

How mobile operators are driving inclusion of persons with disabilities

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The GSMA Assistive Tech programme works to drive greater access and use of mobile technologies for persons with disabilities in emerging markets and maximise opportunities for social and economic inclusion. The programme works with the mobile industry and key disability and development stakeholders to address the digital inclusion gap of persons with disabilities, identify innovation opportunities and highlight the value of mobile-enabled assistive technologies. The programme is supported by the UK Department for International Development and AT 2030.

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This project is part of AT2030, a programme led by the Global Disability Innovation Hub (GDI Hub) and funded with UK aid from the UK government

AT2030

AT2030 will test 'what works' to improve access to AT and will invest £20m to support solutions to scale. With a focus on innovative products, new service models, and global capacity support, the programme will reach 9 million people directly and 6 million more indirectly to enable a lifetime of potential through life-changing Assistive Technology.

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Definitions

Access	An individual's potential use of a mobile phone, regardless of ownership, through borrowing or renting.
Accessibility	The characteristics of products, services or environments designed to be inclusive of persons with disabilities.
Assistive products	Products that maintain or improve an individual's functioning and independence, thereby promoting their well-being. These include wheelchairs, hearing aids and communications aids, among others.
Assistive technologies	An umbrella term covering the systems and services related to the delivery of assistive products and services.
Digital inclusion of persons with disabilities	Actions to address the barriers to ownership and access of digital products and services by persons with disabilities, including mobile phones and use of mobile-enabled services.
Disability	An umbrella term covering impairments, activity limitations, and participation restrictions. An impairment is a problem in body function or structure; an activity limitation is a difficulty encountered by an individual in executing a task or action; while a participation restriction is a problem experienced by an individual in involvement in life situations.
Mobile disability gap in ownership	Refers to how much persons with disabilities are less likely to own a mobile phone than non-disabled persons.
Ownership	An individual has sole or main use of a mobile phone, and uses it at least once a month, whenever needed and without additional cost other than use of mobile services.

Acronyms

AT	Assistive technology
DPO	Disabled Persons' Organisation
GARI	Global Accessibility Reporting Initiative
ICT	Information and communication technologies
LMICs	Low- and middle-income countries
MNOs	Mobile network operators
SDGs	Sustainable Development Goals
UNCRPD	UN Convention on the Rights of Persons with Disabilities
WHO	World Health Organization



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Key insights

1. Digital innovations can bridge the access gap to assistive technologies (ATs) and promote the inclusion of persons with disabilities. However, in many parts of the world, persons with disabilities have limited access to information and communication technologies (ICT).[1] Furthermore, recent research conducted by the GSMA Assistive Tech programme demonstrates that those who have access to mobile phones are valuable users of services, but the services are not always suitable to their needs.[2] This gap offers opportunities for mobile operators to rethink and develop innovative ways to provide services and products for persons with disabilities.

2. As users of mobile products and services, persons with disabilities experience their mobile in different ways to non-disabled users. The main characteristics and barriers along their customer journey path are:

   - **Awareness of mobile products and services:** Most persons with disabilities value mobile phones as effective communication tools.

     Key barrier: Mobile phones are not perceived as ATs by either persons with disabilities, their caregivers, relatives or phone lenders. Awareness of relevant products and services is also low.

   - **Access to mobile phones:** Access to mobile phones is high but there is still a gap between persons with disabilities and non-disabled persons.

     Key barrier: Phone lenders do not perceive the value that mobile plays in the lives of persons with disabilities and borrowers often face limited and restricted access to mobile phones.

1. UN (2018). Disability and development report.
2. GSMA (2019). Understanding the mobile disability gap.

- **Ownership of mobile phones:** Recent GSMA Assistive Tech research revealed relatively high ownership of mobile phones by persons with disabilities (82 per cent in Kenya and 62 per cent in Bangladesh) but there is still a mobile disability gap[3] in ownership of 12 per cent in Kenya and 13 per cent in Bangladesh.

  Key barrier: The cost of handsets is high for many persons with disabilities and the cost of services can be a barrier to use mobile services.

- **Usage of mobile phones and services, including access to digital content:** Regardless of gaps in access and ownership, persons with disabilities use services on par with non-disabled users and some of them are, power-users, of mobile services.

  Key barrier: Persons with disabilities face challenges and concerns regarding the confidential and safe use of mobile services, which are not always designed inclusively.

- **Access to basic services:** Persons with disabilities report being enabled by mobile phones— in their role as ATs— to perform their daily activities and access basic services.

  Key barrier: Basic services are not inclusive (i.e. inaccessible infrastructure or service design), and persons with disabilities often incur additional costs to access and use services, or 'hidden costs', due to their disability (e.g. paying for someone's help).

3. In the mobile industry, some mobile operators have developed inclusive strategies to drive the participation of persons with disabilities as customers or as employees. These strategies consider both the operators' **customer-facing** and **internal business** activities.

4. For customer-facing activities, mobile network operators (MNOs) are:

   - Providing **accessible mobile products** (i.e. handsets with accessibility features or accessories) and **tailored packages** that meet the needs of customers with disabilities for data, calls and messaging services (i.e. discounted tariffs). Etisalat and Kcell, for instance, offer highly discounted mobile packages to their customers with disabilities. Through these tailored packages, customers with disabilities who feel better served recommend these products to individuals with similar needs, which could result in increased loyalty and more customers.
   - **Inclusively promoting** mobile services, products, and devices **in accessible formats** for customers with disabilities. In this regard, some operators follow the Global Accessibility Reporting Initiative (GARI) to provide information about the accessibility features of handsets. However, further efforts are required to ensure that customers with disabilities are aware of these products and that they have an adequate level of digital skills to maximise the assistive role of mobile phones.
   - Providing **accessible customer services and digital products,** such as ensuring that their websites and apps are screen-readable, and making shop-level services more accessible to all. This includes access to shops, the provision of interpreters for customer service,

3. Refers to how much persons with disabilities are less likely to own a mobile phone than non-disabled persons.

offering training provision to staff, and tailored customer services. As a result of increasing accessibility of its M-Pesa service through the integration of Interactive Voice Response (IVR), Safaricom reports increased trust in the service and its organic promotion by customers with disabilities. Although Safaricom has not formally promoted the new IVR-enabled M-Pesa service, they report more than 3,000 customers using it daily.

- Developing **products and innovations for customers with disabilities** to enable access to basic services and value-added services such as entertainment and wellness platforms, generating new revenue streams from an untapped market segment. By increasing accessibility of their pay-TV platform, Telefónica has realised increased revenues from a previously untapped customer segment of persons with disabilities.

5. For internal activities, operators are generating opportunities for the inclusion of employees with disabilities by:

- **Creating awareness and sensitising non-disabled employees.** Greater awareness can help create a culture within the organisation that provides a friendlier environment for the implementation of subsequent activities and strategies for the inclusion of persons with disabilities as employees or customers. For Telenor in Pakistan, sensitisation of employees around disability topics was a key first step for the implementation and success of their OpenMind programme.
- **Providing training and skills development** for persons with disabilities. Through training programmes, operators can contribute to the empowerment of persons with disabilities by opening opportunities for employment (within or outside the organisation). Through its OpenMind programme, Telenor trains persons with disabilities to learn skills that improve their eligibility for available roles within the company or other similar organisations.
- **Recruiting and employing** candidates with disabilities through dedicated programmes. Operators can actively challenge attitudinal barriers towards disability by hiring employees with disabilities, contributing to the broader efforts to tackle stigma and negative views around disabilities. Through its efforts to identify, target and support job seekers with disabilities, Safaricom has filled over half of the five per cent quota of employees with disabilities, as required according to Kenya's Persons with Disabilities Act.
- Ensuring the **workplace is inclusive**, providing adequate ATs, and designing company policies for conducive working environments for employees with disabilities. Inclusive workplaces can help organisations foster a more productive workforce. Singtel has developed an app to support employers toward improved recruiting of candidates with disabilities and ensuring accessible workplaces.

