Assistive Technology Adoption and Digital Inclusion

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Abstract

Suppose you had the greatest library in the world at your door, but the door was locked, and you could not buy the key because it cost you more a month than your rent. This does not symbolize anything to millions of Bangladeshis with disabilities, but is their everyday reality. About 15.6 million individuals or about 9 percent of the population cannot access the digital resources, information, and services that the other population members have access to without much hesitation.

With the advent of 2026, the conversation of Assistive Technology (AT) will have transitioned away from an overly medical or rehabilitative perspective of innovation to a more social justice, equity, and the very right to engage as a full member of a Smart Bangladesh. Assistive technologies, both in their simplest form (screen readers and speech-to-text software) and more complex forms (adaptive hardware and mobility devices) are also being discussed as digital skeleton keys, which help open the door to education, employment, healthcare, and civic participation.

Although Bangladesh is fast upgrading its digital infrastructure, there is a drastic divide in terms of participation. Recent reports, around the end of 2025 to the beginning of 2026, indicate that although 47 percent of the general population is actively engaged in the internet, approximately 4 percent of the persons with disability use mobiles internet. Such an impressive gap demonstrates a more general phenomenon of digital exclusion that has not been fully reflected in national statistics. In addition, 71 percent of those with the difficulty in functions state that they have an unmet requirement of assistive products, and they have to depend on improvised or self-adapted remedies. This inequality is also increased by gender: Of all women with disabilities, only 30% own a mobile device, and 54% of men in that group do. These statistics highlight the point that the problem of digital participation is not only a technological one but is highly intertwined with social, economic, and cultural aspects.

Included in the list of the three significant areas of friction which hinder the uptake of assistive technology in Bangladesh are human-centered research. To begin with, there is the affordability wall. Most of

Bangladeshi users cannot afford to buy commercial assistive software and high-end adaptive hardware since they are marketed at prices that are typically too high to afford in the West. Financial precarity is found in about 70% of persons with disabilities, which renders such tools virtually unseen in their life. Another possible fix: frugal innovation entails that open-source software (OSS) and open-source hardware (OSHW) can lower the price of assistive devices by more than 90 percent. In one example, the localised versions of NonVisual Desktop Access (NVDA) to Bangali script input or Bangali script OCR software can significantly enhance accessibility at relatively low cost. Through the development of open-source, designers and policymakers would be able to offer tools which are culturally and language pertinent, economical and sustainable.

Second, infrastructure is usually a hindrance even with the availability of assistive technologies. Lots of government portals still use visual CAPTCHA challenges with no audio options meaning that blind people cannot access much needed government services. Another problem is banking infrastructure: the lack of websites that can be used with the help of a screen reader and the unavailability of ATMs mean that many individuals cannot conduct some personal financial transactions, so they have to use the help of relatives or caregivers and lose independence. The infrastructure paradox points out the idea that accessibility cannot be viewed in the narrow context of software only, but on a larger scale of system design that encompasses digital platforms, service provision, and the wider infrastructure.

Third, one of the factors causing low adoption of assistive technologies is social and educational factors. There is still a digital divide, and the widespread myths about technology being not accessible to the disabled are frequently supported by social discourses. Users often leave tools even with the provision of the tools as they often do not have proper training or support that is culturally and linguistically relevant to them. The human-centered design study shows that to address these barriers, it is necessary to not only supply technology, but also local training resources, mentorship, and community involvement which develops the level of competence and confidence.

The assistive technology needs to be redefined as not a luxury item, not an addition, but as a structural outcome in terms of equity and social inclusion. The most appropriate accessibility is one that is considered during the design phase and not the one that is added afterwards. A 2025 UNDP study identified retrofitting an existing digital platform to be accessible to cost 10 times as much as its original development and highlighted the significance of inclusive design, which needs to be undertaken proactively. This observation supports the value of digital inclusion as a social justice issue: when the edges of the society are designed, this will positively impact the entire society and establish more accessible and equal systems to all users.

To ensure the transition to a well-rounded digital ecosystem in Bangladesh, a systemic approach to achieving this goal over the period of 2026 to 2030 will be a gradual process. To overcome the affordability barrier, first, subsidized bundles of health-tech can be used. The government and the parties in the private

sector must also liaise on offering internet access packages at low prices and subsidized assistive devices (smart canes, Braille displays, and adaptive key boards) to provide beneficiaries of other programs, like the Suborno Card. Second, it is important that a Digital Accessibility Act should be established by 2027. The international standards and protocols that should be used to develop this legal framework include WCAG 2.2 and require accessibility to all the applications and web sites that are open to the people and which should be monitored by a special National Authority. This kind of law would give accountability and motivation to developers to follow inclusive design. Third, it is necessary to invest in local AI and software innovation. Bangla-first AI models, such as speech-to-text systems with support of regional dialects, OCR with support of the Bangla script, and predictive text apps, can provide a guarantee that assistive technology is situated within a local context, that it can be useful, and relevant to the local populations.

The gendered aspect of digital exclusion can be resolved by integrating these strategies as well. The participation gap can be bridged by specific measures to enhance technology access among women with disabilities, including training opportunities in the community, mentoring, and micro-finance programs of devices. The inclusive design should thus work at various levels, which include policy, infrastructural, education, and community support. By working on the issues of affordability, compatibility with infrastructure, and digital literacy in a combined manner, Bangladesh can make sure that assistive technologies reach their potential to become the tools of empowerment and not be the artifacts of inequality.

The use of assistive technology is not mere technical issue, but rather it is an ethical and social necessity. In case digital platforms, public services, and social tools are inaccessible, they contribute to already existing inequalities, and people with disabilities cannot obtain healthcare, education, and employment opportunities. On the other hand, agency, independence and participation are made possible because of inclusive design. It is possible to change the discourse of charity to a rights-based inclusion by referring to AT as a Digital Skeleton Key where access to digital resources is a subject of equity and not privilege.

Besides, monitoring and evaluation will be necessary in order to make sure that the progress will be not only measurable but also able to be sustained. The analytics of accessibility, including the monitoring of usage trends, adoption, and user response, can be used to address iterative changes, which means that policies and interventions would be dynamic in meeting the needs of people with disabilities. The evidence-based solutions may also help to understand existing gaps, including areas that do not adopt due to insufficient infrastructures or cultural impediments, allowing interventions to be directed to maximize the effect.

To sum up, assistive technology is not an extravagance, it is a step to isolation and dependence. To achieve the dream of a smart Bangladesh that is inclusive of all the citizens, Bangladesh must be ready to make the assistive tools accessible, affordable, and culturally diverse. With the inclusive design embedded in the policy, infrastructure, training and local innovation, we could make sure that millions of Bangladeshis with

disabilities are not left behind on the digital gate. Success in the next few years will not only be in the connection rates or distribution of devices, but empowerment and involvement of the previously marginalized people. Assistive technology is the root to the society where all citizens can receive education, healthcare and civic life on equal terms irrespective of their physical and cognitive capabilities. Avoiding the tendency to use access as the structural need, Bangladesh can turn digital inclusion into not the aspiration but the reality so that the idea of a Smart Bangladesh becomes truly accessible to everyone.