DIGITAL INCLUSION

Concept Note

This Concept Note is the result of a process of consultation and debate between W20 delegates representing companies, governments and civil society organisations across the globe. It describes some of the challenges involved and reviews, existing recommendations for governments and policy makers. All this can provide a way forward for a coordinated and effective action by the G20 in support of women’s empowerment and equality.

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Summary

Digital technologies have become a powerful force for social and economic development, delivering substantial benefits for both individuals and society. Digital technologies empower women, providing them with access to information, services and life enhancing opportunities. Ensuring women are digitally included brings significant benefits not only to them, but to their communities, economies and general development. However, women’s participation in the information society is constrained by two main factors: too many women face barriers to access and use digital technologies; and, underpinning this, too few women are involved in the design, development, production and governance of digital technologies.

Latest estimates from the ITU (2017) suggest that women globally are 12% less likely to use the internet. A recent GSMA study shows that in low- and middle-income countries, women

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3. The ‘Information Society’ usually refers to a society in which the creation, distribution, use, integration and manipulation of information is a significant economic, political, and cultural activity. In 2003 in its Declaration of Principles, the World Summit on the Information Society (WSIS) expressed the ‘common desire and commitment’ to build a ‘people-centred, inclusive and development-oriented Information Society, where everyone can create, access, utilize and share information and knowledge, enable individuals, communities and peoples to achieve their full potential in promoting their sustainable development and improving their quality of life’ (WSIS (2003). Declaration of Principles, Building the Information Society: a global challenge in the new Millennium.

are 26% less likely to use mobile internet than men, the primary means of accessing the internet in many parts of the world. Women are also often under-represented at senior levels in high-technology industries - including the digital sector- and there is a substantial gender gap, in both developed and developing countries, in skills, jobs and careers involving science, technology, engineering and mathematics (STEM subjects). These gender gaps begin in education from the primary school and continue in the workplace limiting the access to high productivity enterprises and remaining in low-wage employment. The increasing economic and social importance of digital technologies means that disparities and gender biases could exacerbate existing inequalities experienced by women rather than reduce them.

This digital gender gap is unlikely to close on its own. Its root causes are driven by a complex set of social, economic and cultural barriers which can only be overcome with targeted intervention by all stakeholders. G20 Member States already play a leading role in digital transformation and digital development, supporting the SDGs. Concerted action including clear policies and cooperation amongst them and in partnership with other stakeholders can address the digital gender gap and ensure that women are not being left behind.

Introduction

Digital technologies, including the internet, mobile and broadband communications and other rapidly evolving information and communication technologies (ICTs), have the potential to empower women and help overcome some of the inequalities and barriers to opportunity and achievement that they face. That potential, however, will only be unlocked if women have the same opportunities to access, use digital technologies and benefit from them, as men do.

Women’s participation in the Information Society is constrained at present by two main factors: (1) too many women- mostly, from developing countries and lower socio-economic status - face barriers to access and use digital technologies; and, underpinning this, (2) too few women - mainly, from privileged backgrounds - are involved in the design, development, production and governance of digital technologies. If these digital gender gaps are not addressed, digital technologies may exacerbate gender inequalities rather than helping to reduce them. For example, digital exclusion also means that women in poverty may not be able to easily access government schemes and services that are increasingly going digital, further deepening their exclusion. The digital economy can also lead to greater inequality. For example, studies indicate that the digital economy may worsen gender divides in pay and job status and that women may be the worst affected by the normalisation of precarious employment in the gig economy.

Digital inclusion matters to women, because it makes it less costly to communicate and gives them access to valuable information, facilitates their financial independence and enables them to live independent lives and enjoy independent livelihoods. Such positive impacts do not extend only to women, but to their communities, businesses, economies and

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6. 'Digital technologies' are all types of electronic equipment and applications which use information in the form of binary code (strings of only two numeric characters, usually 0 and 1). Such technologies include computers, personal computers, calculators, cellular telephones, communications satellites, and high-definition television sets. This paper adopts a broad definition of 'digital technologies' to encompass current and future technologies; including ICTs, cloud computing, big data, artificial intelligence etc.
7. See endnote 3.
10. See endnote 1.
general development. As societies become increasingly dependent on digital technology, women, their broader communities and national economies are at risk of losing out on the positive promise of full participation in digital economies.

**What is the digital gender divide?**

1. **Access and use**

The extent to which data are available on access and use of digital technologies by women and men varies between countries. Nevertheless, available evidence is clear. Latest (2017) estimates from the ITU suggest that women globally are 12% less likely than men to use the internet. Women are also less likely than men to own or use a mobile phone, the most common means of personal communications and internet access in developing countries. A 2018 GSMA report found that women in low- and middle-income countries are on average 26% less likely to use mobile internet.