- Developing **organisational strategies for inclusion** of persons with disabilities as active customers or employees. Having a company-wide plan and goals will ensure that disability is considered throughout the organisation. Strong directive and involvement from leadership teams on disability inclusion strategies within Zain Group and Safaricom has ensured the buy-in from different business units, resulting in inclusive innovation across the organisation. In many cases, these innovations have had a positive impact on core business drivers.

6. Some operators have seen results through **customer loyalty and revenues generated from improved products for persons with disabilities**, and are driving a disability inclusion strategy away from traditional non-profit or corporate responsibility activities to a strategy that considers persons with disabilities as a niche customer segment with untapped revenue generating potential. To develop and promote a disability inclusion strategy, the main **recommendations to operators** are to: a) change perceptions of disability both inside and outside the organisation; b) identify the needs of customers with disabilities and provide better suited products and services; c) provide opportunities to innovate for customers with disabilities; d) promote a work environment inclusive of persons with disabilities; e) co-design services and products with customers with disabilities, disabled persons organisations (DPOs), the public sector, and tech start-ups; and f) champion and lead wider strategies that promote disability inclusion.

The GSMA will engage with operators in different markets to generate insights, and better understand how to support operators to identify market opportunities where innovations could be impactful in enabling the participation of persons with disabilities in society. Through this work, mobile operators could play an active role in the inclusion of persons with disabilities as part of the efforts to achieve the UN's Sustainable Development Goals.



1 Digital technologies as participation enablers for persons with disabilities

Persons with disabilities[4] and older people are often excluded and marginalised in society due to a lack of access to opportunities and services. They are therefore often overrepresented among those most in need and are worst affected by disasters, particularly women.[5] Systematic discrimination also affects persons with disabilities as they often have lower levels of education and fewer employment opportunities.

Assistive technologies (ATs) are systems (i.e. hardware or software) and services designed to improve the functioning of persons with disabilities.[6,7] The UN Convention on the Rights of Persons with Disabilities (UNCRPD) recognises that every person with a disability has the right to access affordable ATs.[8] They are instrumental in helping persons with disabilities to overcome some of the physical and social barriers of disability.

With an estimated one billion persons with disabilities in the world, **80 per cent** of whom are in low- and middle-income countries (LMICs), ATs

4. Disability is defined by the World Health Organization (2011) as "an umbrella term covering impairments, activity limitations, and participation restrictions. An impairment is a problem in body function or structure; an activity limitation is a difficulty encountered by an individual in executing a task or action; while a participation restriction is a problem experienced by an individual in involvement in life situations."
5. UN (2018). Disability and development report.
6. Smith, R. O. *et al.* (2018). Assistive technology products: a position paper from the first global research, innovation, and education on assistive technology (GREAT) summit. *Disabil Rehabilitation Assistive Technology* 1–13 doi:10.1080/17483107.2018.1473895.
7. UNICEF & WHO. (2015). Assistive technology for children with disabilities: Creating opportunities for education, inclusion and participation. A discussion paper [online]. Geneva: World Health Organization. See: https://www.unicef.org/disabilities/files/Assistive-Tech-Web.pdf.
8. UN (2008). Convention on the rights of persons with disabilities and optional protocol. See: https://www.un.org/disabilities/documents/convention/convoptprot-e.pdf.

are still largely inaccessible to **89-95 per cent**[9] of those who need them, limiting their participation in society.[10] To achieve the UN's Sustainable Development Goals (SDGs) and "leave no one behind", it is essential to address the needs of persons with disabilities and overcome the challenges of access to ATs.

Many different factors play a role in limiting fair and adequate access to ATs in LMICs. The lack of awareness regarding available ATs among persons with disabilities and their caregivers, combined with low affordability, quality, and availability of ATs are the main barriers to ownership and use.[11,12,13] Trained personnel, governance, and funding to provide support and maintenance are also often lacking in LMICs, inhibiting the effective dissemination and use of ATs.[14]

Mobile technology as an enabler of inclusion

Digital innovations can bridge the access gaps to ATs and promote the inclusion of persons with disabilities. With more than 5.1 billion people subscribed to mobile services,[15] mobile phones are perhaps the most widely available electronic product globally. Mobile phones and products have created new ways of communicating and interacting that provide opportunities for persons with disabilities to fully participate in society.[16] However, in many parts of the world, persons with disabilities still have limited access to information and communication technologies (ICT).[17] The GSMA report titled *Leveraging the potential of mobile for persons with disabilities* highlighted the potential of mobile phones as ATs for persons with disabilities.

While some research indicates that persons with disabilities are typically digitally disadvantaged,[18] there is a lack of evidence to understand the characteristics of access, ownership and usage of mobile products and services by persons with disabilities. In research conducted by the GSMA Assistive Tech programme, the **mobile disability gap**[19] was quantified for the first time and the use of mobile phones and services by persons with disabilities was characterised in Kenya and Bangladesh (see Section 2: The mobile customer journey for persons with disabilities).

Objectives and methodology

This study has three objectives: 1) to provide a better understanding of current global initiatives implemented by mobile operators for the digital inclusion of persons with disabilities; 2) to present two case studies of operators' disability inclusion initiatives; and 3) to develop a set of recommendations for promoting the digital inclusion of persons with disabilities. Desktop research was conducted to achieve these goals by reviewing existing literature describing disability-related initiatives implemented by mobile network operators (MNOs), complemented by interviews with individuals involved in these strategies at the ideation, planning or implementation stages. While the examples presented in the following sections are not exhaustive, the scope aimed to include cases from both developed and developing markets. This research is complementary to research published by the GSMA Assistive Tech programme.[20]

9. Rohwerder, B. (2018). Assistive technologies in developing countries. K4D Helpdesk Report. Brighton, UK: Institute of Development Studies.
10. Tebbutt, E. et al. (2016). Assistive products and the Sustainable Development Goals (SDGs). Globalization Health 12, 79.
11. Tangcharoensathien, V., et al. (2018). Improving access to assistive technologies: challenges and solutions in low- and middle-income countries. WHO South-East J of Public Health 7:84-89 doi: 10.4103/2224-3151.239419.
12. Rohwerder, B. (2018). Assistive technologies in developing countries. K4D Helpdesk Report. Brighton, UK: Institute of Development Studies.
13. Tangcharoensathien, V., et al. (2018). Improving access to assistive technologies: challenges and solutions in low- and middle-income countries. WHO South-East J of Public Health 7:84-89 doi: 10.4103/2224-3151.239419.
14. Rohwerder, B. (2018). Assistive technologies in developing countries. K4D Helpdesk Report. Brighton, UK: Institute of Development Studies.
15. GSMA (2019). 'The Mobile Economy'.
16. Raja, D. S. (2016). Bridging the disability divide through digital technologies. Background paper for the 2016 World Development Report: Digital Dividends. Washington D. C.: World Bank. Available at: http://pubdocs.worldbank.org/en/123481461249337484/WDR16-BP-Bridging-the-Disability-Divide-through-Digital-Technology-RAJA.pdf [Accessed 15 Jul. 2019].
17. UN (2018). Disability and development report.
18. Hernandez, K. and Roberts, T. (2018). Leaving no one behind in a digital world. K4D Emerging Issues Report. Brighton, UK: Institute of Development Studies.
19. GSMA (2019). Understanding the mobile disability gap.
20. *Ibid.*



2 The mobile customer journey for persons with disabilities

The customer journey refers to a set of events experienced by customers during the use of a service or a product.[21] Understanding the characteristics of the customer journey is fundamental to identify pain points, and to design products and services suitable for the customer's needs. Customer journeys are useful tools for organisations to not only identify the ideal use scenario, but also to better understand the stages of the journey and how these stages are experienced. As a tool, customer journeys can help organisations to identify bottlenecks or areas where customers are not fully satisfied, and to ideate innovative products and services for their customers.

