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Bridging the Gender and Digital Divide in Post COVID-19 Pakistan: Empowering Women Through ICT

Saba Shahid and Bushra Arfeen

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SABA SHAHID AND BUSHRA ARFEEN*

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The 21st century has significantly been characterized as an era of globalization. Globalization in turn has led to a rapid rise in technological innovation and a process of sharing of that technology across the world. In the early 1990s, the advent of the Internet and its eventual use by private citizens further helped in ‘flattening’¹ the world and leading to a global order where technology played a role in not just transforming the traditional role of geographic borders, that were considered as barriers between various countries, but also eliminating the idea of time and space between various parts of the world. The past two decades have been revolutionary in nature, where rapidly evolving Information and Communications Technology (ICT) is redefining our entire socioeconomic and political system. In fact, in 2020 the number of Internet users throughout the world has gone up to 4.54 billion². Digital technology opens up space for enormous economic opportunity and growth: can serve as a tool to bring about socio-political change, become an arena for entertainment, and serve as a medium for governance and law enforcement. From e-commerce and online banking to political revolutions and human rights agency, from online learning to remote robotic medical surgeries, all facets of human and societal life have been impacted by ICT. While the speed and efficiency for everyday tasks has improved, digital technology has also contributed towards both reducing inequality—enhancing the skills and livelihoods of some, and increasing it for some—making the social ladder steeper for others who do not have the right tools or accessibility. In other words, the double-edged sword of digital technology must be dealt with carefully to ensure it acts as an enabler for equitable human development.

This paper is divided into five sections; the introductory section 1 looks at the link between technology and human development, section 2 evaluates the impact of Pakistan’s patriarchal culture on women’s access to technology including the issue of online harassment and argues that digital empowerment is a tool for human rights security. Section

*Saba Shahid is Research Fellow at the Centre for Public Policy and Governance and Bushra Arfeen is Research Associate at School of Management and Visiting Lecturer at School of Management and Department of History and Pakistan Studies, Forman Christian College (A Chartered University, Lahore)

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¹ Thomas L. Friedman, *The World Is Flat: A Brief History of the Twenty-first Century*, New York: Farrar, Straus and Giroux, 2005.

² Arooj Khalid, “Mitigating the Digital Gender Gap,” *MIT Technology Review Pakistan*, October 23, 2020, <http://www.technologyreview.pk/mitigating-the-digital-gender-gap/> (accessed November 24, 2020)

3 explores the nexus between education, economic empowerment and technological skills. Section 4 provides some concluding remarks. Finally the fifth section offers policy recommendations based on three principles: expanding women's digital capabilities through investments in education, improving their access to ICT tools and creating conducive environments for growth

1. Introduction: Digital Empowerment and Human Development

Given that ICT has become an essential component of our socio-economic, political and cultural lives, it is no surprise that international development organizations such as the UN now consider digital literacy as an indicator of human development. Goal 4 of the Sustainable Development Goals (SDGs), calls for expanding equitable and quality education including lifelong learning opportunities. Included in this Goal is ensuring people are equipped with the right skills including “technical and vocational skills, for employment, decent jobs and entrepreneurship” and the UN outlines measuring this through the “Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill”,³ in other words digital literacy. UNESCO defines digital literacy as *“the ability to access, manage, understand, integrate, communicate, evaluate and create information safely and appropriately through digital devices and networked technologies for participation in economic and social life. It includes competences that are variously referred to as computer literacy, ICT literacy, information literacy, and media literacy.”*⁴

Similarly Goal 9 of the SDGs, Target 9.C, demands an expansion of “access to information and communications technology” and the provision of “universal and affordable access to the Internet in least developed countries by 2020”.⁵ While this Goal is yet to be achieved, the emphasis on ICT access is clear. Investments in ICT and life-changing digital resources vastly compound people's socioeconomic and political agency, thereby expanding their potential to improve livelihoods and conquer higher levels of human development.⁶ The right ICT tools allow communities to tap into non-traditional economic activity, through virtual markets remotely, gain access to financial resources online, voice concerns over safety and environmental security and advocate for change through social media, thereby contributing towards institutional strengthening, including the push for a more democratic and equitable framework of governance and economic management. Figure 1 below illustrates how ICT infrastructure and other digital resources have instrumental impact on human development.

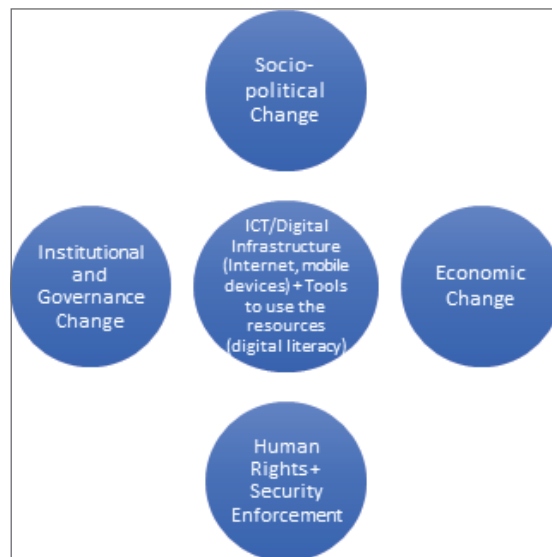
³ “Department of Economic and Social Affairs Sustainable Development”, *United Nations*, <https://sdgs.un.org/goals/goal4> (accessed 3 November 2020).

⁴ “A Global Framework to Measure Digital Literacy”, United Nations Educational Scientific and Cultural Organization, <http://uis.unesco.org/en/blog/global-framework-measure-digital-literacy> (accessed 11 November 2020).

⁵ United Nations, Department of Economic and Social Affairs Sustainable Development, “Goals, 9, Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation”, <https://sdgs.un.org/goals/goal9> (accessed 27 November 2020).

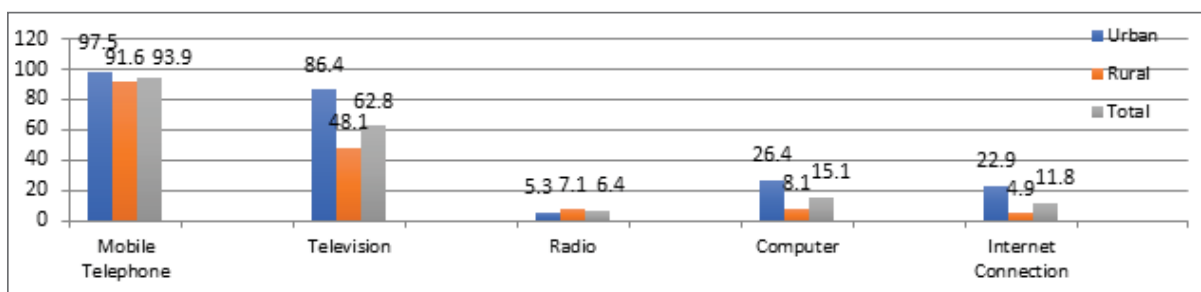
⁶ Kuyoro Shade O., Awodele O. and Okolie Samuel O., “ICT: An Effective Tool in Human Development”, *International Journal of Humanities and Social Science*, 2 (7). April 2012. http://www.ijhssnet.com/journals/Vol_2_No_7_April_2012/17.pdf (accessed 7 December 2020).

Figure 1: ICT Infrastructure and Tools have an instrumental impact on Human Development



Yet, in Pakistan, access to technology remains a serious impediment to most households' human development. According to data collected by the Pakistan DHS 2017-18, ICT infrastructure is far from being universal in the country. The figure below illustrates access to basic technology in households, and the geographic differences that exist based on urban-rural settings.

Figure 2: Percentage of Households with access to basic ICT Infrastructure, Pakistan⁷



If location already acts as a barrier to accessing the right ICT tools, it is no surprise that digital technology is not shared equally across the genders as well. Because ICT infrastructure and digital literacy perform game-changing roles, then it is imperative that they

⁷ National Institute of Population Studies (NIPS) [Pakistan] and ICF, 2019, *Pakistan Demographic and Health Survey 2017-18*. Islamabad, Pakistan, and Rockville, Maryland, USA: NIPS and ICF, p. 21 Online Available: <https://dhsprogram.com/pubs/pdf/FR354/FR354.pdf> (accessed 14 December 2020).

be shared equitably across the country and between men and women.

