



TECHNOLOGY FEATURE Industrial News / Technology Report / Research Communication

Bridging the Gap: A Technical Framework for Intersex Socio-Economic Empowerment through Telemedicine and Digital Education in Pakistan

How education in digital skills and encrypted health platforms could improve the socioeconomic future of one of Pakistan's most underprivileged communities.

By **Muhammad Haseeb** | University of Agriculture | Published: July, 2026

✉ haseebsharif.direct@gmail.com | Position: Software Engineer

Introduction

In Pakistan, transgender and intersex people are all referred to as Khwajasira. However, as the intersex population's unique biological and medical qualities are mostly hidden, not much is known about them. Because of this lack of knowledge, societal gatekeepers decide who is "male to female" or "facially male" (intersex), allowing them to have equal access to jobs, healthcare, and education with those who were assigned the opposite sex at birth. Although Pakistani citizens now have the freedom to self-identify due to the Transgender Persons Protection of Rights Act 2018, social gatekeepers still have power.

Intersex individuals in Pakistan are faced with two interrelated structural crises. First, many are forced into the abusive informal economy after undergoing unofficial "normalizing" procedures during birth. This marginalization is distinct from that faced by transgender individuals, yet it is often ignored in the discursive conflation between the two.

This article describes practical technological solutions that allow safe telemedicine and digital education to reduce healthcare vulnerability and poverty.

"In a digital workspace, a developer's value is determined by their code, not their gender marker. Technology offers a way to bypass the gatekeepers of society."

Technology Overview : The Healthcare Crisis: Telemedicine as a Shield

A long history of surgical procedures expected to conform intersex bodies to binary sex types has been described in medical literature; these procedures are often carried out without meaningful permission. I recommend using telemedicine for a safer experience. Telemedicine has been accepted by the World Health Organization as a process of improving healthcare access in less developed countries with limited resources. Based on their individual experiences with physicians who respect their physical autonomy and keep the principle of getting permission after full information, patients and individuals would examine the database and give opinions.

Full encryption that includes such standards as AES 256 would secure patient identities and medical information. By means of safe virtual consultations, individuals in isolated and/or conservative regions could seek



endocrine, psychiatric, or surgical advice without being recognized by the community. In the practical sense, this converts healthcare as a stressful environment into a controlled online environment that puts the dignity of the patients first.

The Digital Era: Stepping into the New World

Still, a lack of opportunity remains one of the most urgent challenges. The ones who cannot conform to the simple norms are literally ignored by the traditional employers, and often these employers demand tight gender conformity. Digital education offers another possibility. Digital marketing, data analytics, and software engineering training provide individuals with skills that are evaluated not on their looks but on their results, which can be measured.

According to a study on the global gig economy, digital workplaces enable distributed, geographically scattered workers to operate in international markets. Websites such as GitHub and Upwork enable professionals to earn a reputation because of their performance and portfolios. This technique decreases dependency on localized hiring beliefs for an intersex learner in Lahore or Sukkur.

The exposure to bullying that many gender different individuals report in physical training facilities is largely decreased by asynchronous online courses. Digital education can be a practical step toward middle-class stability when it is taught in Urdu and supported by mentorship.

Key Findings & Impact

There are both alarming gaps and new possibilities in the current environment. In Pakistan, the 2017 census officially found that approximately 10,418 individuals were officially recognized as transgender or intersex in the country. Advocacy groups believe that the true number must be much less than that, perhaps in the 500,000 range. The further complete secrecy of the community by official monitoring is reflected in this undercount.

A 2022 Oxford Internet Institute assessment ranked Pakistan in 4th position among the countries of the world in freelancing. According to the Pakistan Software Export Board, the IT export earnings of the country were more than 2.6 billion USD during the financial year 2022-2023. To the intersex individuals who acquire the requisite technological expertise, this emerging digital economy promises some real opportunities.

There is still an extreme lack of access to healthcare. According to the World Health Organization, there are currently one psychiatrist per 500,000 people in Pakistan, and almost none of them have received professional training in intersex-specific care. The previous demonstrations of Sehat Kahani and other telemedicine websites have already established that in rural areas in Pakistan, women can receive online consultations. The next theoretically possible and culturally relevant step would be to apply such models to intersex individuals who have additional levels of protection and scrutiny on the part of their provider

What's Next?

Social change cannot be replaced by technology. Pakistan still has quite a large digital divide. According to the World Bank data, approximately 36% of Pakistani people used the internet over the past few years, and even lower connectivity rates are being observed by vulnerable populations. Moreover, most intersex individuals do not have the opportunity to attend normal schools, and as such, obtaining digital skills is not an easy task.

To address these issues, tech companies, telecom companies, provincial educational ministries, and civil society organizations should collaborate. Any platform-based strategy needs sub-platforms of data bundling, digital places within communities, and basic literacy programs.



To bridge the gap between intersex Pakistanis requires a shift in policy statements to practical procedures. The practical and ethically appropriate basis can be provided by secure telemedicine networks and easily accessible digital learning pathways. It is possible to have the architecture. The next step is coordinated execution.

About the Author

Muhammad Haseeb is a student of software engineering from Faisalabad. His areas of expertise are software architecture and the creation and use of intelligent systems. His email address is haseebsharif.direct@gmail.com

Keywords: Telemedicine; Digital Education; EdTech; Intersex Rights; Gig Economy; Encryption; Blockchain; Pakistan Tech

References

- [1] Government of Pakistan, 2018 Transgender Persons Protection of Rights Act 2018, National Assembly of Pakistan. Available at: https://na.gov.pk/uploads/documents/1526547582_234.pdf
- [2] Dreger, A.D. 1998. Hermaphrodites and the Medical Invention of Sex, Harvard University Press. Available at: <https://www.hup.harvard.edu/books/9780674001893>
- [3] Office of the United Nations High Commissioner for Human Rights, 2019 Intersex People. Available at: <https://www.ohchr.org/en/sexual-orientation-and-gender-identity/intersex-people>.
- [4] Sehat Kahani 2023 About Us and Impact. Available at: <https://sehatkahani.com>.
- [5] Pakistan Software Export Board 2023 IT Industry Statistics. Available at: <https://www.pseb.org.pk>.
- [6] World Bank 2023 Individuals Using the Internet Percentage of Population Pakistan, World Development Indicators. Available at: <https://data.worldbank.org/indicator/IT.NET.USER.ZS?locations=PK>.
- [7] Office of the United Nations High Commissioner for Human Rights, 2019 Intersex People. Available at: <https://www.ohchr.org/en/sexual-orientation-and-gender-identity/intersex-people>.