Based on insights by the GSMA Assistive Tech programme from Kenya and Bangladesh,[22] the 'mobile customer journey' by persons with disabilities can be characterised as shown in Figure 1. The main stages are:

21. GSMA (2016). Customer Journey Framework.
22. GSMA (2019). Understanding the mobile disability gap.

1. **Awareness of mobile products and services**. Most persons with disabilities value mobile phones as effective communication tools. However, mobile phone are often not perceived to be ATs by persons with disabilities, their caregivers or relatives. Some persons with disabilities believe that they are not capable of using mobile phones due to their disability and lack of digital skills, and are often unaware of handsets or mobile packages that are suitable for their needs.

   Key barrier: Mobile phones are not perceived as ATs by either persons with disabilities, their caregivers or relatives. Awareness of relevant products and services is also low.

2. **Access to mobile phones**. Access to mobile phones is high but there is still a gap in access between persons with disabilities and non-disabled persons. Persons with disabilities who do not own a mobile phone but have access to one usually borrow the mobile phone from a relative or friend. Access is limited and restricted, and can occasionally come at a cost—for example, the borrower may top-up more airtime than the amount used and not get the difference back. Lenders do not usually see the value that access to a mobile phone provides to persons with disabilities.

   Key barrier: Phone lenders do not perceive the value that mobile plays in the life of persons with disabilities and borrowers often face limited and restricted access to mobile phones.

3. **Ownership of mobile phones**. Several insights into phone ownership by persons with disabilities were highlighted in the GSMA Assistive Tech study.[23] High ownership of mobile phones by persons with disabilities was identified (82 per cent in Kenya and 62 per cent in Bangladesh), however, there is a mobile disability gap of 12 per cent in Kenya and 13 per cent in Bangladesh, which means that persons with disabilities are less likely to own a mobile phone than non-disabled persons. In both countries, 70 per cent of persons with disabilities own a basic or feature phone. When disaggregating by type of disability, individuals with hearing and visual impairments are highly likely to own a mobile phone in Kenya, but those with hearing impairments are least likely to own a mobile phone in Bangladesh. In both countries, those with hearing impairments are most likely to own a smartphone while those with visual impairments are least likely to own a smartphone. Several barriers to ownership were reported by persons with disabilities, such as the affordability of accessible handsets, the perception of being unable to use mobile phones due to their disability, a lack of digital skills, and lack of awareness by caregivers or relatives that mobile phones can be valuable tools for persons with disabilities.[24]

   Key barrier: Persons with disabilities report the unaffordability of mobile phones to be the main barrier to ownership.

4. **Usage of mobile phones and services, including access to digital content**. Regardless of gaps in access and ownership, persons with disabilities are users of mobile services on a par with non-disabled persons. However, when disaggregating persons with disabilities by segment, there are differences in how the different groups use mobile services. For instance, in both Kenya and Bangladesh, persons with visual or hearing impairments who own a smartphone have high levels of mobile internet usage.

23. GSMA (2019). Understanding the mobile disability gap.
24. Persons with disabilities are often financially dependent on a carer, such as relative or a friend.

However, persons with disabilities have reported several challenges when attempting to access or use mobile services, including the cost of services (and the additional costs they incur to access them), the perception that their disability hinders the autonomous use of mobile services, and safety and security concerns.

Key barrier: Persons with disabilities face challenges when using mobile services that are not always inclusive, reporting the cost of services and concerns around confidentiality and safety to be key mobile service usage barriers.

5. **Access to basic services**. Even when access to basic services is, in general, limited for all users, persons with disabilities report being enabled by mobile phones—in their role as ATs—to perform their daily activities and access basic services. These benefits are reported in varying degrees, depending on the country and the type of disability. The impact of mobile technology as an enabler seems to be higher in Kenya, where the mobile ecosystem is more mature compared to Bangladesh. Mobile phones can undeniably offer alternative ways to access the existing ecosystem of services—which are often inaccessible to persons with disabilities—with the adequate digital skills to activate accessibility features when needed, and accessible and affordable mobile services.

Key barrier: Basic services are not inclusive (i.e. inaccessible infrastructure or service design), and persons with disabilities face discrimination from services providers and often incur additional costs to access and use services, or 'hidden costs', due to their disability (e.g. paying for someone's help).

The characteristics of the customer journey, as well as the existing pain points, can offer opportunities for mobile operators to ideate, rethink and develop innovative ways to provide services and products for persons with disabilities. The following sections will showcase examples of how some operators are working in this area.



Figure 1

Customer journey map for access, ownership and use of mobile phones and services by persons with disabilities

