Gender equity creates new technical opportunities.

Using a gender lens to consider access, content & community, privacy, and safety can lead to new technical innovations. The following feature considerations can lead to improved experiences.

- **Device privacy:** Software can help users maintain personal privacy on shared devices.
- **Reducing bias in machine learning:** Accounting for gender disparities in usage and training data can improve the relevance of recommended content.
- **Better abuse controls:** Improved and contextually relevant abuse reporting can lead to safer online experiences for all.

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26. Brennan, B. (2015, January 21). Top 10 things everyone should know about women consumers. Retrieved from https://www.forbes.com/sites/bridgetbrennan/2015/01/21/top-10-things-everyone-should-know-about-women-consumers/#635509916a8b.

Taking the first steps

Educate yourself and your organization about gender equity.

Learn about gender equity issues globally and incorporate them into your design and product decisions. Research is crucial for learning about communities that are less familiar to you, and in identifying where to invest resources.

Measuring gender.

Measuring changes and impact is key to identifying the "whats" and "how manys" of equity issues and evaluating the progress of any resulting changes. Metrics may be qualitative (e.g., product perception) or quantitative (e.g., % of female and male users). There are two ways to measure gender: declared gender (what the user tells us) or inferred gender (heuristics to infer gender). Here are five metrics for measuring gender equity in technology.

- What % of your 28-day active users in each country are male and female?
- What % of your market (e.g., banked citizens, college graduates) is female?

- What % of new users (who have registered in the past seven days) are women users?
- What is the % difference in key feature usage frequency (comparing women with men)?
- What is the % difference in users who created content (comparing women with men)?

Conduct gender-focused research.

Interview and survey women about their realities, practices, and aspirations to understand the whys and hows of gender experiences. Qualitative data is especially relevant when understanding a new problem space, making decisions regarding solutions, and talking about those problems and solutions intelligently. Here are some tips to conduct gender interviews:

- **Conduct gender-specific interviews** to understand how women are using (or not using) technology and their goals. Care and sensitivity are important in this research. Establish an ethical process for getting consent, creating safe spaces, using same-gender moderators, and anonymizing data.
- **Speak to allies and powerful figures** such as partners, parents, in-laws, and community or religious leaders as they often influence women's access to technology.
- **Work with local NGOs** to engage with marginalized populations who might be otherwise inaccessible like LGBTQ+ communities, violence survivors, or women with disabilities. NGOs can share powerful experiences and become active partners.

Analyze existing data.

Examining existing data can serve as a starting point and can complement new data you gather.

- **Slice existing quantitative data by gender** to understand individual experiences and compare the differences across cohorts in logs data, large-scale surveys, polls, etc.
- **Examine your qualitative data** by gender to examine specific themes that might be overlooked in aggregate analysis. Look for particularly interesting interviews or focus groups with women. You can also use other data sources like user feedback, app store reviews, and social media comments.
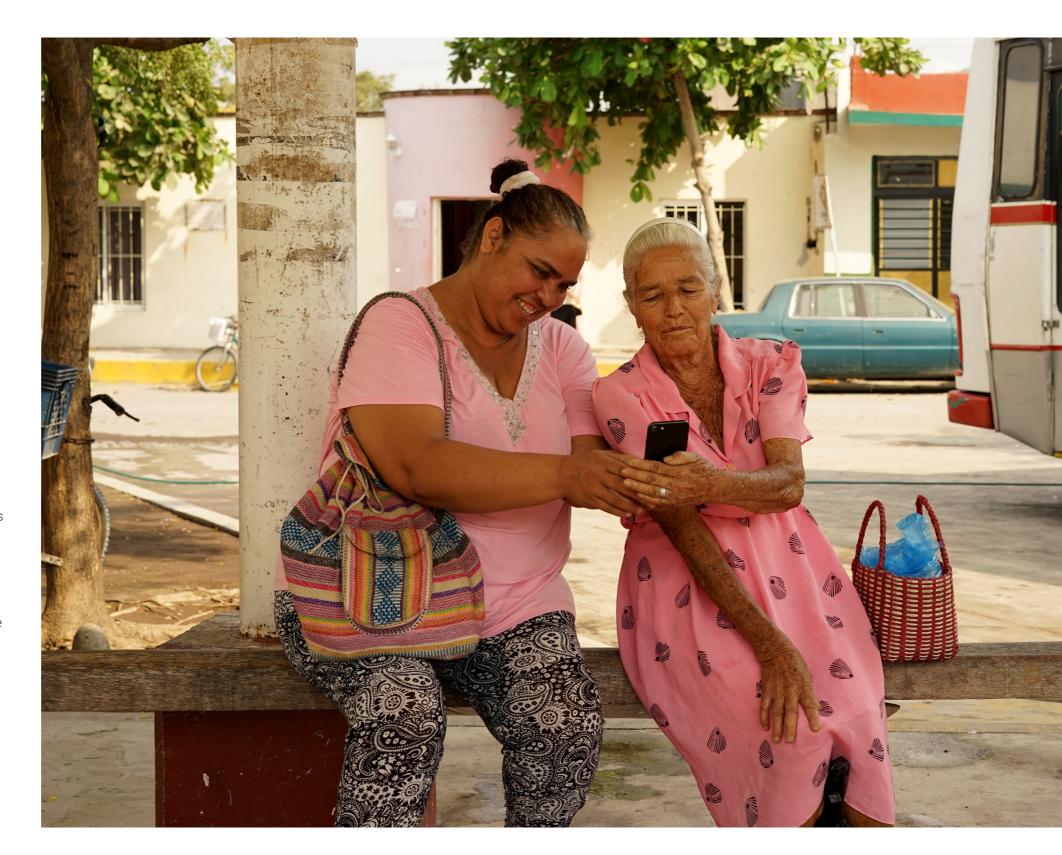
Conclusion

