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Mobile as Assistive Technology

Kenya Summary Report

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2 Kenya Report Summary

This document presents the summary of findings from research investigating the impact of Mobile as Assistive Technology conducted in Kenya between 2024 and 2025. The project explored whether smartphones can serve as assistive technology for people who are Blind or Partially Sighted (BPS) and people who are Deaf or Hard of Hearing (DHH).

The research was funded by the UK Department for International Development, Google, and ATScale – Global Partnership for Assistive Technology.

The research was led by Global Disability Innovation Hub (GDI Hub) and University College London in collaboration with Jomo Kenyatta University of Agriculture and Technology, Kilimanjaro Blind Trust Africa, Senses Hub, and Safaricom.

3 Context

Smartphones are no longer just communication tools. For people with disabilities, they can serve as assistive technology – replacing or supplementing specialised devices such as hearing aids and Braille readers. Unlike traditional assistive technology, smartphones are increasingly affordable and widely available, including in low- and middle-income countries (LMICs).

3.1 Smartphone Usage: Between Disabled & Non-Disabled people

In Kenya, there is a significant gap between disabled and non-disabled people when it comes to smartphone use:

- Only 12% of disabled people own a smartphone, compared to 41% of non-disabled people – a gap of 72%
- Disabled people are 36% less likely to be aware of mobile internet
- Disabled people are 85% less likely to use the internet

This gap is not simply about device access. It is shaped by a combination of factors: limited digital skills, affordability of data, inaccessible apps and websites, and lack of targeted training. Women with disabilities face compounded disadvantages due to gender norms, financial constraints, and safety concerns.

Despite these barriers, smartphones offer significant potential as assistive technology. This research was designed to test that potential in practice – giving people the devices, training, and data they needed, then measuring what changed.

4 About the Study

4.1 What the study set out to do

This study examined how smartphones function as assistive technology for BPS and DHH people in Kenya, following a structured programme of device access, digital skills training, and six months of supported use.

4.2 Who took part

194 participants were recruited in Kenya through Kilimanjaro Blind Trust Africa (KBTA):

Total participants at baseline	194 (97 BPS, 97 DHH)
Completed both baseline and follow-up surveys	121 (49 BPS, 72 DHH)
Age range	19 to 68 years
Location	Nairobi and surrounding counties
Education (most common)	College or university level

4.3 What participants received

- A Samsung A14 smartphone (a low-cost Android device, approximately USD 150).

- Two days of digital skills and accessibility training covering features such as TalkBack, Lookout, Live Transcribe, Sound Amplifier, and Live Captions.
- 2 GB of mobile data per month for six months, provided free of charge by Safaricom

4.4 How the study measured change

- Surveys were completed at the start and end of the study, using standardised questionnaires on digital skills, smartphone use, quality of life, and internet behaviour.
- In-depth interviews with 12 purposively selected participants after six months.
- Passive, privacy-preserving monitoring of app use through the Murmuras app, which recorded only app names and usage duration.

5 Key Findings

5.1 Digital Skills Improved Significantly

After training and six months of use, participants showed clear improvements in their ability to use smartphones:

- Across both groups combined, 71% of digital skills questions (39 out of 55) showed significant improvement.
- The BPS group saw improvement in 66% of skills, while the DHH group improved in 41%.
- The biggest combined gains were in calendar management, file management, and enabling/disabling accessibility settings.

- For the BPS group, the standout improvements were in navigating on-screen menus, turning accessibility settings on and off, and managing cloud storage.

These improvements are statistically significant, meaning they are unlikely to be due to chance. Effect sizes are moderate to large, indicating meaningful real-world gains.

5.2 Smartphone Use Increased Across Key Life Areas

Participants reported using their phones more frequently across 10 of 25 activity areas, including:

- Making and receiving voice calls
- Watching videos
- Communicating with organisations
- Travelling independently
- Organising and managing daily activities
- Accessing employment opportunities
- Using healthcare services

The largest improvement was in organising and managing daily activities.

5.3 Quality of Life Improved

Both groups showed significant improvements in access to information for daily living. DHH participants also showed improvements in participation in leisure activities. While

other quality-of-life measures (such as concentration, safety, and social participation) did not show statistically significant changes in survey data, qualitative interviews provided compelling evidence of transformation in these areas.

5.4 Accessibility Features Were Widely Used and Valued

The following data summarises how participants rated and used key accessibility features after six months:

- TalkBack was rated helpful by 97% of completely blind users, with 92% using it at least several times a week.
- Google Assistant was rated helpful by 89% of completely blind users.
- Among partially sighted users, Zoom magnification was rated helpful by 80%.
- For Deaf users, Live Transcribe was rated helpful by 82%, with 73% having used it in real-world situations such as conversations with a doctor.
- Live Captions was rated helpful by 84% of Deaf users, and 82% use it at least several times a week.
- Sound Notifications was rated helpful by 71% of Deaf users.