Key

Characteristics

Barriers

Persons with disabilities

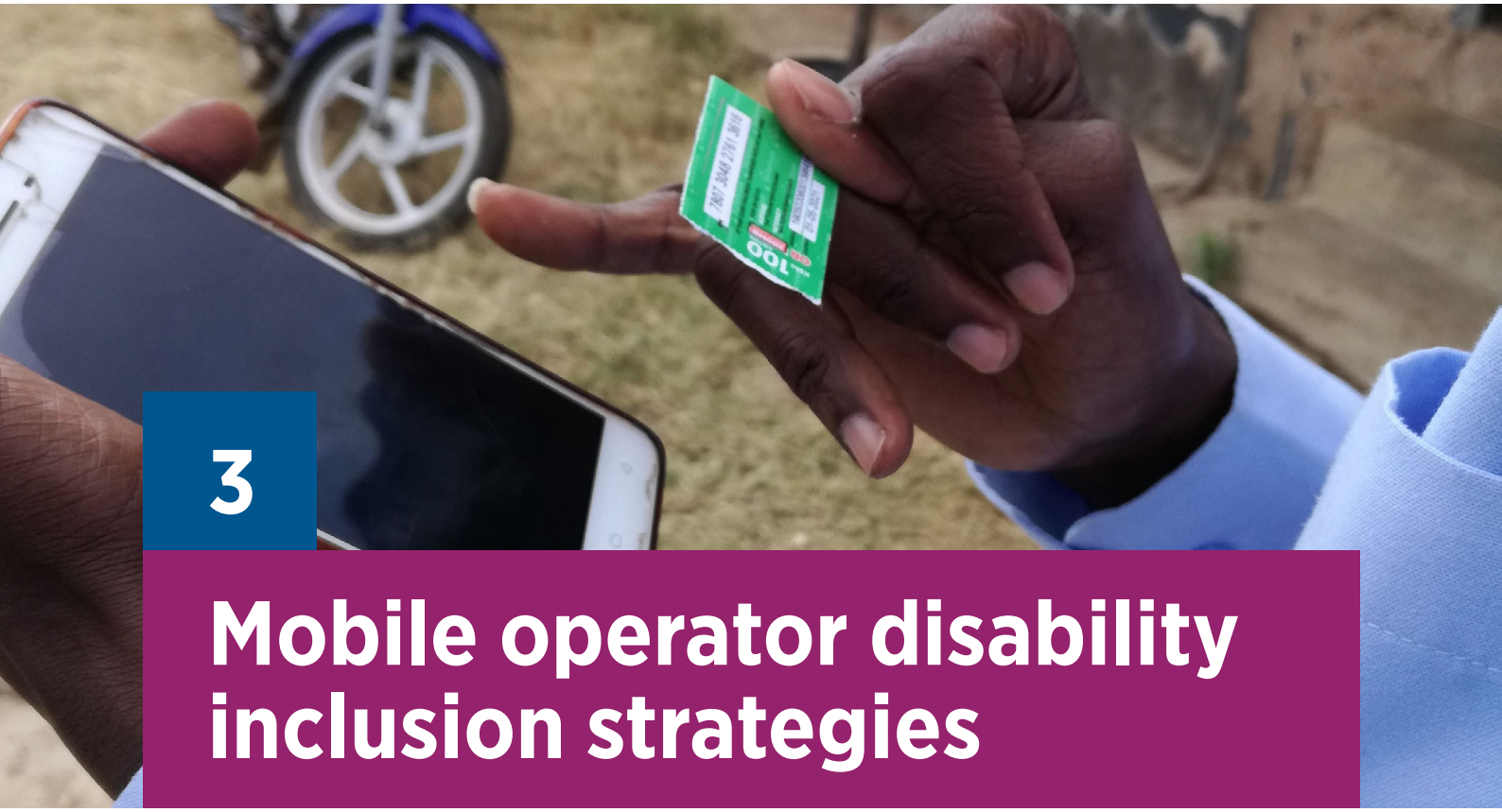
Awareness of products and services	Access to mobile phones	Ownership of mobile phones	Usage of basic mobile services	Usage of mobile internet	Usage of mobile money	Access to digital content	Access to basic services
Persons with disabilities value mobile phones as effective communication tools	96% of persons with disabilities in Kenya and 87% in Bangladesh have access to a mobile	82% of persons with disabilities in Kenya and 62% in Bangladesh own mobile phones, but they are less likely to than non-disabled persons	Usage of mobile-enabled services is similar to non-disabled users, but there are power-users across types of persons with of disabilities			Accessibility features help access to digital content, but only but only ~10% of mobile users with disabilities use them in each country	Access to services is limited for all, but more limited for persons with disabilities
	Those who do not own a phone, borrow from friends and family	Over 70% of mobile owners with disabilities in both countries have a basic or feature phone	When owned, accessibility features drive usage of mobile-enabled services				
Persons with disabilities are unaware of the role of mobile phones as ATs, and often learn through word-of-mouth	Borrowers have restricted access when using phones	Mobile phones are often gifted, or great efforts are needed to buy one	Persons with disabilities are less likely to use calls or SMS than non-disabled persons	In Kenya, persons with disabilities have a similar usage of mobile internet to non-disabled persons. In Bangladesh, persons with disabilities use mobile internet much less than non-disabled persons	Users with disabilities have a similar usage of mobile money services as non-disabled users	Digital content is often not accessible	Mobile is perceived as an enabler of access to access to employment opportunities, informal or formal, healthcare and information
	Borrowers often have to pay for airtime, even if not fully consumed	Persons with multiple disabilities are less likely to own			Mobile money is used for checking balance, airtime top-ups, P2P transfers and cash-out		
					Mobile money account registration by persons with disabilities is slightly below non-disabled persons in Kenya, but higher than non-disabled persons in Bangladesh		
Lenders, caregivers or relatives are unaware of the value of mobile for persons with disabilities		Women with disabilities are less likely to own and use mobile than men with disabilities. Depending on context, gender plays bigger role than disability					Persons with disabilities face discrimination from services providers
			Lack of awareness of accessibility features, hence functional limitations challenge the use of mobile-enabled services				
		More accessible handsets (i.e. smartphones) are unaffordable	Lack of digital literacy is a barrier to ownership and usage of mobile, including the use of accessibility features				Infrastructure is often inaccessible
			Cost of using services is high				
			Persons with disabilities often incur additional costs to access and use services, including cost of accessibility apps or 'hidden costs' to access services				
		Accessibility features target one type of functional limitation at a time			Lack of autonomous use results in confidentiality issues		Persons with disabilities often rely on someone else to access services

Figure 1

Customer journey map for access, ownership and use of mobile phones and services by persons with disabilities

Key: Characteristics / Barriers

	Awareness of products and services	Access to mobile phones	Ownership of mobile phones	Usage of basic mobile services	Usage of mobile internet	Usage of mobile money	Access to digital content	Access to basic services
Persons with physical/mobility impairment	See 'Persons with disabilities' on previous page for characteristics and barriers	See 'Persons with disabilities' on previous page for characteristics and barriers	Access to and reaching shops physically can be challenging	Hardware design is critical for persons with physical impairment. Size and weight can make phones unusable for persons with short stature. Persons with physical impairments (e.g. hands, wheelchair users) prefer robust phones that can withstand falls The use of accessories, such as headphones, can facilitate the use of mobile phones				Mobile supports access to basic services were physical barriers exist, such as transportation and financial services
Persons with speech impairment	See 'Persons with disabilities' on previous page for characteristics and barriers	See 'Persons with disabilities' on previous page for characteristics and barriers	Those with speech impairments have high ownership of mobile in Kenya (82%)	Those with hearing and speech impairments are highly likely to use SMS. Those deaf or hard of hearing are power-users of SMS in Kenya				
Persons with hearing impairment	See 'Persons with disabilities' on previous page for characteristics and barriers	See 'Persons with disabilities' on previous page for characteristics and barriers	Those with hearing impairment are as likely to own a phone as non-disabled persons in Kenya, but are the least likely to own in Bangladesh. They are the most likely to own a smartphone in both countries.	Persons deaf or hard of hearing are the least likely to use calls and their level of education correlates with their level of SMS usage	High use of video calls Power-users of instant messaging In both countries, blind, visually impaired, deaf or hard of hearing who own smartphones are high users of mobile internet. Hard of hearing are power-users in Kenya.	Those deaf or hard of hearing have a higher ownership of mobile money registered accounts than non-disabled persons		Lack of sign language interpretation challenges access to basic service
Persons with visual impairment	See 'Persons with disabilities' on previous page for characteristics and barriers	See 'Persons with disabilities' on previous page for characteristics and barriers	Persons with visual impairments are highly likely to own a mobile phone in both countries (82%), but the least likely to own a smartphone	Visually impaired users are likely to use calls Least autonomous segment when using mobile services Speech-to-text or text-to-speech technologies are often not available in local languages (i.e. Bengali)			Visually impaired users benefit from the use of screen-readers, text-to-speech and text magnifying technology	Mobile improves access to education
Persons with cognitive impairment	See 'Persons with disabilities' on previous page for characteristics and barriers	See 'Persons with disabilities' on previous page for characteristics and barriers	Those with cognitive impairment and difficulties with self-care are less likely to own a mobile phone in both countries	Those with difficulties remembering and with self-care are as likely to use calls as non-disabled persons in Kenya				



3

Mobile operator disability inclusion strategies

In the path towards achieving the UN's SDGs, efforts have been made to utilise the potential of mobile technology and online tools to facilitate remote access to healthcare, education, financial inclusion, employment, and social and political participation. The private sector plays a critical role in the implementation of these tools and the creation of ecosystems required to deliver digital solutions. It is often challenging, however, for private organisations to justify the commercial opportunities to invest in the development of disability innovations.