Moreover, this gender gap is also wider in developing countries and also in vulnerable population groups in developed countries. The World Bank highlighted that there are approximately 3.9 billion people offline, and that many of these offline populations share common characteristics – they are predominantly rural, low-educated, with lower incomes, and a large number are women and girls. GSMA evidence suggests that women who live in South Asia are 26% less likely to own a mobile than their male peers, and 70% less likely to use mobile internet.

This data is useful in establishing the scale of the gender digital divide, but is also important to assess how access and use are experienced by particular groups of women (for example, elderly women, women who live in rural areas, those who live with disabilities, those who face discrimination because of their sexuality, those who are refugees). Some groups of women are relatively well-served in the digital environment, while others experience multiple disadvantages. To be beneficial to women, access to and use of digital technologies must be universal, affordable, unconditional, meaningful and equal and must meet the diversity of women’s varying circumstances, needs and priorities, in the different countries and different contexts in which they live their lives and earn their livelihoods.

2. **Participation in design, development and production of digital technologies**

Women participation in the design, development, production and governance of digital technologies is also limited and unequal. There is a substantial gender gap, in both developed and developing countries, where skills, jobs and careers involving science, technology, engineering and mathematics (known as STEM subjects) are concerned.
Moreover, women are under-represented at senior levels in high-technology industries, including the digital sector.\textsuperscript{18}

The problem begins with education. Gender differences are present at all levels of STEM education starting at primary school, but particularly higher levels; globally, young women represent just 35% of all students enrolled in STEM-related disciplines in higher education.\textsuperscript{19} New opportunities are often accompanied today by a demand for more advanced skills, which can further marginalize women who have not developed them. The gap continues within employment. Women are less likely than men to enter STEM careers and more likely to leave them.\textsuperscript{20} In the technology sector, men outnumber women at every level, with the starkest differences at the top of the industry, where women make up just 21% of technology executives. More participation by women in leading this dynamic sector would help to improve their financial status, redress this wider deficit in female leadership and provide much-needed role models for girls in education and early careers.\textsuperscript{21}

Lastly, the under-representation of women in the sector can also be linked to gender-biased observed in machine learning, image recognition and other AI tools (IDG, 2018). Software trained on biased datasets can mirror and amplify these biases,\textsuperscript{22} code discrimination against women into big data processes,\textsuperscript{23} and design gender-blind digital artefacts, such as digital assistants.\textsuperscript{24} These implications are significant considering that companies and governments are increasingly turning to these tools (Bloomberg 2017).

What are the barriers to digital inclusion?

1. Barriers to access and use

The barriers to women’s digital access and use are interrelated and are often deeply rooted in social and economic barriers that constrain women’s ability to benefit from accessing and using digital technologies. While men also experience structural inequalities,\textsuperscript{25} such as those in income, education and employment opportunities as well as social norms, on average, women are likely to experience them more severely. A holistic approach is required if the digital gender gap is to be effectively addressed. Improved gender-disaggregated data on internet access and use is also critical for understanding and measuring the digital gender gap and informing policy and strategies for addressing it.

2. The availability of relevant infrastructure

This refers to the physical unavailability or inadequacy of infrastructure, including network coverage and the electricity required to power devices. Women who live in poor and remote areas often find the internet particularly difficult to access because of limited connectivity or lack of energy. Public access facilities can offer an alternative solution; however, such facilities may only be available in locations that women find unsafe or inaccessible, or where


\textsuperscript{19} UNESCO (2017a). Cracking the Code: Girls’ and Women’s Education in Science, Technology, Engineering and Mathematics (STEM).


\textsuperscript{21} ISACA, 2017:3.

\textsuperscript{22} https://www.wired.com/story/machines-taught-by-photos-learn-a-sexist-view-of-women/


\textsuperscript{24} https://qz.com/91681/we-tested-apples-siri-amazon-echoes-alexa-microsofts-cortana-andgoogle-home-to-see-which-personal

social norms and safety concerns curtail freedom of movement. In some societies, women also experience difficulties in obtaining proof of identification which is required to open accounts or register SIM cards.26

3. Cost and affordability
Cost of device and cost of connectivity and usage can have a significant effect on women’s ability to benefit from the internet. Cost, for instance, remains the greatest barrier to mobile phone ownership for many men and women.27 Cost typically affects women more than men because women’s income is generally lower.28 In addition, women often have less financial independence and find it more difficult to access capital than men.29 Women are therefore more sensitive to price when buying devices, and often choose those with poorer quality and connectivity, enabling lesser access to the internet and other information sources.