COVID-19 and Pakistan

The global economy has suffered a major blow due to the COVID-19 pandemic. However, women have disproportionately suffered economic and social harm. In Pakistan specifically, where only 20-25% of women are involved in the labor force, women were employed in sectors that have been the severest hit by the health crisis. Moreover, these occupations tend to be in the lower wage market that involves jobs like home-based workers, domestic service providers, beauticians, agriculture workers, teachers and micro-enterprise owners. According to a recent survey conducted across Islamabad, Karachi and Lahore, 53% of respondents said they had lost income due to the various lockdowns and the subsequent collapse of businesses. Likewise, out of those who are employed, 25% said they faced salary deductions⁹. Evidence also suggests that women who had been facing income shortages also had to rely on loans in order to maintain basic household expenditures¹⁰. Conversely, online opportunities, made possible through digital resources such as online shops, and home-based online businesses, opened new avenues for many and led to a significant increase in e-commerce in the country. Pakistan's largest online shopping company recorded a nine-fold increase in sales since March 2020 after the onset of COVID-19.¹¹ The State Bank of Pakistan has indicated that just through a shift towards electronic payments, an additional 4 million jobs and a 7% increase in GDP (+36 bn USD) could be achieved by 2025.¹² These numbers are noteworthy, as they call for an urgent plan of action to diminish or narrow down the gender-based divide.

2. Women's Digital Activity: Culture, Online Harassment and Human Rights

In addition to improving livelihood outcomes, access to digital technology also performs an instrumental role in securing people's freedom of expression and right to information. In 2012, the UN Human Rights Council adopted a resolution on "The promotion, protection and enjoyment of human rights on the Internet" where its first three articles highlight how fundamental human rights must be protected in online spaces as well.¹³ Similarly,

⁹ Faisal Bari, "Women in the Informal Sector," *Dawn.com*, September 18, 2020, <https://www.dawn.com/news/1580309> (accessed November 24, 2020)

⁹ "COVID-19: Economic Consequences for Women," *Brecorder*, May 15, 2020, <https://www.brecorder.com/news/597105> (accessed December 6, 2020)

¹⁰ Faisal Bari, "Women in the Informal Sector," *Dawn.com*, September 18, 2020, <https://www.dawn.com/news/1580309> (accessed November 24, 2020)

¹¹ "Covid-19 Boosts Digital Economy, E-commerce in Pakistan," *The Express Tribune*, July 07, 2020, <https://tribune.com.pk/story/2253806/covid-19-boosts-digital-economy-e-commerce-in-pakistan> (accessed 11 December 2020).

¹² Ibid.

¹³ United Nations, (2012c). Human Rights Council Resolution 20/8, Promotion and protection of all human rights, civil, political, economic, social and cultural rights, including the right to development, A/HRC/RES/20/8 (16 July 2012). <https://documents-dds-ny.un.org/doc/RESOLUTION/GEN/G12/153/25/PDF/G1215325.pdf?OpenElement> (accessed 30 November 2020).

Pakistan is a signatory to the International Covenant on Civil and Political Rights (ICCPR), ratified in 2010, which entails safeguarding people’s freedom of speech. Yet countries around the world are challenged with making online spaces safe for socio-political debate and discussion—especially for women. As a report by the Carnegie Endowment for International Peace notes, online harassment and abuse on social media platforms is disproportionately targeted at women, particularly women in politics.¹⁴

Pakistan too struggles with protecting these rights, with vulnerable groups more prone to experiencing violation. A recent research on South Asia shows that the region has the highest number of “Internet shutdowns” in the world, while Pakistan ranks amongst the ten worst countries globally in terms of digital media freedom.¹⁵ With respect to the gender dimension, the Digital Rights Foundation Pakistan notes “women experience online spaces differently than men. They are denied access to spaces due to gender disparity, stereotypical and cultural expectations on how women should behave online, cyber harassment, sexualised threats and violence stemming from online activities-impeding women’s right to free speech online, political participation, information and association.”¹⁶ The incidence of electronic Violence Against Women (eVAW) has also increased in Pakistan where several cases of crime including honor killings have surfaced.¹⁷ This is disconcerting and demands affirmative action is needed in Pakistan to protect women and uphold their right to access and utilize information and express themselves online. Box 1 summarizes these legal dimensions below.

Box 1: ICT and Internet Accessibility: Legal Protections for Human Development

In the twentieth session of the Human Rights Council in July 2012, a Resolution on “The promotion, protection and enjoyment of human rights on the Internet” was adopted. The first three articles of the Resolution underscore the indispensable right to freedom of expression and how these must also be protected online. These articles read that the Human Rights Council:

“1. Affirms that the same rights that people have offline must also be protected online, in particular freedom of expression, which is applicable regardless of frontiers and through any media of one’s choice, in accordance with articles 19 of the Universal Declaration of Human Rights and the International Covenant on Civil and Political Rights; 2. Recognizes the global and open nature of the Internet as a driving force in accelerating progress towards development in its various forms; 3. Calls upon all States to promote and facilitate access to the Internet and international cooperation aimed at the development of media and

¹⁴ Lucine di Meo and Saskia Brechenmacher, “Tackling Online Abuse and Disinformation Targeting Women in Politics”, Carnegie Endowment for International Peace, 30 November 2020, https://carnegieendowment.org/2020/11/30/tackling-online-abuse-and-disinformation-targeting-women-in-politics-pub-83331?utm_source=carnegieemail&utm_medium=email&utm_

¹⁵ Dr. Kiran Hassan, presentation on “Are Social Media Platforms Providing Space for Continuities or Changes for Religious Minorities in South Asia?” CPPG, 1 December 2020.

¹⁶ Digital Rights Foundation. https://www.upr-info.org/sites/default/files/document/pakistan/session_28_-_november_2017/df_upr28_pak_e_main_rev.pdf (accessed 24 December 2020), p. 2

¹⁷ These crimes include blackmailing, identity theft, sharing of explicit images, stalking, hacking etc. A report by DRF Pakistan notes that in the year between 2014 and 2015, of the 3000 cybercrimes reported to the FIA, 45% were related to women being “targeted on social media”, Digital Rights Foundation. https://www.upr-info.org/sites/default/files/document/pakistan/session_28_-_november_2017/df_upr28_pak_e_main_rev.pdf (accessed 24 December 2020), p.5.

*information and communications facilities in all countries;*¹⁸

Pakistan's Constitution 1973 also guarantees Freedom of Expression as a human necessity, although the relevant articles (Article 19 and 19A) allow an easy interpretation for “reasonably” curbing or restricting these rights. Moreover, recent legislations adopted in Pakistan such as the Prevention of Electronic Crimes Act (2016) and the Pakistan Electronic Media Regulatory Authority (PEMRA) Ordinance (2002), have been developed in a way that grant the government ability to monitor freedom of expression, and have been used in cases to censor issues related to gender-discrimination. As the DRF notes, such powers “will affect political speech of women HRDs, activists critiquing laws relating to gender and sexual minorities reclaiming spaces online.”¹⁹

2.1 Challenging Cultural Norms through Technology

Access to ICT and an improvement in digital literacy acts as an instrument of women's cultural empowerment, allowing them to challenge regressive gender roles that curb their overall sociopolitical and economic development. Yet, as described above, women's participation on online forums of economic, political and social activity is often looked down upon, expressed in the form of online harassment—and this trend is global. Many such as Lucina Di Meco and Saskia Brechenmacher from the Carnegie Institute for International Peace see online abuse against women as an instrument to impose gender roles on those seen to be “transgressing social norms”.²⁰ Writing for the Wilson Centre, Valerie M. Hudson explains these cultural bottlenecks are a result of centuries of prioritizing “male kinship” to uphold societal security. And in order to maintain that male kinship, “a systematic subordination of female interests to male interests has to be enforced” often manifested through practices such as early marriages, dowries, lack of physical asset ownership, female infanticide and so on, all of which undermine women's empowerment despite indicators such as the literacy rate, female labor-force participation rate and appointment to government positions showing upward trends.²¹ Conversely, societies that have been able to challenge notions of “female subordination” have been able to build safer, and more conducive environments for their people.²²

The concept of female subordination has naturally translated into socio-economic indicators as well, where women are underrepresented in most economic and political sectors, particularly in “high-value and skill jobs.”²³ Gender biases, as Maryam Tanwir

¹⁸ United Nations, 2012, Human Rights Council Resolution 20/8, Promotion and protection of all human rights, civil, political, economic, social and cultural rights, including the right to development A/HRC/RES/20/8. 16 July 2012. <https://documents-dds-ny.un.org/doc/RESOLUTION/GEN/G12/153/25/PDF/G1215325.pdf?OpenElement> (accessed 30 November 2020).