Our report takes a comprehensive look at gendered experiences with technology for the Next Billion Users. We identify access, content & community, privacy, and safety as four main roadblocks to gender equity online.

We encourage technology leaders to acknowledge a few truths: people who identify as women and non-binary people regularly navigate double standards and prejudices, and the Internet far too often produces and reinforces these injustices. We also believe that the Internet provides the tools necessary to challenge age-old discrimination, and leaders can use the rapid speed of technological evolution as a positive force for accelerating equity.

We must also ask whether online equity alone can increase participation and justice. And while this report is written for technology makers, it's important that everyone advocates for gender equity as a baseline. Unless we take an intentional approach, equity is not a default outcome of the Internet.

Let us consider the impact of our technologies on women, from product inception to launch. We have an enormous opportunity to create more inclusive online experiences for all of the Internet's citizens, because technology works best when it works for everyone.[27]

27. Larsen, S. (Ed.) (2017, January). The Internet health report [PDF]. Retrieved from https://d20x8vt12bnfa2.cloudfront.net/InternetHealthReport_v01.pdf

Appendix: Research methodology

We researched women's relationships with technology across seven countries: Bangladesh, Brazil, India, Indonesia (survey-only), Mexico, Nigeria, and Pakistan, from May 2017 to May 2018. We followed a mixed-methods approach, conducting semi-structured qualitative interviews and focus groups with 363 participants and a large-scale in-person survey (with GfK) with 3,618 respondents. People who identified as women comprised roughly 80% of our participant pool, and we included people who identified as men in order to understand the broader ecosystem. We interviewed NGO staff and community members in areas of abuse survivors, LGBTQ+ civil rights, HIV+ welfare, assisting female genital mutilation (FGM) survivors, refugee rehabilitation, and disability rights.

We view gender as a non-binary construct. A person's gender is deeply personal, and may or may not align with their sex assigned at birth. In an effort to understand diverse experiences, we spoke to cis and transgender women. Cisgender persons refers to those whose sense of gender matches the gender assigned to them at birth. Trans women refers to non-cisgender persons who consider themselves women. Other non-cisgender identities, like non-binary individuals, were not part of our research sample. LGTBQ+ individuals were included in our interviews, however the survey did not include a question about gender or sexual identity in order to ensure participant safety across all countries. Across the sample in India, 2 respondents self-identified as lesbian, 6 as queer, 3 as transgender male-to-female people. We use the term 'women' and 'men', when a respondent self-identified as such in interviews.

We apply a postcolonial feminist lens in our data gathering and approach. This lens helps us locate acts of agency and subversion; examine the complex interplay of gender with class, religion, caste, race, livelihoods, sexuality, disability and more; and identify support systems beyond binary shades of patriarchy. Postcolonial feminism takes a critical view of dominant Western feminism that saw non-white women of the Global South as powerless victims that needed rescuing, or viewed gender as a universal category not intersecting with other factors. Our research is rooted in the deep histories of feminist engagement of scholars and activists in the Global South, including

Chandra Mohanty,[28] Nivedita Menon,[29] Sara Suleri,[30] Marcela Lagarde,[31] Marta Lamas,[32] Graciela Hierro,[33] and Oyèrónké Oyĕwùmí.[34]

In this section, we describe our qualitative and quantitative methods, including participant recruitment, moderation, analysis, and research ethics and care. Note that in Indonesia, we conducted only survey research, not interviews.