In this section, different global initiatives from the mobile industry are presented and compared to identify opportunities to design disability inclusive practices. Our scoping is restricted to **value generating activities** and includes customer-facing strategies (i.e. products, services, and innovations for customers with disabilities) and internal strategies (i.e. employment and human resources).

How do mobile operators drive inclusion of persons with disabilities?

Globally, there are numerous activities that mobile operators could undertake to engage with persons with disabilities. Some operators actively and directly support disabled persons' organisations (DPOs) or persons with disabilities through campaigning events, or donating ATs to schools or the DPOs themselves. Others offer services and products for customers with disabilities or implement company-wide inclusion strategies. Table 1 provides a summary of a review of types of disability inclusion activities from more than 30 MNOs globally. Recognising the value of persons with disabilities as active members of society, particularly as potential employees and customers, can create opportunities for MNOs to innovate their product development, service provision, and operations.

Table 1

Summary of disability inclusion activities by mobile operators

Type of inclusion activities	Relevant stakeholders	MNO activities to support persons with disabilities
Customer-facing strategies	Customers with disabilities	**1. Customer awareness of accessible products and services.** Provision of digital information about services, products, and devices to customers in accessible formats.
		2. Availability of accessible handsets and tailored packages. Provision of accessible mobile products (i.e. handsets with accessibility features) and packages that suit their needs for data, calls and messaging services (i.e. discounted tariffs).
		3. Accessible customer services and digital products. Integration of interactive voice response in mobile services, video relay, or speech-to-text enabled services.
		4. Accessible shops and physical services. Provision of accessible physical services, including access to shops, training for shop staff, and tailored customer services.
	Employees with and without disabilities, entrepreneurs and start-ups, persons with disabilities	**5. Developing products and innovations for customers with disabilities.** Provide a platform for highlighting innovation. Support the design of solutions and services for/with persons with disabilities. Support and adopt solutions codesigned for/with DPOs and/or persons with disabilities.
Internal strategies	Employees with and without disabilities	**1. Awareness and sensitisation of employees.** Provision of disability awareness training for staff with and without disabilities.
		2. Skills development for persons with disabilities. Provision of programmes for training and skills development for persons with disabilities.
		3. Employment of persons with disabilities. Dedicated recruitment for candidates with disabilities, ensuring that they receive adequate mentoring, work adjustments and support.
		4. Inclusive workplaces. Adaptation, retrofitting or building accessible workplaces. Provision of adequate ATs and work policies for conducive working environments for employees with disabilities.
		5. Defined inclusion and diversity strategy. Define plans and goals for increasing inclusion of persons with disabilities as active customers or employees.

Customer-centred strategies: offering appropriate products and services to customers with disabilities

Recognising that **customers with disabilities are as valuable as non-disabled customers** is an important step that operators can take to improve their digital inclusion.[25] Depending on the service, some segments of customers with disabilities are power-users and have a higher usage of services than other groups, including non-disabled customers. However, customers with disabilities do not always access services and products in the same way as non-disabled customers, as shown in Figure 1.

25. GSMA (2019). Understanding the mobile disability gap.

1. Customer awareness of accessible products and services

Steps along customer journey: Awareness of products and services, access to mobile phones, and ownership of mobile phones.

Key barrier: Mobile phones are not perceived as ATs by either persons with disabilities or their caregivers or relatives. Awareness of relevant products and services is also low.

Strategies: An individual's disability often limits their capacity to fully utilise mobile services. This affects the perceived value of mobiles phones for persons with disabilities by themselves but also by their caregivers or relatives. Through an accessible mobile phone or tablet, persons with disabilities can use mobile services more easily. However, access to handsets and services is challenging when the information required to purchase them is not available in an accessible format.

The Global Accessibility Reporting Initiative (GARI), a project from the Mobile & Wireless Forum (MWF),[26] is a database of devices (including mobile phones, tablets, mobile apps, wearables and smart TVs) that provides information about the accessibility features of a device and helps users choose devices that are more suited to their needs. Some operators offer GARI's information to their customers. For instance, in Mexico, Telcel provides search filters in their device database for customers to select when looking for an accessible handset for mobility and hearing and visual impairment.[27,28] In Costa Rica, operators Claro, ICE and Telefónica signed an agreement to provide access to GARI through their websites.[29] The South Africa Electronic Communications Association, a non-profit association representing the telecommunications industry, provides a GARI-based search engine for accessible mobile phones and tablets.[30] Other operators that categorise their catalogue of mobile products based on GARI include Telefónica and Movistar in Spain, AT&T in the US, and MTN and Vodacom in South Africa.[31]

Providing access to GARI's information is an important step to increase awareness of available accessible handsets. However, operators need to actively ensure that this information reaches the user to avoid the risk of this tool and necessary accessibility features being underused. For instance, Vodacom in South Africa not only provides information about accessibility features of mobile phones using GARI but they also have guidance online and in stores on how to activate voice control technologies (VoiceOver and TalkBack) for customers with visual impairment.[32] These actions can drive higher adoption of mobile phones by persons with disabilities.

26. Global Accessibility Reporting Initiative. See: https://www.gari.info.
27. Telcel (n.d.). Teléfonos y smartphones.
28. América Móvil (n.d.). What we do for our customers and communities.
29. GSMA (2016). GSMA and Costa Rican operators commit to a safer mobile environment.
30. SAECA (n.d.). GARI.
31. GARI (n.d.). Examples of GARI in Use.
32. Vodacom (n.d.) Persons with visual impairments.

2. Availability of accessible handsets and tailored packages

Steps along customer journey: Access to mobile phones, ownership of mobile phones, usage of basic mobile services, usage of mobile internet and usage of mobile money.

Key barrier: Most accessible handsets (i.e. advanced smartphones) are unaffordable to many persons with disabilities and the cost of services may be a barrier to use for those who own or borrow a mobile phone.

Strategies: Persons with disabilities who own a mobile phone are users of mobile services on a par to non-disabled owners and some disability segments are power-users of some services.[33] Accessible smartphones are, however, still largely unaffordable. Operator-subsidised smartphones and tablets can offer accessible solutions for a fraction of the price of complex or multiple ATs,[34] while tailored packages can make services more affordable.

In Kazakhstan, Kcell offers discounted tariffs specially designed for customers with disabilities. These rates can represent huge cost savings when compared to basic tariffs—on-net video or voice calls are 91 per cent cheaper than the basic rate, while the cost per MB of data is discounted by 98 per cent.[35] Similarly, Etisalat, an operator from the United Arab Emirates, offers pre- and post-paid mobile data packages with a 50 per cent discount.[36]

In some countries, discounts are the result of broader national policies and initiatives. Since 2016, operators in Peru have offered a discounted tariff for persons with disabilities as part of a proposal from the telecommunications sector for their digital inclusion;[37] while in Ecuador, reduced tariffs are the result of the Disability Law, implemented in 2013, that establishes special tariffs for persons with disabilities to access the internet as well as mobile and fixed phone services.[38]

In search of more affordable mobile services, persons with disabilities often own more than one SIM card to access services from different operators.[39] Through tailored packages, operators can address the specific service needs of customers with disabilities, drive a higher usage of services and increase loyalty.