¹⁹ Digital Rights Foundation. https://www.upr-info.org/sites/default/files/document/pakistan/session_28_-_november_2017/df_upr28_pak_e_main_rev.pdf (accessed 24 December 2020), p. 3

²⁰ Lucina Di Meco and Saskia Brechenmacher, “Tackling Online Abuse and Disinformation Targeting Women in Politics”, Carnegie Endowment for Internal Peace, 30 November 2020, https://carnegieendowment.org/2020/11/30/tackling-online-abuse-and-disinformation-targeting-women-in-politics-pub-83331?utm_source=carnegieemail&utm_medium=email&utm_

²¹ By Valerie M. Hudson, “What Changes When We See Women”, 13 November 2019, Wilson Center. <https://www.newsecuritybeat.org/2019/11/women/> (accessed 4 December 2020).

Valerie M. Hudson, Donna Lee Bowen, and Perpetua Lynne Nielsen, *The First Political Order: How Sex Shapes Governance and National Security Worldwide*, (Columbia University Press, 2020)

²² Ibid.

²³ Maryam Tanwir and Nitya Khemka (2018) “Breaking the silicon ceiling: Gender equality and information technology in Pakistan”, *Gender, Technology and Development*, 22 no.2, p.110 <https://www.tandfonline.com/doi/full/10.1080/09718524.2018.1496695> (accessed 8 December 2020).

& Nitya Khemka explain, are also likely to account for why fewer women end up in science, technology, engineering, and mathematics (STEM) fields, have lower technical skills and why they have to face unfriendly work environments in a culture of pervasively “negative socio-cultural attitudes.”²⁴ They provide literature on how “sex differences in attitudes to STEM subjects do not have a biological basis but are socially produced and perpetuated.”²⁵ On the other hand, when women are employed in the IT sector and are able to participate alongside men, they are able to break gender stereotypes; create new entrepreneurial opportunities, gain greater financial and decision-making autonomy, developing virtuous cycles of economic growth and social development.²⁶ Women, who are able to demonstrate leadership through their work in the technology sector, act as positive role models for other women and girls, encouraging and motivating them to do the same.²⁷ However, this requires facilitation in women’s access to the right ICT resources, including ownership of digital devices and the right skills to make the most use of them.

If the barriers to ICT accessibility are considered for women in Pakistan, several reasons emerge that are not uncommon to other lower middle-income countries (LMICs) in Asia. These include: low levels of literacy and skills, low financial affordability, perception about how relevant technology is to daily life, and familial disapproval.²⁸ Furthermore, while all these factors are indicative of the development challenges women face overall in Pakistan; another important contributor remains the conservative nature of society which limits women’s exposure to critical economic growth opportunities. The GSMA (Global System for Mobile Communications GSM Association) report for instance finds that “...while disapproval by family members is not a top barrier in most markets, for women in Bangladesh and particularly in Pakistan, it is an extremely important factor grounded in conservative social norms that govern many women’s choices and behavior.”²⁹ This argument is further strengthened by a report published by the British Council that highlights how traditional patriarchal social structures play a strong role in hindering access³⁰. The report also brings to light that women prefer to use the Internet from home; frequenting Internet cafes are an unlikely alternative for them due to cultural factors. This could explain why in households where there are no technological devices, women have no means of accessing technology³¹. Hence, in addition to the family disapproval, in cases of lack of affordability, cultural norms restrict women from gaining access in public spaces.

²⁴ Ibid, p.110

²⁵ Ibid, p.112.

²⁶ Maryam Tanwir and Nitya Khemka (2018) “Breaking the silicon ceiling: Gender equality and information technology in Pakistan”, *Gender, Technology and Development*, 22 no.2, p.112 <https://www.tandfonline.com/doi/full/10.1080/09718524.2018.1496695> (accessed 8 December 2020).

²⁷ Ibid., p.120.

²⁸ Oliver Rowntree and Mathew Shanahan, “Connected Women The Mobile Gender Gap Report 2020”, GSMA, 2020, p. 17

²⁹ Tariq Ahmed Saeedi, “Pakistan’s Gender Gap in Mobile Phone Ownership, Usage Widest in World: GSMA,” *The News*, March 06, 2020, <https://www.thenews.com.pk/print/624556-pakistan-s-gender-gap-in-mobile-phone-ownership-usage-widest-in-world-gsma> (Accessed December 25, 2020)

³⁰ Roger Jeffery et al., “Digital Citizenship in Pakistan,” British Council, https://www.britishcouncil.pk/sites/default/files/digital_citizenship_in_pakistan.pdf (Accessed December 24, 2020)

³¹ Ibid.

Even though Internet connectivity is not yet universal in Pakistan, its significance is recognized. Studies indicate for example that 55% male mobile owners and 53% female mobile owners claimed that mobiles are a source of benefit for them. They claimed that they feel safer, are better informed and it provides support to them in their daily lives³².

In fact, connectivity is not just limited to searching and getting information from the web; it also allows social interactions through which people can connect to each other both locally and across the world. However, in this case too, women's use of the Internet for social connectivity is limited. A report revealed that in 2018, there were 35 million users of social media in Pakistan, out of which 77% were male and only 23% were female³³. IT specialist, Faiza Yousaf founder of "Women in Tech Pk" and a Chief Consultant at the digital agency "Outtabox", explains that "Women are also restricted to use social media by males in the family due to the fear of harassment and in some cases religious/cultural reasons."³⁴ Yousaf adds that there is a huge percentage of women using shared accounts with their husbands just because they don't feel like revealing their identity online." Similarly Danish Khan, the CEO of a women-based development organization points out that women's growth is often suppressed, "using tradition, religion, or social norms as excuses"; access to digital technology is only a starting point, "power to possess" and effectively utilize that technology is the key.³⁵

Governments are now recognizing the need to enforce greater protection against online abuse; the EU's Digital Services Act and U.S. President Joe Biden's proposed National Task Force on Online Harassment and Abuse are policy responses to do just that.³⁶ Pakistan too needs to develop a distinction between legislation that protects and promotes women's online activity and laws that limit freedom of expression or are vague enough to allow unnecessary policing. As the DRF notes, Pakistan must develop mechanisms that ensure human rights are protected in line with our international obligations. For instance protecting women from online harassment can be achieved through greater diversity and female representation in government departments such as the National Response Centre for Cyber Crime—which must specifically be mandated with safeguarding women's online activity, including their data privacy³⁷. Including more women in the policy-making process, particularly with respect to online harassment can ensure more gender-sensi-

³² Kalbe Ali, "Highest Male-female Gap on Cell-phone Ownership Registered in Pakistan: Report," *Dawn*, March 06, 2020, <https://www.dawn.com/news/1538756> (Accessed December 24, 2020)

³³ Mohammad Farooq, "Pakistan's Social Media Landscape Dominated by Males, Females Lag Behind: Report," *Pakistan Today*, 18 April 2018. <https://www.pakistantoday.com.pk/2018/04/18/pakistans-social-media-landscape-dominated-by-males-females-lag-behind-report/> (accessed December 2020).

³⁴ Ibid.

³⁵ "Mitigating the digital gender gap", *MIT Technology Review*, <http://www.technologyreview.pk/mitigating-the-digital-gender-gap/> (accessed 15 December 2020)

³⁶ Lucine di Meco and Saskia Brechenmacher, "Tackling Online Abuse and Disinformation Targeting Women in Politics", Carnegie Endowment for International Peace, 30 November 2020, https://carnegieendowment.org/2020/11/30/tackling-online-abuse-and-disinformation-targeting-women-in-politics-pub-83331?utm_source=carnegieemail&utm_medium=email&utm_

³⁷ Digital Rights Foundation. https://www.upr-info.org/sites/default/files/document/pakistan/session_28_-_november_2017/df_rdrf_upr28_pak_e_main_rev.pdf (accessed 24 December 2020).