Interviews and focus groups

The goal of the qualitative research was to understand the intersection of technology and gender.

Participant recruitment

Participants were recruited through a combination of nongovernmental organizations (NGOs), personal contacts, and recruitment agencies. Prior to the sessions, recruitment contacts and NGO staff verbally described the purpose of the study, question categories, and researcher affiliation, and provided potential participants with an opportunity to decline participation prior to any contact with our team.

Interview and survey methods

We conducted focus groups of three participants per group (triad focus groups). Focus group participants were already known to other members of the group, like friends and neighbors, in order to help with rapport and trust. Incentives varied depending on the country, demographic, and format of session (details below). In order to obtain a well-balanced sample, participant recruitment was divided such that roughly a third of participants were of high socioeconomic status (SES), a third were of medium SES, and a third were of low SES. (SES was determined by income tiers of socioeconomic classification definitions per country.[35]) Ages of participants varied from 18 to 65 years old. All participants owned phones.

Each focus group session lasted about two hours on average. The study followed a comparative fieldwork format[36] which helped us understand points of transition where phenomena break, continue, or transform. We ended every focus group by asking the participants which topics or issues they would like to highlight the most in our research reports, giving them a chance to reflect upon the conversations and represent their voices in their own terms. We conducted individual interviews on five occasions when it was hard to schedule a time and place for a focus group to meet.

Research ethics and anonymization

To protect our participants and create neutral safe spaces, we invited participants to coffee shops, restaurants, university campuses, and NGO locations. Contextual interviews at home or work posed the possibility that co-located members, like in-laws, children, or employers, could overhear and compromise the accuracy of responses and even participant safety. In a few cases, we conducted interviews at home when participant safety was assured – i.e., when no one else was present or the participant lived alone. Same-gender and same-ethnicity moderation was almost always employed to leverage common cultural ground and build trust.

Verbal informed consent was translated by native speakers into local languages, explained, and obtained from all participants. Fifteen to twenty minutes were spent explaining the purpose of the interviews, answering any

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questions, and building rapport. Participants were made aware that they had the right to terminate the study at any point. In a few interviews, we stopped recording and taking notes when participants became emotional; we retroactively wrote textual notes after the interview. All data was stored on a locked Google Drive folder with access limited to the research team.

Methods of recording – i.e., audio, video, notes, or none of these options – were explained to participants, who chose the technique they were most comfortable with. Only pseudonyms are used in this paper. Any identifying information has been redacted. Age ranges are reported to protect participant privacy. Locations are specified only if the population is larger than 100,000. For marginalized participants like LGBTQ+, we use pseudonyms and specify only the country of study.

Our sample intentionally included heterosexual people alongside gender and sexual minorities. We use the term 'women' because of the broad political location of the term and the category that our participants identified with. The term does possess limitations by connoting binary biological identities and signifying the heterosexual category. We have tried to be faithful to the personal pronouns and identities used by participants themselves when we quote them.

Analysis

Interviews were conducted in local languages and translated to English in transcription (see below). Inductive analysis was conducted on the raw interview data.[37] We focused on stories about (1) aspiration and empowerment, (2) device and Internet mapping, (3) access issues, (4) apps and notifications, (5) life stages, (6) device and account sharing, (7) identity, (8) safety, and (9) security. From a close reading of transcripts, we developed categories and clustered excerpts together, conveying key themes from the data. Three team members created a code book based on the themes and categories.

Country specifics

Bangladesh

In Bangladesh we interviewed 42 female and 13 male participants. Their occupations included garment workers, housewives, teachers, medical doctors, engineers, and day laborers. Focus groups were conducted in Dhaka (central Bangladesh), Chittagong (southeast Bangladesh, bordering India), and Sylhet (northeast Bangladesh, bordering India). Participants were recruited by contacting each group through a known contact, such as members of the research team, university staff, and known professional and personal contacts, in order to gain the trust of participants.

Focus groups were conducted in Bengali, and recordings were later transcribed into English. Incentives of warm food along with monetary incentives of US$12, or the gift equivalent, were provided for each participant.