5.5 Internet Access Was a Persistent Barrier

Connectivity was a major challenge throughout the study:

- Over half of participants (52.8%) exhausted their free 2 GB monthly data within one week. A further 28.3% ran out within two weeks.
- BPS participants depleted data faster than DHH participants (67% versus 45% within one week).
- When data ran out, the impact on phone use was significant: 79% of high-volume users and 79% of conservative users reported that data depletion considerably or significantly disrupted their phone use.
- Mobile data was described as expensive and unaffordable by almost all participants. Most purchased small daily or weekly bundles rather than monthly plans.
- WiFi access was associated with higher overall data usage. Participants with regular WiFi access were twice as likely to be high-volume users.

> *"Sometimes it may not be affordable, but because we live in an era whereby **internet has become a basic need**, we need to work out and see how we can get better. But sometimes it's not affordable, so there are months when I may not use data. (BPS participant, male, urban, employed)"*

Rural participants spent approximately 40% less on mobile data than urban participants, which likely reflects both lower access to connectivity infrastructure and fewer opportunities to use the internet.

5.6 The Type of Disability Shapes How People Use the Internet

The study identified two groups of users based on internet behaviour:

- Participants were split into two usage groups: High-Volume users (those consuming more than 1 GB of data per day) accounted for 26.6%, while Conservative users (under 1 GB per day) accounted for 73.4%.
- Deaf participants were heavily represented in the High-Volume group at 61.8%, whereas all Low Vision participants fell into the Conservative group.
- High-Volume users were twice as likely to have regular WiFi access (50%) compared to Conservative users (25.5%).

DHH users tended to use more data because they rely on video calls and visual communication, which are inherently data-intensive. BPS users typically engage with text- and audio-based tools that require less data. This means that policies to improve internet access for disabled people must account for these different needs – a single approach will not work for all disability groups.

6 Impact on Participants' Lives

6.1 What changed for DHH participants

Deaf and Hard of Hearing participants highlighted the following benefits from the programme:

6.1.1 Independence in communication

Live Transcribe allowed DHH participants to attend meetings and appointments without relying on a sign language interpreter. This reduced costs and gave them direct control over their own communication.

> *"The phone has transformed my life. As a deaf person, I can now control many things independently and attend meetings without a sign language interpreter, using live transcriptions instead."*

6.1.2 Access to information

Live Captions enabled DHH participants to access audio and video content for the first time. Social media platforms such as Facebook and WhatsApp provided real-time access to news and community discussions. Some participants also used AI applications to look up simplified explanations of unfamiliar words.

6.1.3 Personal safety

Sound notification features that alert users to nearby sounds through vibration gave participants greater reassurance at home and in other environments.

> *"The phone is able to vibrate when it detects sounds. It detects a lot of things, so for me it has been able to create a lot of independence."*

6.2 What changed for Blind and Partially Sighted (BPS) participants

6.2.1 Managing daily tasks independently

Accessibility features such as TalkBack, Lookout, and Google Assistant enabled participants to read documents, identify currency, complete financial transactions, and access services on their own.

"Now I can operate a phone on my own and I don't have to depend on somebody to send money for me. I am proud of having some privacy now that I can receive and reply to messages on my own."

6.2.2 Access to employment and education

Participants used TalkBack to browse job websites and complete job applications. Students used accessible reading applications such as InstaReader to convert course materials into audio and AI tools like ChatGPT for research.

6.2.3 Social inclusion

Access to WhatsApp groups and social media enabled many participants to connect with their communities in ways not previously possible, particularly for those who had relied on basic feature phones.

"I am able to interact with the wider community through different WhatsApp groups. I am able to listen to their messages and also reply, and I feel part and parcel of the community.

6.2.4 Privacy and financial security

Being able to conduct financial transactions independently improved participants' sense of privacy and dignity. However, barriers remained: some financial applications such as M-Pesa were not fully accessible, which continued to force participants to ask others for help with sensitive transactions.

7 Gaps Identified by the Research

7.1 Training must be tailored to individual ability

The study found that BPS participants needed significantly more time and support than DHH participants to learn how to use smartphones. Factors such as age, prior experience, residual vision or hearing, and learning needs all shaped the pace and approach required. A standard two-day training format was not sufficient for all participants. The physical unboxing of the device, inserting a SIM card, and learning shortcut gestures were all challenging without individualised support.

For DHH participants, sign language interpreters were present but were often unfamiliar with the terminology used in accessibility training. This caused delays and required a separate preparatory session for interpreters before the main training could proceed effectively.

7.2 Accessibility features need greater flexibility and reliability

While participants valued tools such as TalkBack and Lookout, they identified practical limitations. TalkBack was disrupted by frequent notifications. The Lookout object recognition tool was difficult to use accurately in real-world settings, particularly when locating objects at different distances or positions.

These are design issues that require developer attention: greater user control over notifications and more intuitive audio or haptic feedback to guide phone positioning.