4. Design and usability
The design of digital technologies impacts on women’s ability to use them.30 Unfortunately, because too few women are involved in the design and development of digital technologies, women’s needs and priorities are insufficiently considered in the development of devices and services31.

5. Skills
Relatedly, women also lack the skills and confidence to engage with digital technologies effectively at every level, from basic usage to professional work and governance. In many countries, girls have poorer access to education than boys and, as a result, more are illiterate.32 Limited literacy leads on to lack of digital skills and lack of confidence, reducing women’s ability to take advantage of online resources.33 Women are less likely than men to use transformational services (like mobile internet) as a result of this lack of confidence.34

6. Safety and security
Digital technologies can both empower women and foster abuse that disempowers them. It is increasingly recognised that online abuse should be considered an aspect of gender-

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27. GSMA, 2015b.
31. GSMA, 2015a.
34. GSMA, 2015a.
based violence\textsuperscript{35} that limits women’s freedoms and human rights, and violates the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW).\textsuperscript{36} Online harassment, abuse and violence can represent significant barriers to access for many women.\textsuperscript{37} Those women who live in poor and remote areas may only be able to access the internet at schools, where privacy is limited, or public access facilities, which may be unsafe or inaccessible.

Those women who own or wish to own devices often feel vulnerable to theft, online harassment, surveillance, illegal data retention and fraud.\textsuperscript{38} In many countries, women have experienced online abuse – from petty harassment and trolling to stalking and sexual intimidation. Social media platforms have often been lax in addressing sexism and misogyny\textsuperscript{39}. Recent events have also highlighted concerns over the use of personal data\textsuperscript{40} - unethical/ illegal data practices can discriminate against women\textsuperscript{41} and privacy concerns have been expressed in relation to women’s health related data\textsuperscript{42}. Nevertheless, studies also show that women can use mobile-related services to protect and enhance their personal security.\textsuperscript{43}

7. Awareness and relevant content

In developing countries, many women are unsure or unaware of the potential of communications services to benefit their lives. Recent research by LIRNEasia shows that awareness of the internet is very low, particularly amongst women. Many internet users, particularly in developing countries, equate the internet with social media services like Facebook rather than the more diverse services it offers.\textsuperscript{44} Women with little disposable income, time, literacy or awareness of the internet have little incentive to spend time and money to gain access. The lack of relevant content also exacerbates this problem. ICT services and applications are sometimes criticised for focusing mostly on men’s priorities or paying too little attention to women’s needs – for example, private access to information on reproductive health. These biases are also present in the production of digital and software content. For instance, women account for 8%-16% of Wikipedia content editors (Wikimedia Foundation Wikipedia editor surveys, 2011).

8. Cultural norms

A final factor inhibiting women’s access to and use of digital technologies concerns the cultural norms that shape women’s lives to different degrees in different countries. Cultural
factors which act as barriers to digital technologies are difficult to address, deeply entrenched, and often so subtle that women fail to fully recognize their impact. Examples of such barriers are for example, the prioritization of boys’ education over that of girls’, or women’s fear of the internet because they believe content may be inappropriate, offensive or harmful to them. These barriers may exacerbate other inequalities women face, including those arising from lower incomes and educational attainment levels.

9. Barriers to women’s participation in design, development, production and governance

The gender gaps affecting skills and access to jobs and careers in STEM disciplines and workplaces, including digital technologies, begin with the barriers women face in education since primary school. Some teachers and parents, for example, and indeed some students, believe that STEM subjects are more appropriate to boys than girls, discouraging girls from studying them. Other issues are more general, like stereotypical perceptions of women’s roles in society in curricula, textbooks and teacher education programmes.

Without relevant skills, many women are less able to benefit from the potential of digital technology for employment, enterprise and business. As a result of existing gaps, the technical departments in digital businesses are predominantly staffed by men. Male-dominated workplaces may also be unattractive to women because of the risk of harassment and inappropriate behaviour, and also because they perpetuate a certain archetypal employee leading to cultures within organisations that while superficially acknowledge diversity effectively marginalize women. As things stand, these factors tend to reinforce the gender bias in STEM and ICT employment.

In addition, stereotypes and assumptions about types of work that are appropriate for men and women are widespread. There is also often gender bias in recruitment and promotion that affects women’s ability to participate fully in the design, development, production and governance of digital technologies. One study found that approximately 66% of women surveyed had experienced some form of bias against them in the workplace as well as uneven progression opportunities.

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46. UNESCO, 2017b.