Brazil

In Brazil we interviewed 42 female and 4 male participants. Their occupations included administrators, medical students, teachers, lawyers, housewives, engineers, and day laborers. Focus groups and individual interviews were conducted in Vítoria, a city within the state of Espírito Santo. We conducted five individual interviews when it was hard to schedule a time and place for a focus group to meet. Participants were recruited by contacting each group through a known contact, such as members of the research team, and known professional and personal contacts, in order to gain the trust of participants. Interviews were conducted in coffee shops, community meetups, the interviewees' homes, and a local university. The location and time of the interviews were chosen by the participants based on their availability and convenience.

Focus groups were conducted in Portuguese, and recordings were later transcribed into English by the research team. Incentives of food and drinks were provided for each participant.

India

In India our 103 female and 16 male participants included college students, housewives, domestic helpers, village farmworkers, IT professionals, bankers, small business owners, teachers, and two women with physical and visual disabilities (microenterprise owner and banker, respectively). Focus groups were conducted in Chennai and Bangalore (south India), as well as Delhi, Kanpur, and villages in the state of Uttar Pradesh (north India).

Focus groups were conducted in rented conference rooms, community centers, cafés, restaurants, universities, and quiet public spaces like communal seating areas. Interviews were conducted in Hindi, Tamil, and English depending on the participant's language preference. Recordings were transcribed into English by the research team. Each participant received $10 to $15 for participation depending on urban versus rural locations.

Mexico

In Mexico we interviewed 36 females and 4 males. Participants came from diverse backgrounds such as research professors, IT professionals, lawyers, folk musicians, housewives, government workers, college students, and housekeepers. We conducted focus groups and individual participant sessions in Mexico City (central Mexico), Colima, and Guadalajara (western Mexico). Recruitment was done via personal contacts. The sessions were

conducted in places like universities, restaurants, coffee shops, parks, and participants' homes.

Interviews were conducted in Spanish, and recordings were later transcribed into English by the research team. As an incentive, participants were offered a free restaurant meal.

Nigeria

In Nigeria we interviewed 29 female and 10 male participants. Their occupations included housewives, working professionals, university students, and microenterprise owners. We had two local Nigerian native researchers moderate and translate (where necessary) into English or a local language (Hausa or Igbo) depending on the participant's preference. For the sessions with men, a male moderator led the interview.

Focus groups were conducted in Abuja (central Nigeria) and Lagos (coastal Nigeria). Sessions took place in the offices of either Google Lagos or Phillips Consulting in Abuja, or at a meetup point such as a business room of a hotel. Recruitment was done via outreach to NGOs and by Phillips Consulting through its networks.

Recordings were later transcribed into English by the research team. For their time, participants were given essential pantry items as their incentives such as rice and vegetable oil. Incentives were worth about 70,000 naira (approximately $55).

Pakistan

In Pakistan we interviewed 52 female and 12 male participants. Their occupations included professionals, homemakers, manual laborers, microenterprise owners, and students. Occupations of working women included gym trainers, janitors, beauticians, schoolteachers, security personnel, corporate employees, university instructors, and home tutors. Focus groups were conducted in Lahore, Multan, and Rawalpindi (central Pakistan), Peshawar (northwest Pakistan, bordering Afghanistan), Karachi (south Pakistan), and Hunza (northeast Pakistan, bordering India). We chose places like community centers, schools, and facilitators' homes for conducting the focus groups, according to the comfort levels of participants.

Participants were recruited with the help of local facilitators. We visited Muslim, Christian, and Ismaili communities with facilitators to recruit participants and to conduct the focus groups in their communities. Goody bags consisting of food items worth up to $5 were distributed among the participants who showed up for interviews. All focus groups were done in Urdu and responses were audio or video recorded after obtaining verbal consent from participants. The recordings were later transcribed into English by the research team.

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Survey research

The objectives for the quantitative research phase were:

- Capture basic technology usage and attitudes among women in the identified markets.
- Understand some of the key day-to-day interactions and challenges that these women face.
- Explore men's perceptions of women's experiences, for the purposes of identifying key similarities and differences.

The foundation of the question topics were based on qualitative research themes and findings identified by Google. GfK and Google worked jointly to develop a questionnaire that would best address the key topics and objectives of the research. The questionnaire consisted of approximately 65 closed-ended questions. A number of questions regarding income, education, and household composition were included to help categorize responses. Survey respondents were primarily focused on the 18–24, 25–34, 35–44, 45–54, and 55–64 age ranges, with each contributing 16 to 20% of the base. In addition, there was some representation of 65-plus at 7% of the survey respondents. Survey respondents were spread across income ranges, though they tended slightly higher than average as they needed to be active online to qualify for the survey.