7.3 Many essential apps and websites are not accessible

A significant and persistent barrier was the lack of access to widely used digital services. Participants who relied on TalkBack found that many websites and applications did not work correctly with screen readers. Common problems included interactive forms that could not be navigated, inaccessible date pickers, and images without text descriptions.

This is not a minor inconvenience. When essential services such as banking, utility payments, and government forms are inaccessible, disabled people are forced to involve

others in private transactions – undermining both their autonomy and their financial security.

> *"When you are creating a website, you are supposed to make it accessible even to screen readers and even people who are hard of hearing. When you find an image, you try to tap it so that the screen reader describes the image, but then it doesn't."*

7.4 Lower-end Android devices have accessibility limitations

Affordable smartphones from brands widely used in LMICs, such as Techno and Infinix, were found to have compatibility issues with Android accessibility features. TalkBack and other tools did not always recognise screen elements or button inputs correctly. This creates a particular challenge in low-income settings where high-end devices are unaffordable but lower-end devices do not reliably support the accessibility features that disabled users depend on.

8 Recommendations

The following recommendations are drawn directly from the research findings. They are addressed to policy makers, funders, regulators, and technology providers.

8.1 Make internet access affordable for disabled people

Mobile data costs are a fundamental barrier. More than half of participants ran out of their free monthly data allocation within one week. For disabled people who depend on internet connectivity to use assistive apps, navigate routes, and communicate, data costs are not a luxury item – they are an access requirement. Governments and regulators should consider concessional data bundles for disabled users, or zero-rating of accessibility-critical services such as navigation and real-time transcription apps.

8.2 Fund and institutionalise digital skills training tailored to disability

Generic digital literacy programmes will not reach disabled people effectively. Training must be modular and ability-based, allowing each participant to progress at their own

pace and starting from their specific needs. Funders should support the development of standardised curricula adapted for BPS and DHH learners, and ensure that sign language interpreters involved in technology training receive preparatory sessions to build the vocabulary and understanding needed to facilitate effectively.

8.3 Enforce digital accessibility standards

Governments should mandate that all public-facing digital services – including government portals, healthcare systems, and financial platforms – meet the Web Content Accessibility Guidelines (WCAG). Compliance should include real-world usability testing with disabled users, not just technical audits. The current situation, in which essential services remain inaccessible to screen reader users, is a systemic barrier to the digital inclusion of disabled people.

8.4 Set accessibility performance standards for publicly funded device procurement

When public funds or donor resources are used to provide smartphones to disabled people, the devices procured must be specified to support full accessibility feature functionality. Lower-end Android devices often do not reliably support TalkBack and related tools. Procurement guidelines should specify minimum accessibility performance requirements to ensure that funded devices are genuinely fit for purpose.

8.5 Recognise that disability type shapes digital access needs

Deaf and blind users have fundamentally different data requirements and platform preferences. Policies that treat disabled people as a single group will miss these distinctions. Interventions to improve digital inclusion should be designed with input from Disabled People's Organisations (DPOs) representing specific disability communities, and evaluated separately for different impairment groups.

8.6 Address the gender dimension of digital exclusion

Women with disabilities face compounded barriers to smartphone access and use, including reliance on borrowing devices, financial limitations, and safety concerns. This study did not find significant gender differences in the outcomes of the intervention, which may reflect the equalising effect of providing uniform device access and training. This finding suggests that targeted provision of devices, data, and training has the potential to reduce gendered digital exclusion – and should be factored into programme design.

9 Conclusion

This study provides clear evidence that smartphones can function as effective and meaningful assistive technology for people with sensory disabilities in Kenya. With the right devices, training, and connectivity, participants made significant gains in digital

skills, increased their smartphone use across key areas of daily life, and reported tangible improvements in independence, access to information, social connection, and quality of life.

The results are particularly strong for two specific applications: currency identification features that address a documented challenge for BPS individuals, and video calling capabilities that resolve communication barriers for DHH individuals where text-based solutions are limited by literacy constraints.

9.1 Summary of headline outcomes

- 71% of digital skills assessment items showed statistically significant improvement across both groups combined.
- Smartphone use increased across 10 activity areas, including health, employment, travel, and daily management.
- Both groups improved significantly in access to information for daily living.
- DHH participants also improved significantly in leisure activities.
- Over 80% of Deaf participants rated Live Transcribe and Live Captions as highly helpful.
- Over 90% of completely blind participants used TalkBack at least several times a week.
- More than half of participants exhausted their monthly data allocation within one week, highlighting connectivity as the most urgent barrier to address.

However, the research also makes clear that smartphones are not a ready-made solution. Accessibility features must be reliable and customisable. Training must be

adapted to individual needs. Digital services must be designed to accessibility standards. And internet access must be affordable.

The evidence from Kenya points to a clear path forward: targeted investment in connectivity, training, and digital accessibility policy can substantially improve the lives of disabled people and advance their inclusion in digital society.