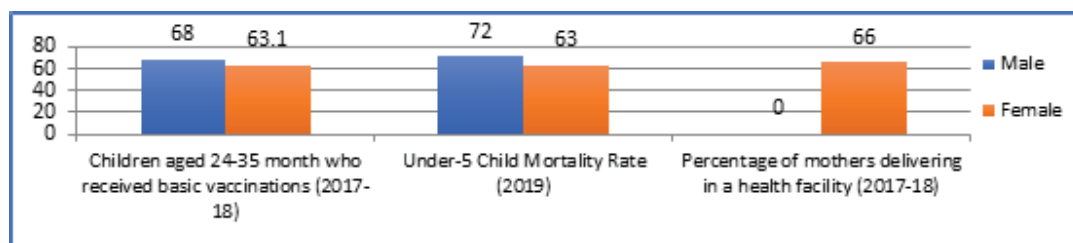
tive responses. Likewise, the private sector, including big social media companies, must be pushed to take on greater reform to monitor and moderate their websites and applications for hate speech and sexual harassment, particularly for women given they are usually the target of abuse and trolling. As a report by the Carnegie Endowment for International Peace notes: *“The proliferation of online harassment, hate speech, and disinformation is not only driven by gaps in content moderation but also by a business model that monetizes user engagement with little regard for risk...platforms rely on deep learning algorithms that prioritize disseminating content with greater engagement. Inflammatory posts often quickly generate comments and retweets, which means that newsfeed algorithms will show them to more users.”*³⁸

Holding these companies accountable by enforcing greater transparency in how algorithms work and pushing them to design ethical systems that filter out hate speech and misinformation should be something IT policies address.³⁹

3. Female Education, Economic Empowerment and Technological Skills

Before exploring the situation of women’s access to technology in Pakistan, it should be taken into account that Pakistan ranks 151 out of 153 countries in terms of reducing the gender gap, according to the World Economic Forum’s Gender Gap Index 2020, given the wide differentials in economic, social and political growth.⁴⁰ Women make up around half of the country’s population (around 49%)⁴¹ yet are unable to secure basic rights for themselves; while some are simply unable to attain those rights, others are completely unaware of their existence. The figures below indicate differences in access to basic livelihood needs between men and women in Pakistan.

Figure 3: Gender gap in selected health indicators, Pakistan⁴²



³⁸ Lucine di Meco and Saskia Brechenmacher, “Tackling Online Abuse and Disinformation Targeting Women in Politics”, Carnegie Endowment for International Peace, 30 November 2020, https://carnegieendowment.org/2020/11/30/tackling-online-abuse-and-disinformation-targeting-women-in-politics-pub-83331?utm_source=carnegieemail&utm_medium=email&utm

³⁹ Ibid.

⁴⁰ World Economic Forum, Global Gender Gap Report 2020, http://www3.weforum.org/docs/WEF_GGGR_2020.pdf (accessed February 2021)

⁴¹ Iftikhar Ahmad, “No Country for Working Women,” *The Express Tribune*, March 10, 2018, <https://tribune.com.pk/story/1655699/no-country-working-women> (accessed December 24, 2020)

⁴² All basic vaccinations include BCG, three doses of DPT-HEPB-HIB, three doses of oral polio vaccine (excluding polio vaccine given at birth), and one dose of measles vaccine. DHS 2017-18, p. 196

“Mortality Rate, Under-5, Female (per 1,000 Live Births) - Pakistan,” The World Bank Data, 2020, <https://data.worldbank.org/indicator/SH.DYN.MORT.FE?locations=PK> (accessed November 24, 2020)

National Institute of Population Studies (NIPS) [Pakistan] and ICF, 2019, *Pakistan Demographic and Health Survey 2017-18*. Islamabad, Pakistan, and Rockville, Maryland, USA: NIPS and ICF, p. 159 Online Available: <https://dhsprogram.com/pubs/pdf/FR354/FR354.pdf> (accessed 14 December 2020).

Figure 4: Gender gap in selected literacy indicators, Pakistan⁴³

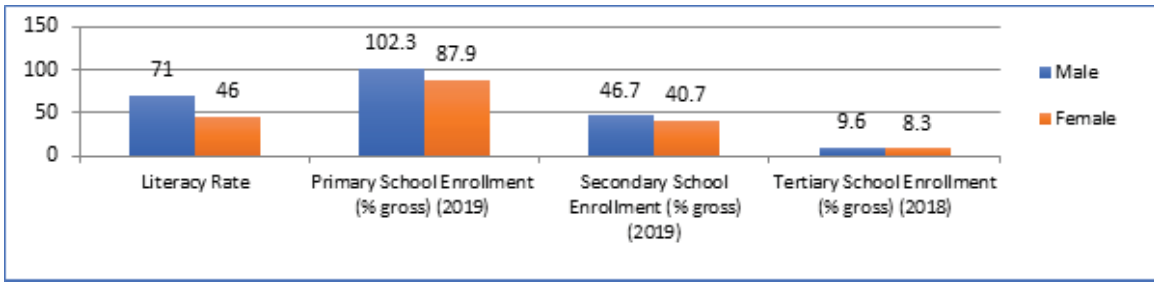
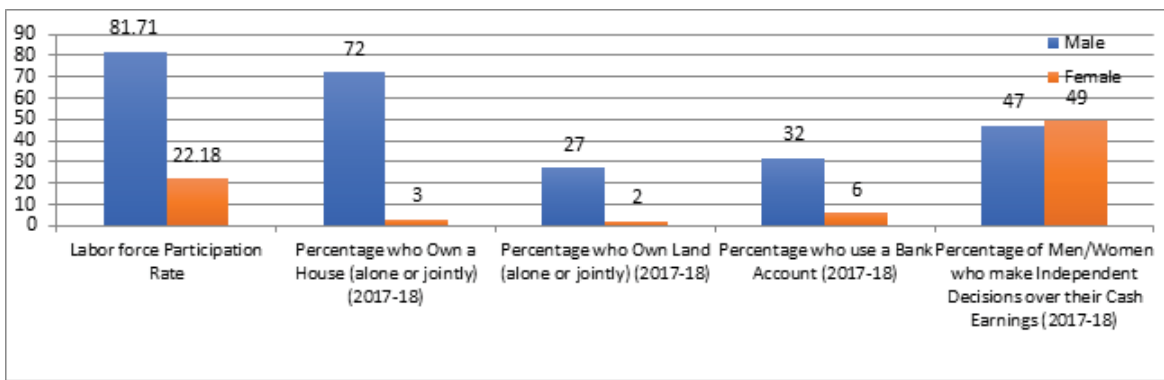


Figure 5: Gender gap in selected economic indicators, Pakistan⁴⁴



Given the scenario depicted above, where women continue to lag on basic human development indicators in Pakistan, it is no surprise that digital development in the country also tells a gendered story where men experience better outcomes than women. This is significant because in a globalized world, exposure to human rights and improved human development outcomes, amongst other life-saving information, can be achieved to a great extent through digital literacy and access to technology. However, digital capabilities also demonstrate a gendered story, where women lag behind men on basic indica-

⁴³ "Literacy Rate, Adult Male (% of Males Ages 15 and Above)," The World Bank Data, 2020, <https://data.worldbank.org/indicator/SE.ADT.LITR.MA.ZS> (accessed December 15, 2020)

The World Bank Data, "Literacy Rate, Adult Female (% of Females Ages 15 and Above)," *The World Bank Data*, <https://data.worldbank.org/indicator/SE.ADT.LITR.FE.ZS?locations=PK> (accessed December 2020).