In all countries, the surveys were administered by a trained interviewer during a face-to-face session with a respondent. The vast majority of consumer surveys are now conducted using online panels, but those panels are generally limited in the Global South. As a result, face-to-face interviewing was utilized to help ensure a broad representation of survey respondents. Interviews were conducted in a range of locations from restaurants to local cafés. In Mexico, Brazil, Nigeria, and Pakistan, interviewers utilized a computer-aided questionnaire to complete the interviews, while a paper-based questionnaire was used in Indonesia, India, and Bangladesh. Across all countries, interview length was approximately 30 minutes.

GfK worked with a localization partner company to create local translations for each country, and then each local data collection partner checked the translation and provided feedback on revisions. Each local data collection partner completed a review to identify any areas of concern for their respective countries and provided feedback on any revisions prior to the start of data collection. Upon initiation of data collection, local teams provided any last feedback on revisions based on the first interviews conducted.

Due to the sensitive nature of the topics addressed in the research, women interviewers primarily completed the interviews with women survey respondents and male interviewers with male survey respondents, though there were some exceptions. This approach was meant to minimize any gender moderation dynamics and to increase the comfort of each respondent group to answer the questions openly and honestly.

Data collection occurred overall from January 10 through February 23, 2018. In each country, data collection was spread across a three-week period. For the countries utilizing computer-aided personal interviewing, data files were transmitted after approximately 40 interviews to ensure all formatting was consistent, and then a final data file was transmitted at the end of the data collection. For countries using a paper-based questionnaire, survey results were entered into a GfK-hosted system on a periodic basis.

The primary output of data analysis was cross tabulations of the data showing country totals by gender and country-specific results by a number of demographic characteristics. Results themes have been structured across the key areas of access, content & community, privacy, and safety.

Research limitations

Although our study triangulated across mixed methods, it may be subject to common limitations of qualitative and quantitative studies, including recall and observer bias, participant self-censorship, and limited generalizability of the results.

Our qualitative interviews depended on what participants remembered and felt comfortable reporting in a semi-private setting (which could reduce their comfort level with speaking up, or conversely incentivize speaking among trusted contacts). While we have tried to represent diverse voices and experiences, our study had low representation of people who identify as LGBTQ+, survivors of rape, FGM, and assault, HIV+ persons, and persons with disabilities. We only included them when we felt they would be safe participating in our study.

Our study only offers directional results, not conclusive findings. We acknowledge the intersectional experiences of gender: aspects like age, social class, cultural norms, sexuality, caste, race, and family structures are often additive and multiplicative with gender and determine the impact of gender. We highlight variations in different gendered experiences, but explicitly comparing cohorts is beyond the scope of this current study.

Indonesia is not included in the qualitative research but this is an area for future research.

Our report does not dive into race, an axis deeply relevant to many regions. We considered axes like social class, caste, ethnicity, religion, physical ability, and others. Future research can examine the intersection of race and gender.

Country	Qualitative research	Quantitative research
Bangladesh	42 female, 13 male (55 total) Dhaka, Sylhet, Chittagong	400 female, 108 male (508 total) Dhaka, Chittagong, Sylhet, Khulna, Rajshahi, and surrounding rural areas
Brazil	42f, 4m (46 total) Vítoria (Espírito Santo)	407f, 109m (516 total) São Paulo, Rio de Janeiro, Porto Alegre, Recife, and surrounding rural areas
India	103f, 16m (119 total) Chennai, Bangalore, Delhi, Kanpur, Uttar Pradesh rural areas	418f, 101m (519 total) Delhi, Mumbai, Kolkata, Chennai, Bangalore, and surrounding rural areas
Indonesia	N.A.	405f, 100m (505) Medan, Palembang, Jakarta, Surabaya, Bandung, Yogyakarta, and more urban and rural areas
Mexico	36f, 4m (40 total) Guadalajara, Colima, Mexico City	400f, 101m (501 total) Mexico City, Guadalajara, Monterrey, Hidalgo, Puebla, Guerrero
Nigeria	29f, 10m (39 total) Abuja and Lagos	421f, 131m (552 total) Lagos, Ibadan, Kano, Benin City, Port Harcourt, and surrounding rural areas
Pakistan	52f, 12m (64 total) Lahore, Karachi, Peshawar, Multan, Rawalpindi, Hunza	405f, 112m (517 total) Karachi, Lahore, Islamabad/Rawalpindi, Faisalabad, Multan, and surrounding rural areas

Appendix: Acknowledgements