33. GSMA (2019). Understanding the mobile disability gap.
34. Raja, D. S. (2016). Bridging the disability divide through digital technologies. Background paper for the 2016 World Development Report: Digital Dividends. Washington D. C.: World Bank. Available at: http://pubdocs.worldbank.org/en/123481461249337484/WDR16-BP-Bridging-the-Disability-Divide-through-Digital-Technology-RAJA.pdf [Accessed 15 Jul. 2019]
35. Kcell (n.d.). Tariffs. See: https://www.kcell.kz/en/product/tariffs
36. Etisalat (n.d.) More options for people of determination. See: https://www.etisalat.ae/en/c/people-of-determination.jsp
37. CONADIS. "Operadoras de Telefonía Anuncian Descuentos en los planes para personas con discapacidad".
38. Ministerio de Telecomunicaciones y de la Sociedad de la Información. "Conatel aprueba beneficios en telecomunicaciones para personas con discapacidad. See: https://www.telecomunicaciones.gob.ec/conatel-aprueba-beneficios-en-telecomunicaciones-para-personas-con-discapacidad/".
39. GSMA (2019). Understanding the mobile disability gap.

3. Accessible customer services and digital products, and 4. Accessible shops and physical services

Steps along customer journey: Ownership of mobile phones, usage of basic mobile services, usage of mobile internet and usage of mobile money.

Key barrier: Access to shops, agents, and information about mobile products and services can be a challenge for some customers (e.g. those with physical impairments or difficulties communicating). Persons with disabilities therefore often incur additional or 'hidden' costs to access and use services due to their disability (e.g. paying for someone's help).

Strategies: When operators consider products for customers with disabilities, they often lack visibility of who these customers are and their needs, and are therefore unable to provide them with tailored services. However, some operators have identified opportunities to offer more suited services for customers with disabilities by, for instance, working with DPOs to understand the needs of this customer segment (see Safaricom's case study in Section 4: Case study: two operators' inclusion strategies).

Offering accessible physical services and products

Physical access to shops can be challenging for some customers with disabilities, either due to the travelling distance or access to the shop itself. Some operators are adapting the way in which services are provided and/or auditing and retrofitting facilities to improve their accessibility. For instance, China Mobile has previously offered door-to-door services to customers with disabilities.[40]

Once at the shop, access to information and support can also be challenging. To tackle this, Claro in Chile offers sign language interpretation in all customer centres in Santiago, and plans to expand the service to the rest of the country as part of their "Inclusion 360" strategy.[41,42] Entel in Perú[43] also offers these services in their shops in Lima.

Adequate provision of customer services and support

Customer services should be conscious of the needs of customers with disabilities, including those services that can be accessed remotely (i.e. phone, video calls). For instance, in Turkey, Turkcell offers a "Visual Customer Service"[44] that provides services in sign language to customers with a 3G phone at no extra cost. In Thailand, AIS also offers sign language services through a web camera, provided by staff with hearing impairments.[45]

In Kenya, Safaricom has a specialised section in their call centre to provide services for customers with hearing impairments.[46] To access this service, customers dial a specific customer care centre via video call and receive support from an agent using Kenyan Sign Language (KSL). The operator also ensures that the information they provide is accessible, including their website, and that information videos have closed caption or KSL interpretation.

40. China Mobile Ltd (2011) Creating a better future with sincerity and innovation.
41. SENADIS (2017). Empresa de telefonía lanza modelo de incusión laborar.
42. Cooperativa.cl (2019) "Ejecutivos de Claro de todo el país se capacitan para atender en lengua de señas".
43. Entel (n.d.). Señas que conectan.
44. Turkcell (n.d.). Support for disadvantageous groups.
45. AIS (2017). AIS Digital for Thais. The next generation Thailand. Annual report and sustainability report 2017.
46. Interview with Safaricom.

5. Developing products and innovations for customers with disabilities

Steps along customer journey: Usage of basic mobile services, usage of mobile internet and usage of mobile money.

Key barrier: Persons with disabilities face challenges when using mobile services, including confidentiality and safety concerns. They also face barriers to access basic services and discrimination from services providers.

Strategies: Mobile phones users with disabilities perceive mobile phones as a support to their daily activities and enablers of access to basic services such as education, healthcare and financial services.[47] However, they face many challenges and discrimination when accessing and using mobile services and basic services. These challenges are exacerbated for some disability segments.[48]

Zain Group in Jordan has introduced several technologies to support persons with hearing impairments using their services.[49] One of these solutions is a collaboration with Mind Rockets to launch Ramz, an application that uses animated avatars for real-time translation of text and speech into Jordanian Arabic Sign Language. Likewise, China Mobile provided funding to Nuobaiai to design "Longyu", an Internet of Things (IoT) application that helps persons who are deaf or hard of hearing to receive calls.[50] The application converts and displays voice messages into text while also allowing replies to be made by text and converting them to voice. These solutions increase the accessibility of digital information provided by operators.

Some operators support the development of disability innovations, either as part of their product development plans or by supporting external innovators or start-ups. Turk Telekom has developed several products and services for persons with disabilities. For instance, "Loud Steps" is an app that helps individuals with hearing or visual impairment to navigate large building complexes, such as airports, university campuses and shopping centres.[51] The app helps individuals to find their destination and provides a description of the surroundings while the person walks to their destination. Another app, "Accessible Life", offers four features: identification of banknotes using the mobile phone camera, an emergency number to share the phone's exact location with others when lost, text-to-speech services to read pieces of text scanned with the camera, and an e-book reader (through text-to-speech services).[52]

Through their innovation incubator programme, Jazz in Pakistan supported the development of DeafTawk, a digital platform that aims to bridge communication between persons who are deaf and service providers by offering online sign language interpretation, sign language training and audio-video translation services.[53] Jazz is working towards integrating DeafTawk into their wellness platform.

47. GSMA (2019). Understanding the mobile disability gap.
48. *Ibid*.
49. Zain Jordan (2018). Creating an ecosystem that better utilizes technology to engage the deaf into the community.
50. China Mobile Ltd (2018). Connect to the Future. Sustainability report.
51. Turk Telekom. (n.d.) Turk Telekom Group Social Responsibility Projects.
52. Golden Drum (n.d.). Accessible Life.
53. TRIAC (n.d.). DeafTawk: Barriers break when communication starts.

In Malaysia, through their innovation challenge, Digi supported "Eddy", an app for learning Malaysian Sign Language intended to be used by anyone, including hard of hearing users.[54]

Some operators are developing value-added services for their customers with disabilities, such as entertainment platforms. For instance, Movistar+ 5S is a service offered by Telefónica that allows users to watch programmes from their pay-TV platform with accessible features, including sign language, closed caption and audio description. The service is provided at no additional cost and can be accessed through the television or computer, allowing customers with visual or hearing impairment to access previously unavailable entertainment services. A similar entertainment service is offered by Turk Telekom through "Accessible Tivibu", a version of Tivibu Web and Tivibu Home (their pay-TV services) that is accessible for customers with visual impairments (i.e. through audio description) and hearing impairments (i.e. through sign language and closed caption).[55]

These examples of customer-facing activities demonstrate that **some operators consider persons with disabilities as valuable customers and are advancing new solutions to suit their needs for services**. For some operators, these activities are new revenue generating streams as they increase their customer base by addressing the needs of customers with disabilities. Moreover, this continuous innovation to better serve customers with disabilities gives MNOs a competitive advantage over others. For example, in Turkey, both Turkcell and Turk Telekom are continuously innovating to serve the needs of their customers with disabilities.