"School enrollment, Primary, Male (% gross) -Pakistan," The World Bank Data, 2020, <https://data.worldbank.org/indicator/SE.PRM.ENRR.MA?locations=PK> (accessed 15 December 2020)

"School enrollment, Secondary, Male (% gross) -Pakistan," The World Bank Data, 2020, <https://data.worldbank.org/indicator/SE.SEC.ENRR.MA?locations=PK> (accessed 15 December 2020)

"School enrollment, Tertiary, Female (% gross) -Pakistan," The World Bank Data, 2020, <https://data.worldbank.org/indicator/SE.TER.ENRR.FE?locations=PK> (accessed 15 December 2020)

⁴⁴ "Pakistan Male Labor Force Participation - Data, Chart," TheGlobalEconomy.com, https://www.theglobaleconomy.com/Pakistan/Male_labor_force_participation/ (accessed December 24, 2020)

"Pakistan Female Labor Force Participation - Data, Chart," TheGlobalEconomy.com https://www.theglobaleconomy.com/Pakistan/Female_labor_force_participation/ (accessed December 24, 2020)

National Institute of Population Studies (NIPS) [Pakistan] and ICF, 2019, *Pakistan Demographic and Health Survey 2017-18*. Islamabad, Pakistan, and Rockville, Maryland, USA: NIPS and ICF, pp. 271-3 Online Available: <https://dhsprogram.com/pubs/pdf/FR354/FR354.pdf> (accessed 14 December 2020).

tors. Men are more likely to gain formal training in ICT skills, and consequently, are more likely to dominate the ICT sector in the labor market. Women's digital capabilities are frequently developed in the home environment which can hinder their opportunities of excelling in the technology field including acquiring skills for entrepreneurship, or becoming leaders in the industry.⁴⁵ Consequently, **providing women equal opportunities to enhance their ICT skills is a fundamental stepping-stone, and this should begin in the education sector.** Likewise, inequalities in access to education must be eradicated if we are to avoid vicious cycles of deprivation and low human development.

3.1 Education and Digital Literacy

According to the Economic Survey of Pakistan 2020, in 2018-19, men's literacy rate was at 71% while that of women at only 49%. For women living in rural areas the proportion of women who can read and write is only two out of five.⁴⁶ **It is equally disturbing to note that 61% of the 25 million Pakistani children who cannot go to school are girls.**⁴⁷ Previously, in the 2015 Oslo Summit on Education and Development, Pakistan was declared as one of the world's worst performing countries on education. Statistics from 2018 reveal that 32% of the primary school age girls were out of school.⁴⁸ The percentage of out-of-school girls only accelerated as the level of education increased as by grade six, 59% of the girls were out of school (while the boys who were out of school amounted to 49%). By the time these children reach class 9, only 13% of the girls are still in school and while it cannot be ignored that both the boys and the girls are missing out on education, it is the girls who are the most impacted⁴⁹.

Research indicates that ICT tools in the primary and secondary education sector in Pakistan are still at a nascent stage. Lack of teacher training and up-to-date IT skills, fear of mature content propping up on the Internet, frequent power outages, lack of appropriate skills to deal with technological glitches, low levels of teacher motivation and inadequate funding towards the education sector all contribute to why technology has not been integrated effectively into our school curricula.⁵⁰

Yet, the irreplaceability of technology, and its growing need, cannot be undermined in terms of socializing and learning which is essential for Pakistan's human capital devel-

⁴⁵ Panoply Digital Ltd, "Women's Pathways to the Digital Sector: Stories of Opportunities and Challenges," Federal Ministry of Economic Cooperation and Development (BMZ), February 2017, 7, https://www.bmz.de/en/publications/type_of_publication/information_flyer/flyer/study_eSkills4girls.pdf.p.7 (accessed 15 December 2020)

⁴⁶ Government of Pakistan, Finance Division, "Education", Pakistan Economic Survey 2019-2020. https://www.finance.gov.pk/survey/chapter_20/10_Education.pdf (accessed 27 November 2020).

⁴⁷ "Shall I Feed My Daughter, or Educate Her?" Human Rights Watch, November 13, 2018. <https://www.hrw.org/report/2018/11/12/shall-i-feed-my-daughter-or-educate-her/barriers-girls-education-pakistan> (accessed December 25, 2020)

⁴⁸ Panoply Digital Ltd, "Women's Pathways to the Digital Sector: Stories of Opportunities and Challenges," Federal Ministry of Economic Cooperation and Development (BMZ), February 2017, 7, [bmz.de/en/publications/type_of_publication/information_flyer/flyer/study_eSkills4girls.pdf](https://www.bmz.de/en/publications/type_of_publication/information_flyer/flyer/study_eSkills4girls.pdf) (accessed 15 December 2020)

⁴⁹ "Shall I Feed My Daughter, or Educate Her?" Human Rights Watch, November 13, 2018, <https://www.hrw.org/report/2018/11/12/shall-i-feed-my-daughter-or-educate-her/barriers-girls-education-pakistan> (accessed December 25, 2020)

⁵⁰ Waqas A. Khan, "ICT in Education, Reached? Nowhere!" *Pakistan Today*, June 18, 2017, <https://www.pakistantoday.com.pk/2017/06/18/ict-in-education-reached-nowhere/> (accessed 17 December 2020)

opment. A labor force that is equipped with up-to-date technical skills and technological adaptability will ensure an economy that is competitive and well integrated into the global production chain. However, as already discussed, there are various impediments that have been hindering Pakistan's process with IT development—these have become even more pronounced in its education sector since the Covid-19 pandemic hit in early 2020. Replicating global best practices, Pakistan too switched to online learning but many schools were unable to participate in this endeavor, given the weak IT infrastructure available in most schools, if at all.

More specifically, around 300,000 educational institutions were closed due to the outbreak of Covid-19, which put approximately 50 million school, college and university going Pakistanis at a risk of falling behind⁵¹. Thus, the educational institutions that were capable of digitizing education incorporated it within their programs while those who did not have the resources have simply been struggling to provide basic teaching—augmenting an already divisive and inequality-inducing education system in the country.⁵²

Many schools, especially those that enroll students from low-middle income households were unable to offer remote-teaching alternatives. Where e-learning was a possibility, the system was riddled with issues such as students' erratic access to the Internet, or absence of devices to connect to online classes, weak IT infrastructure in schools, reluctance of teachers to switch to online teaching⁵³ and a loss of household income to support education-related payments. Recent research found that girls from low-income households particularly suffered as parents preferred to support the education of their sons, while their daughters were expected to take on domestic chores as schools remained closed.⁵⁴ Furthermore, parents' fear of sending their children to school and an increased burden of education spending (due to loss of household income) extended the period in which children remained at home. This in turn widened learning inequalities and increased the likelihood of children, particularly the girl child, leaving the education system altogether. Faisal Bari calls this an "early exit from education."⁵⁵ Only through equitable education, that manages to retain the girl child, can we hope to have a female labor force that plays an equalizing role in bridging gender divides.

⁵¹ Mehreen Zahra Malik, "The Coronavirus Effect on Pakistan's Digital Divide," BBC Work life, <https://www.bbc.com/worklife/article/20200713-the-coronavirus-effect-on-pakistans-digital-divide> (accessed December 25, 2020)

⁵² Ibid.

⁵³ Marium Asad, "The State of Education Technology in Pakistani Schools," *The Express Tribune*, 23 October 2020, <https://tribune.com.pk/article/97200/the-state-of-education-technology-in-pakistani-schools> (accessed December 25, 2020)

⁵⁴ In an article for *Dawn* Dr. Faisal Bari talks about the challenges that have arisen for education in Pakistan following the pandemic. Health related fears in addition to loss of income have made education a real trade-off for many families coping with straitened circumstances and girls have suffered more than boys as a result.

Faisal Bari, "Disruptions to Learning", *Dawn*, 16 October 2020. <https://www.dawn.com/news/1585333/disruptions-to-learning> (accessed 19 December 2020).

⁵⁵ Ibid.

Education needs to be multifaceted, breaking stereotypical biases and creating a culture where girls are encouraged to take on technological learning as much as boys. Curriculum change will need to begin at the primary and secondary level, where equality is taught not only through practical courses on basic ICT skills, but also through education on women’s economic value and their contribution towards a society’s growth, contrary to predefined cultural biases. Moreover, we need to develop classrooms that are equipped with the right hardware: updated digital devices that allow interactive learning and provide students opportunities to expand their technical skills, creative expression and inculcate a culture of critical thinking.

The Ministry of IT & Telecom for example, announced in 2018 “ICT’s for girls”—a program which specifically targets female empowerment by reducing barriers to the access of technology and improving their access to digital infrastructure, particularly through improving digital facilities in schools.⁵⁶ Over 200 girls’ schools in Islamabad benefitted while 12,000 girls have already participated in a training program sponsored by Microsoft under the initiative. Teachers have also been trained and Women Empowerment Centres across the country are being developed with IT labs targeted at training women.⁵⁷ Such initiatives need to be scaled up particularly in areas that indicate low levels of digital literacy.

3.2 Women’s Economic Empowerment and Access to Technology

Economic and political gender-based inequalities continue to characterize the world we live in, and Pakistan is no exception. Even in countries categorized with very high human development, stark gender differentials hinder women from achieving their full potential. In the United States, 80% of men occupy higher ranks with decision-making power⁵⁸. In addition, even where women are employed at the same ranks as men, they do not receive the same remuneration. According to a study conducted at Harvard University, the median earnings of females in the year 2005 were \$90,000 for women while men earned around \$162,500⁵⁹. Similarly, in Japan, which has an HDI of 0.915⁶⁰, 93 out of 100 people in the top positions are men⁶¹.

The McKinsey Global Institute notes that while women make up 50% of the working age population, they were able to generate only 37% of the Gross Domestic product (GDP)

⁵⁶ “How Pakistan Is Empowering Women and Girls in ICT,” ITU News, March 09, 2018, <https://news.itu.int/how-pakistan-is-promoting-women-and-girls-in-ict/> (accessed December 25, 2020)

⁵⁷ “Presentation to CICC Members: 3rd December, 2020”, Ministry of Information Technology & Telecommunication Government of Pakistan, http://www.cicc.or.jp/japanese/kouenkai/pdf_ppt/pastfile/r02/201203-04pk.pdf (accessed 8 January 2021).

⁵⁸ Nikki Van Der Gaag, “Women Are Better off Today, but Still Far from Being Equal with Men” *The Guardian*, September 29, 2014, <https://www.theguardian.com/global-development/2014/sep/29/women-better-off-far-from-equal-men>.

⁵⁹ Ibid.

⁶⁰ UNDP, “Human Development Report 2020 The Next Frontier: Human Development and the Anthropocene Briefing note for countries on the 2020 Human Development Report: Japan”, UNDP, http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/JPN.pdf (accessed 7 December 2020).

⁶¹ Nikki Van Der Gaag, “Women Are Better off Today, but Still Far from Being Equal with Men” *The Guardian*, September 29, 2014, <https://www.theguardian.com/global-development/2014/sep/29/women-better-off-far-from-equal-men>

in 2015. If on the other hand, countries worked towards achieving gender quality, an additional \$12 trillion could be added to the global GDP by 2025⁶². Although, it is a positive development that between 2000 and 2018, women were able to secure two-thirds of the 45 million available jobs, yet, it is also a fact that the majority of these jobs were either less secure as they were independent/ part-time or they had less remuneration and limited incentives to offer⁶³.

These statistics are a fair indication of the disparity in the progress made by both genders and they also highlight that women are deprived of the opportunities men have access to. This inequality translates into several dimensions of economic accessibility, including access to ICT resources.

In turn a digital divide is the gap between individuals, regions and countries with respect to access to modern information and communication technologies (ICTs) for a variety of reasons. A digital divide exists not only between countries but also within countries, and even within regions. In fact, there is increasing evidence that a digital divide exists within homes as well since desktops, laptops, tablets, and smart phones are usually in possession of men and boys. The absence of gender equality shares a close relationship with the lack of economic empowerment and that has been affecting access to technology. In fact, the causality between economic empowerment and access to technology can go both ways, one can lead to the other and vice versa. According to United Nations Women, women's economic empowerment plays an integral role in the realization of their other basic rights, where they lack economic independence, they are likely to suffer other forms of deprivation as well⁶⁴. Figures from a research conducted in 2016 revealed that only 8% of females were found to be financially included (registered bank accounts) and these women belonged to the urban set-up, were educated and had a wealthy background⁶⁵.

Box 2: Women and Labor Market

Many factors can explain Pakistan's low female labor participation rate. One pertinent one is the lack of appropriate skills that are required to enter and survive the job market.⁶⁶ This is worrying, given the speed with which technology evolves and develops. If women in Pakistan continue perform poorly on ICT skills development, there is likely to be an adverse impact on their own empowerment—not to mention a signifi-

⁶² More specifically the MGI's research "found that in a best-in-region scenario in which all countries match the performance of the country in their region that has made the most progress toward gender equality, \$12 trillion a year could be added to GDP in 2025." Mekala Krishnan et al., "Ten Things to Know about Gender Equality," McKinsey & Company, September 22, 2020, <https://www.mckinsey.com/featured-insights/diversity-and-inclusion/ten-things-to-know-about-gender-equality#> (accessed November 24, 2020)

⁶³ Ibid.

⁶⁴ UN Women, "Facts and Figures: Economic Empowerment," UN Women, <https://www.unwomen.org/en/what-we-do/economic-empowerment/facts-and-figures> (accessed December 24, 2020)

⁶⁵ Tehreem Husain, "Women and Financial Inclusion – the Case of Pakistan," *The Express Tribune*, March 12, 2018, <https://tribune.com.pk/story/1657403/2-women-financial-inclusion-case-pakistan> (Accessed December 24, 2020)

⁶⁶ Sara Ali, "Empowering Women through Skills in the Age of Automation," *The Express Tribune*, September 11, 2019, <https://tribune.com.pk/story/2054205/6-empowering-women-skills-age-automation> (accessed December 24, 2020)

cant cost to the overall growth potential of the economy.

A lack of awareness or even a basic understanding of their rights can explain another reason behind women's economic deprivation. Women tend not to realize the importance of access to technology in Pakistan given they operate in a private sphere. On the contrary, women who are economically independent and empowered, have greater access to technology primarily because of their awareness and because of the utilitarian function of technology in the labor market. Similarly, the economic dependence of women on men also prevents them from owning digital devices of their own and accessing the right ICT infrastructure. Men can restrict their access based on societal factors by using the authority that they exercise over them⁶⁷.

Women make up only 24% of the labor force despite being 49% of the total population in Pakistan.⁶⁸ Those who are employed face a wide gender pay gap. The hourly gender pay gap is approximately 26% in Pakistan, in other words the wages women earn are 74% of that of the wages of men. Moreover, only 37% of women receive regular wages, which indicates another level of exploitation. Furthermore, out of the 37% of the regularly paid women, 55% of the females receive less than legal minimum wage⁶⁹.

The gender gap in ownership /use determines the average difference between access to men and women as a percentage of the access to men (see *Figure 2*).

Figure 2: Calculating the Gender Gap in Mobile Ownership and Mobile Internet Use

$$\text{Gender gap in ownership / use (\%)} = \frac{\text{Male owners / users (\% of male population)} - \text{Female owners / users (\% of female population)}}{\text{Male owners / users (\% of male population)}}$$

Source: Mobile Gender Gap Report 2020, p.7.

Digital literacy in turn implies access to technology including digital devices such as mobile telephones or computers with an Internet connection. According to the Mobile Gender Gap Report 2020, mobile ownership provides critical life-saving tools such as safety, access to important information, and pivotal support for work and study.⁷⁰ Yet global

⁶⁷ OECD, "Bridging the Digital Gender Divide: Include, Upskill, Innovate," 2018, <http://www.oecd.org/digital/bridging-the-digital-gender-divide.pdf> (accessed December 24, 2020)

⁶⁸ Iftikhar Ahmad, "No Country for Working Women," *The Express Tribune*, March 10, 2018, <https://tribune.com.pk/story/1655699/no-country-working-women> (accessed December 24, 2020)

⁶⁹ Ibid.

⁷⁰ Oliver Rowntree and Mathew Shanahan, "Connected Women The Mobile Gender Gap Report 2020", GSMA, 2020, p.2

trends indicate that women have lesser access to mobile devices and mobile Internet use than men and the gender gap remains a serious hurdle to equitable development.

In LMICs this gap is particularly prevalent where “women are still eight per cent less likely than men to own a mobile phone, and 20 per cent less likely to use the internet on a mobile.”⁷¹ There is nevertheless an improvement—47% of women in LMICs used mobile internet in 2017, this number is now 57%.