54. Digi (2017). Connecting you to what matters most. Sustainability Report 2017.
55. Turk Telekom (2015). Turk Telekom for everything. Annual Report 2015.



Internal strategies: Supporting skills development and employment opportunities for persons with disabilities

Generating training and employment opportunities for persons with disabilities are the two most common activities for operator disability inclusion strategies. Many operators are actively engaged in increasing the diversity of their workforce to be more inclusive of persons with disabilities.

1. Awareness and sensitisation of employees around disability

To implement and drive a disability inclusion agenda, organisations need to work to **create awareness, reduce stigma and change the language around disability**. In Kenya, Safaricom engages in a wide set of disability awareness initiatives, such as events to increase awareness about albinism among employees and celebrating International Day of Persons with Disabilities on 3 December every year.[56] Safaricom is also part of a consortium of private, public and non-profit organisations in Kenya working towards coordinating and reporting on all activities related to protecting the rights and improved employment opportunities for persons with disabilities.

Telenor in Pakistan has placed disability as a priority agenda and, under their Open Mind Pakistan initiative, the organisation worked on advocating, creating awareness, providing training, and sensitisation of employees on disability.[57,58] They provide disability orientation to managers and mentorship sessions to employees with disabilities. This was a fundamental step for the success of their Open Mind programme.

56. Interview with Safaricom.
57. Telenor (n.d.). Open Mind Pakistan.
58. Conversation with Telenor Pakistan.

2. Skills development and training of persons with disabilities

Several operators host programmes for **training and skills development for persons with disabilities**, some of which are linked to their recruitment processes. As part of their Open Mind programme in Norway, Sweden and Pakistan, Telenor provides an opportunity for individuals with physical impairments and mental health conditions to gain professional experience that could lead to improved opportunities and access to future employment.[59] In Pakistan, the programme has been recognised nationally for their efforts to raise awareness of disability and promote an inclusive work environment for persons with disabilities.[60] While graduates do not necessarily gain employment at Telenor, the operator supports them in their jobseeking process.

Similarly, Singtel, an operator in Singapore, is driving an initiative for inclusive workplaces and, through a collaboration with SG Enable, they train and employ several persons with disabilities.[61] In the Philippines, Globe Telecom supported Virtualahan, a winner of their 'Future Makers Program', which is a social enterprise that provides digital skills to persons with disabilities and offers them employment opportunities online.[62]

3. Recruitment and employment of persons with disabilities

Whether a legal or an organisational requirement, **some operators are actively seeking to increase the number of employees with disabilities** within their base. In Kenya, as established by the 2003 Persons with Disabilities Act, public and private organisations are required to have a quota of five per cent of employees with disabilities. In line with this requirement, Safaricom increased their proportion of employees with disabilities from 1.7 per cent to 2.1 per cent—a total 121 employees—in 2018 and plans to increase this to five per cent by 2020.[63] To achieve this target, different business units have been given specific hiring objectives to meet over the next few years. Safaricom also directly supports persons with disabilities to access employment by holding mentoring sessions in which they provide career and job application advice, such as CV writing.[64]

Zain Group recently launched an initiative called "We Able". This initiative is largely driven by Zain Group's CEO and aims to increase the number of employees with disabilities in the organisation by ensuring that all areas of the business are accessible; training materials are inclusive and accessible; and ATs are acquired that support persons with disabilities to join and succeed in their jobs.[65]

59. Telenor (n.d.). Telenor Open Mind: open doors, broader perspectives.
60. Telenor (2015). Telenor Pakistan's Open Mind receives national honors.
61. Singtel (n.d.). Singtel Group Diversity and Inclusion Strategy. See: https://www.singtel.com/about-Us/sustainability/people.
62. Globe (2017). Virtualahan: Breaking down employment barriers for PWDs.
63. Safaricom (2018). Annual Report.
64. Interview with Safaricom.
65. Zain Group (2019). We Able. See: https://zain.com/en/press/WE_ABLE_ZainLaunch/.

4. Inclusive workplaces

Operators working towards increasing their number of employees with disabilities are also looking at ways in which their **workplaces can become more inclusive** by changing or retrofitting facilities, or through the implementation of policies that create **friendlier working environments for persons with disabilities**. Singtel, for instance, has worked with SgEnable[66] to develop the 'Enabling Work app' to create awareness about inclusive employment and disability in Singapore, and for employers to understand the adjustments for recruiting candidates with disabilities and ensuring accessible workplaces.

Safaricom has introduced a positive approach to disability inclusion as an employer.[67] Core to the inclusive employment strategy is the support provided to their employees to ensure that adaptive changes provide a conducive work environment. These changes include making facilities more accessible, such as workstations, bathrooms, and the gym, and by providing employees with assistive equipment required for them to successfully perform their jobs. The operator frequently evaluates their need for training and career development to provide employees with disabilities with the right support. Additionally, Safaricom has also created a network of employees with children and relatives with disabilities. Currently, the group of nearly 40 employees receives additional support and advice, including psychological support.

Turkcell employs approximately 500 persons with disabilities to work in their call centres. Their goal is to provide a quality working environment and equal opportunities to all members of staff, regardless of disability. To their employees with disabilities, they offer the necessary adaptation, as well as training and career development opportunity, services, and transportation assistance.

66. SgEnable is an agency in Singapore dedicated to support persons with disabilities.
67. Interview with Safaricom.

5. Defined diversity and inclusion strategy

Some operators have introduced disability inclusion strategies across multiple business units. For instance, Telefónica's "Design for All" strategy places disability at the core of their operations, services, and products. The aim of the strategy is to ensure that the different areas of the organisation incorporate accessibility in all their activities and, in this way, improve opportunities for employees with disabilities, as well as products and services for customers with disabilities.[68]

Singtel's 'Enabling Strategy' also covers a wide range of activities for the inclusion of customers and employees with disabilities.[69] In terms of their customer-facing activities, the operator provides tailored packages for customers with disabilities, and is currently auditing products, services, and shops to improve their offerings. Through the 'Future Makers' innovation programme, Singtel has supported solutions for persons with disabilities such as Xception, a job centre platform that matches persons with autism to a job; and 'Equal reality', software that uses virtual reality for disability awareness at the workplace. As part of their internal activities, Singtel provides internship and employment opportunities for persons with disabilities through their RISE mentorship programme. Singtel has been a leader in the private sector in disability inclusion in Singapore and is one of the founders of the Singapore Business Network On DisAbility.[70]

By being disability inclusive, organisations can benefit from **heightened innovation, an increased customer base, improved experiences for everyone**, greater productivity at the workplace and reduced risks.[71] MNOs driving disability inclusion across the organisation have the potential to see these benefits.