Pakistan, however, still struggles with one of the highest gender gaps in the world when it comes to mobile phone ownership (38%).⁷² Similarly, with respect to mobile Internet usage, 37% of Pakistani men have access to mobile Internet while this number was only 19 % for women.⁷³

Likewise, considering access to broadband Internet, only 28.14% of the entire Pakistani population has access, indicating an already dire situation.⁷⁴ **Accessibility is even worse, in rural areas where 55% of the population resides; according to the Pakistan Telecommunication Authority, the usage of Internet in these areas is less than 8%⁷⁵. In fact when the overall usage of Internet by women is explored, it is found out that women are 49% less likely to be connected to the Internet than men. Moreover, women are 1.6 times more likely than men to not even possess skills that are as simple as browsing the internet⁷⁶.** This very well explains the data presented by the ICT index according to which, Pakistan stands as one of the least connected countries globally as it ranks 146 out of the 175 economies studied⁷⁷.

Similarly, digital media, as an important source of information, entertainment, economic opportunities and even education, remains underutilized amongst women in Pakistan. A report by the Information Technology University Punjab recorded that on Facebook “the audience for its advertisements in Pakistan consists of only 19.2% women while men make up 80.8%. A similar statistic by LinkedIn shows that women make up 16.3% of the advertisement audience on LinkedIn, whereas men make up the remaining 83.7%.”⁷⁸

Likewise, Twitter’s total monthly advertising was dominated by men (82%), while women

⁷¹ Oliver Rowntree and Mathew Shanahan, “Connected Women The Mobile Gender Gap Report 2020”, GSMA, 2020, p.2

⁷² Of the Countries surveyed in the Mobile Gender Gap Report 2020.

Oliver Rowntree and Mathew Shanahan, *Connected Women The Mobile Gender Gap Report 2020*, GSMA, 2020, p.11.

⁷³ Ibid.

⁷⁴ Naveed Haq, “Pakistan”, Global Information Society Watch, <https://www.giswatch.org/en/country-report/infrastructure/pakistan> (accessed 9 February 2021).

⁷⁵ Ibid.

⁷⁶ Panoply Digital Ltd. “Women’s Pathways to the Digital Sector: Stories of Opportunities and Challenges.” Federal Ministry of Economic Cooperation and Development (BMZ). February 2017. bmz.de/en/publications/type_of_publication/information_flyer/flyer/study_eSkills-4girls.pdf (accessed 15 December 2020)

⁷⁷ Ismail Sheikh, “Pakistan Has World’s Highest Gender Gap in Mobile Phone Usage,” *The Express Tribune*, November 23, 2016, <https://tribune.com.pk/story/1239596/pakistan-worlds-highest-gender-gap-mobile-phone-usage> (Accessed December 24, 2020)

⁷⁸ “Mitigating the digital gender gap”, *MIT Technology Review*, <http://www.technologyreview.pk/mitigating-the-digital-gender-gap/> (accessed 25 November 2020).

had a meager 18%⁷⁹. It is not surprising that these statistics remain consistent even in the ambit of financial inclusion where while about 12% of men have been found making online transactions, only 3.3% of the females were following the suit⁸⁰. This argument is further strengthened by the fact that less than 5% of the female population has access to bank accounts which gives a fair idea about women's financial inclusion⁸¹. Moreover, as far as loans are concerned, only 19% of the microfinance loans were granted to the female borrowers while male borrowers consumed an overwhelming 81% loans. It is also noteworthy that even though an overwhelming majority of females work in the agricultural sector, only 4% of the advances were granted to them⁸². These statistics are a clear indication of disparities in exposure, inclusion and economic opportunities that exist in Pakistan. However, access to technology can help narrow the gender gap, which in turn requires reducing barriers to ICT infrastructure and digital skills.

Studies suggest that where women are given access to technology and included in the tech field on an equal footing as men, companies yield higher profits, are able to create more holistic problem solving cultures, and are more innovative and creative than companies with low levels of gender diversity.⁸³ Moreover, having more women in leadership roles improves productivity significantly. McKinsey & Company noted that corporations that fell in the top 25% for gender diversity performed 21% better than those companies in the bottom 25%. Likewise studies from Carnegie Mellon and MIT found that the collective intelligence of a group rises if it includes more women.⁸⁴

As noted above, many women have identified 'acceptance' as a major barrier to their empowerment in the tech sector. Campaigns that work towards mitigating patriarchal norms that discriminate against women must be taken on across the board in a multifaceted manner—normalizing women in the digital realm. Private corporations can help integrate their business models with community development, particularly through programs that target women. Telenor Pakistan, an international telecommunication company, had set the objective of increasing its female mobile Internet customer base from 40 to 48% and its mobile money customer base from 10% to 15% by 2020 as part of its commitment to bridging the gender divide. The company is also investing in the skills development of 1000 female entrepreneurs, aiding their "design thinking skills" as part of the World Bank's Girls Learn Women Earn project.⁸⁵ Ufone, another telecommunication company

⁷⁹ Mohammad Farooq, "Active Social Media Users in Pakistan Grow by 5.7%: Report," *Pakistan Today Profit*, 5 February 2019. <https://profit.pakistantoday.com.pk/2019/02/05/active-social-media-users-in-pakistan-grow-by-5-7-report/> (accessed December 2020).

⁸⁰ Ibid.

⁸¹ Mansoor Ahmad, "'Banked Population Lowest in Pakistan'," *The News*, August 06, 2015, <https://www.thenews.com.pk/print/55117-banked-population-lowest-in-pakistan#:~:text=LAHORE: Roughly 13 percent of, a recent World Bank report> (Accessed December 24, 2020)

⁸² Fahim Adil, "Women and Access to Financial Services," *Dawn*, March 18, 2019, <https://www.dawn.com/news/1470187> (Accessed December 24, 2020)

⁸³ "Mitigating the digital gender gap", *MIT Technology Review*, <http://www.technologyreview.pk/mitigating-the-digital-gender-gap/> (accessed 15 December 2020)

⁸⁴ Annam Lodhi, "In Conversation with Dr. Bushra Anjum on Data and Gender Equity," *Tech Juice*, April 12, 2019, <https://www.techjuice.pk/dr-bushra-anjum-on-data-and-gender-equity/> (accessed 24 December 2020).

⁸⁵ GSMA, Mobile for Development Telenor Pakistan, , <https://www.gsma.com/mobilefordevelopment/m/telenor-pakistan/> (accessed 24 December 2020)

in Pakistan, developed the 'Inspire' program with the aim of educating both men and women about the benefits of having women in leadership positions. The company hopes to improve gender diversity within its own offices as well through sessions that champion female leadership.⁸⁶

Another example to learn from is WomenInTechpk, a recent online community for women, which is paving the way for greater female representation in the IT industry. By providing career counseling, mentorship and networking opportunities, the initiative hopes to induct more women into field. The community also provides short-courses and internship programs on coding and other IT skills such as communication design, digital marketing and online journalism as an alternative to full-time education.⁸⁷

These initiatives are likely to impact women's formal entry into the labor force, improving their pay scales and opening up avenues for decent work including career progression. As mentioned earlier, women's economic independence is a vital component of their human development. Expanding women's control over assets, their share in the labor market and control over their earnings will not only improve their economic independence, but will also reduce barriers to accessing technology, participating in top leadership positions, and catalyzing their overall empowerment along with it. Therefore, such programs need to be scaled up, replicated and sustained so that women can participate in their communities and the labor force as competitive, high-skilled professionals.

4. Concluding Remarks

Pakistan's commitment to the Sustainable Development Goals cannot be espoused if it is unable to address the human development needs of its women. From the health and education of women, to their right to justice, political and social activity, a country cannot progress if it leaves its women behind. Reducing gender inequality, including the gender digital divide will demand concerted efforts from all; individuals, communities, the private sector, the government, law enforcing agencies and the entire institutional infrastructure responsible for safeguarding people's socioeconomic and political wellbeing.

In this paper we have illustrated the link between the gender-based digital divide in Pakistan and human development outcomes. It is evident that technology is an inextricable component of the international economy and modern societal living, which expands our potential to alleviate development woes while simultaneously improve livelihoods. Women's unequal access to ICT resources such as the Internet and mobile devices in Pakistan continues to hinder their progress, exacerbating their ability to narrow other gender-based development gaps. As a result, a multifaceted, cross-sectoral solution is needed.

⁸⁶ "Ufone Launches Inspire Platform to Empower Women in the Workplace", ProPakistani, <https://propakistani.pk/2019/01/25/ufone-launches-inspire-platform-to-empower-women-in-the-workplace/> (accessed 24 December 2020)

⁸⁷ Women In Tech Pk, Projects, <https://www.womenintechpk.com/portfolio/#Projects> (accessed 24 December 2020)

5. Policy Recommendations

The gender-based digital divide is a harsh reality for Pakistan, with far reaching consequences for the country's human development potential, yet alone its women's empowerment. Women struggle not only in accessing ICT tools such as mobiles, laptops or the Internet, but are unable to use them effectively due to poor learning outcomes, regressive cultural norms and hence low levels of digital capabilities. The multifaceted nature of digital technology, its irreplaceable use in our economic, social and cultural lives, imply that women who suffer due to the digital divide face a steeper curve to improve their livelihoods. We recommend three sets of solutions to tackle Pakistan's gender-based digital divide: expand digital capabilities, improve access and create conducive environments for growth.

5.1 Expand Digital Capabilities through Investments in Education

Equipping Schools and Training the Trainers

Building digital capabilities means devising policies that coincide well with our education policies, particularly those that encourage girls to stay in school. Furthermore, equipping our schools with up-to-date technological resources to impart life-changing skills to our youth will be a fundamental determinant of how Pakistan's human development trajectory will pan out. Access to technology cannot be seen as an isolated component of women's technological empowerment—utilizing that technology effectively for socioeconomic and political gains, or digital capabilities, are as, if not more, important.

We need to focus on redesigning teacher-training programs that integrate digital learning within that process. Eventually we need to create a substantial number of teachers that are not only trained to operate the hardware and deal with basic technical glitches, but are open to change and can adapt to rapid technological innovations. Teacher training will hence go in hand-in-hand with ICT development.

While ICT education needs to begin at the primary level of schooling, higher education institutes must build on those efforts, enhancing student's digital capabilities in conjunction with their respective fields of study. For example while ICT can be an area of study on its own, non-IT courses that range from Philosophy to Public Policy must also ensure that their teaching takes advantage of the relevant technological tools available. For women specifically, studies highlight how developing positive female role models in the IT industry can bring about transformational change in the way people perceive women in tech. Educational institutes can use workshops and mentorship programs as an opportunity to allow students to interact and learn from female industry leaders.⁸⁸

⁸⁸ Maryam Tanwir and Nitya Khemka, "Breaking the silicon ceiling: Gender equality and information technology in Pakistan", *Gender, Technology and Development*, 22, no.2, (October 2018): p. 121

Public, private and academic partnerships that promote ICT skills for women

Lifelong learning opportunities must be provided for women outside of the formal education domain. This means developing programs that teach women essential ICT skills particularly corresponding to market needs, and at subsidized rates. Public ICT programs through Technical and Vocational Education Institutes and part-time programs in regular higher education institutes are possibilities to explore. Similarly private firms and corporations can develop ICT training programs as part of their corporate social responsibility, that ensure women are included in the industry rather than excluded from it.⁸⁵

The Women Chambers of Commerce and Industry- a network of various business groups around the country can also play a significant role in encouraging private corporations to target their corporate social responsibility programs towards women's digital empowerment. There are currently 15 Women Chambers in Pakistan including in Islamabad, Lahore, Peshawar, Bahawalpur, Quetta, Multan and Karachi.⁸⁶ These organizations are responsible for supporting women's entrepreneurship in their respective region by organizing events around business and financial advice, opportunities for networking, acquiring bank loans, social media and marketing advice etc. Adopting a technology-centric approach to their functions, these Women Chambers can help reduce the digital divide in the country, particularly by creating mutually beneficial exchanges between women in the business sector; from women in SMEs and cottage industries to women in larger, international corporations.

5.2 Improve Access to ICT Tools

Foremost in our quest to narrow Pakistan's gender digital divide is improving women's access to ICT and digital infrastructure. Access implies financial affordability and geographic ease, which can be achieved through programs that target female users through special subsidized or discount schemes.⁸⁷

Demand and Supply-side policies for ICT Infrastructure

The public sector must facilitate these endeavors, working towards narrowing the gender digital divide. As mentioned earlier, our commitment to the SDGs, particularly Goal 9 of the SDGs, Target 9.C demands universal and equitable access to the Internet and Information and Communications Technology. Investing in technology for all will have positive spillover effects that will help us achieve other SDGs; on education, health, justice and the environment. Information campaigns that educate communities about the benefits of connectivity and encourage women to use digital devices and Internet services in local languages are a policy option to consider. This is likely to encourage the demand for ICT

⁸⁵ Ibid, p.122

⁸⁶ The Federation of Pakistan Chambers of Commerce and Industry, <https://fpcci.org.pk/about-us> (accessed 9 February 2021).

⁸⁷ Digital Rights Foundation, https://www.upr-info.org/sites/default/files/document/pakistan/session_28_-_november_2017/df_upr28_pak_e_main_rev.pdf (accessed 24 December 2020).

infrastructure and create a market for digital devices. On the supply side, public-private partnerships that help connect peri-urban and rural areas to the Internet and help investments in basic digital infrastructure such as fiber-optic cables and a steady supply of electricity must follow suit.

5.3 Create Conducive Environments for Growth

Invest in changing mindsets and curbing stereotypes

The Government needs to prioritize training public-sector officials on how to deal with gender-sensitive⁸⁸ issues —changing mindsets through culturally appropriate, targeted training programs can go a long way in safeguarding women’s empowerment including their technological and digital progress.

IT companies, the government and Tech industry social media leaders have an obligation towards making the Internet a safer place for women, so that women are encouraged and can participate online boldly and confidently.

Political parties and the parliament must devise effective legislation that penalizes abusive behavior and online harassment towards women.

⁸⁸ Ibid.

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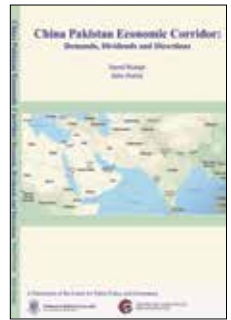
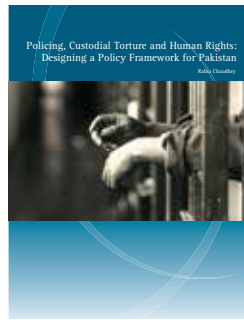
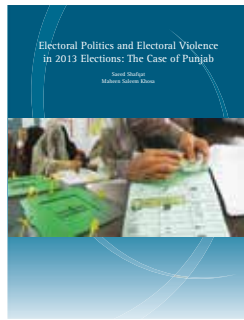
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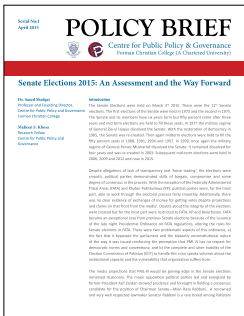
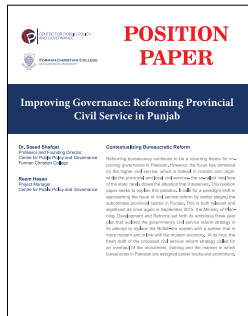
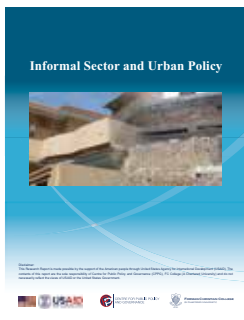
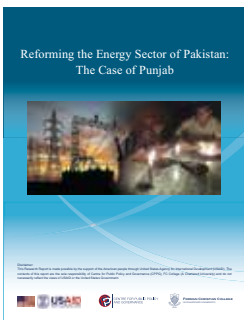
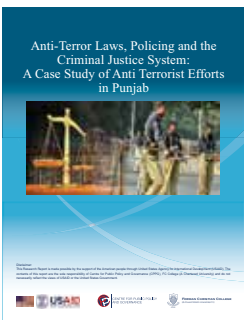
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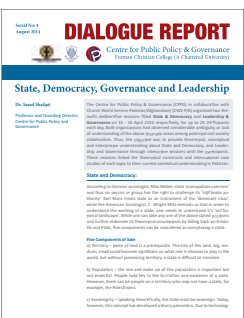
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