68. Telefónica (n.d.) Discapacidad. See: https://www.telefonica.com/web/negocio-responsable/-/contenido-discapacidad.
69. Singtel (n.d.). Singtel Group Diversity and Inclusion Strategy. See: https://www.singtel.com/about-Us/sustainability/people.
70. Singapore Business Network On DisAbility. See: https://www.sbnod.com.
71. Valuable 500. See: https://www.thevaluable500.com/#sign-up.



4 Case study: two operator's inclusion strategies

Safaricom: Enabling access to financial services for visually impaired customers

Disability context and the mobile disability gap in Kenya

With a population of nearly 50 million, Kenya is the largest economy in East and Central Africa and the fastest growing economy in Sub-Saharan Africa.[72] Poverty levels in the country remain high – nearly 36 per cent of Kenyans live under the international poverty line ($1.90 a day)[73] – and persons with disabilities are often among the most disadvantaged. In Kenya, according to the Kenyan Bureau of Statistics, 3.5 per cent of the population reports a form of disability.[74] More than 60 per cent of persons with disability live under the international poverty line. They are less likely to complete primary and secondary education, particularly if they have cognitive, hearing or speech impairments,[75] they are also less likely to access formal paid employment, and they face discrimination and stigma, creating barriers to their full participation in society.[76]

While progress is still necessary, huge advances have been made by the private, non-profit and public sectors to improve the standard of living of persons with disabilities. For instance, the Government of Kenya has adopted legal frameworks and policies to protect persons with disabilities, ensure their access to services, increase their opportunities for independent living, and ensure their right to be productive.[77] In addition, several DPOs operate in Kenya to promote the rights of persons with disabilities, most of them under the coordination of the United Disabled People of Kenya (UDPK).[78]

Ownership of mobile phones and use of mobile internet is high in Kenya, even among groups of

72. World Bank (2019). "Kenya, Overview". See: https://www.worldbank.org/en/country/kenya/overview
73. World Bank (2018). "Poverty Incidence in Kenya Declined Significantly, but unlikely to be Eradicated by 2030".
74. Kenya Bureau of Statistics (2012). Kenya 2009 Population & Housing Census, Analytical Report on Disability, Volume XIII, March 2012
75. These estimates were obtained from the Disability Data Portal compiled by Leonard Cheshire. The data for Kenya is based on the 2009 Census conducted by the KBS, and is likely to change with the census currently taking place.
76. Timmis, H. (2018). Jobs in Kenya. K4D Helpdesk Report. Brighton, UK: Institute of Development Studies.
77. Kabare, K. (2018). Social Protection and Disability in Kenya.
78. *Ibid.*

persons with disabilities. However, persons with disabilities are still 12 per cent less likely to own a mobile phone than non-disabled persons.[79] In fact, in Kenya where the mobile gender gap in ownership is small, according to the GSMA Connected Women,[80] disability is a greater determinant of ownership and usage than gender.

Safaricom's disability inclusion strategy

> ***"Our goal is to transform lives. We cannot leave people behind."***
> Tabie Kioko, Diversity and Inclusion Lead at Safaricom.

In 2017, Safaricom conducted an audit, supported by inABLE[81] of all their products and services to quantify and understand their usage by persons with disabilities. When looking at all the different types disabilities, they realised that individuals with visual impairment were the most excluded from the benefits of technology.

Identifying needs of visually impaired customers

To generate insights into how persons with visual impairment used their services, Safaricom investigated the use of one of their highest revenue-generating services: the mobile money service, M-Pesa.

Safaricom formed a focus group of persons with visual impairment to enable them to understand their challenges and to get a first-hand experience of their interaction with M-Pesa. Safaricom identified several challenges experienced by customers with visual impairment:

- **Being defrauded of their M-Pesa balance:** Visually impaired customers reported that they were often deceived by agents when cashing-in money. When making a deposit, customers received their new balance by text, which they were not able to check at the point of transaction and would only realise that a smaller amount had been deposited upon their return home or when someone they trusted could read the balance to them.

- **Keeping track of their M-Pesa balance:** As designed, the M-Pesa service would send a message whenever a transaction was made. These messages were inaccessible to customers with visual impairment who found it difficult to keep track of their balance and relied on someone who could read their new balance after each transaction.

- **Inability to use M-Pesa service independently:** Due to the lack of accessibility of the service and fear of being defrauded, persons with visual impairment usually had to rely on someone to assist them when purchasing goods or transacting with M-Pesa, often incurring additional costs.

- **Spending more on their transactions:** Persons with visual impairment had to rely on those they could trust to either send them the e-value they required in exchange for cash or even carry out a withdrawal by sending to someone who would give them cash in exchange. All these transactions represented additional costs due to withdrawal fees or peer-to-peer transaction costs, even if depositing at an M-Pesa agent outlet was free.

By engaging and brainstorming with their customers with visual impairment, Safaricom realised that their services were not accessible to those customers and that, in fact, they were paying an additional cost. For this reason, Safaricom integrated an interactive voice

79. GSMA (2019). Understanding the mobile disability gap.
80. *Ibid*.
81. inABLE. See: https://inable.org/

response (IVR) platform to query the balance from an M-Pesa account—which was relatively easy to implement as IVR was already in use for other services. Within three months, Safaricom had fully integrated IVR and made the service available to all customers, regardless of disability or type of phone. While the service is not advertised, Safaricom estimates that more than 3,000 customers access the service daily and that the introduction of IVR reduced fraud by 99 per cent.[82] With the introduction of IVR, those with low literacy and the elderly may also benefit.[83]

Becoming a more inclusive operator

Safaricom have also partnered with Kenya Union of the Blind (KUB) to register all persons with visual impairment in the country to enable them to provide better services. Knowing who they are will enable Safaricom to continue designing tailor-made solutions for them and target relevant services appropriately. The visually impaired are also given priority routing when they contact their call centre for enquiries.

Safaricom provides an example of a holistic strategy for digital inclusion of persons with disabilities—driven by their leadership—to become more inclusive and drive a cultural change within Safaricom. The operator is committed to leave no one behind and has placed disability, particularly visually impairment, at the core of product and service innovation to transform the lives of persons with disabilities.



82. Interview with Safaricom.
83. For details on the customer journey for registering and using these services, as well as benefits for mobile operators adopting similar services, see: https://www.gsma.com/mobilefordevelopment/programme/digital-identity/mobile-based-voice-biometric-identity-an-emerging-technology-that-could-assist-vulnerable-populations/.

Turkcell: Innovating for customers with disabilities

Disability context and the mobile disability gap in Turkey

With a population of 81.4 million,[84] more than 20 per cent of people in Turkey report having a disability.[85] Although Turkey is an upper-middle-income country, it is one of the countries within the Organisation for Economic Co-operation and Development (OECD) with the greatest inequality and poverty ratios.[86] This greatly affects individuals with disabilities.

Turkey adopted their Disability Act in 2005 as part of their accession process to the European Union, and in 2007 became a signatory of the UNCRPD, which was ratified in 2009.[87] Persons with disabilities still suffer from discrimination and stigma, however, and face great difficulties when accessing basic services, such as healthcare, education and employment.[88] For instance, buildings, hospitals and public transportation are mostly inaccessible and there is a lack of strategy and inadequate implementation of inclusive education programmes. Although employment opportunities have increased for persons with disabilities in Turkey, accessibility in the workplace is still a challenge and anti-discrimination policies need to be enforced.[89] Furthermore, the mobile disability gap or the digital access gap faced by persons with disabilities in Turkey has not been researched.

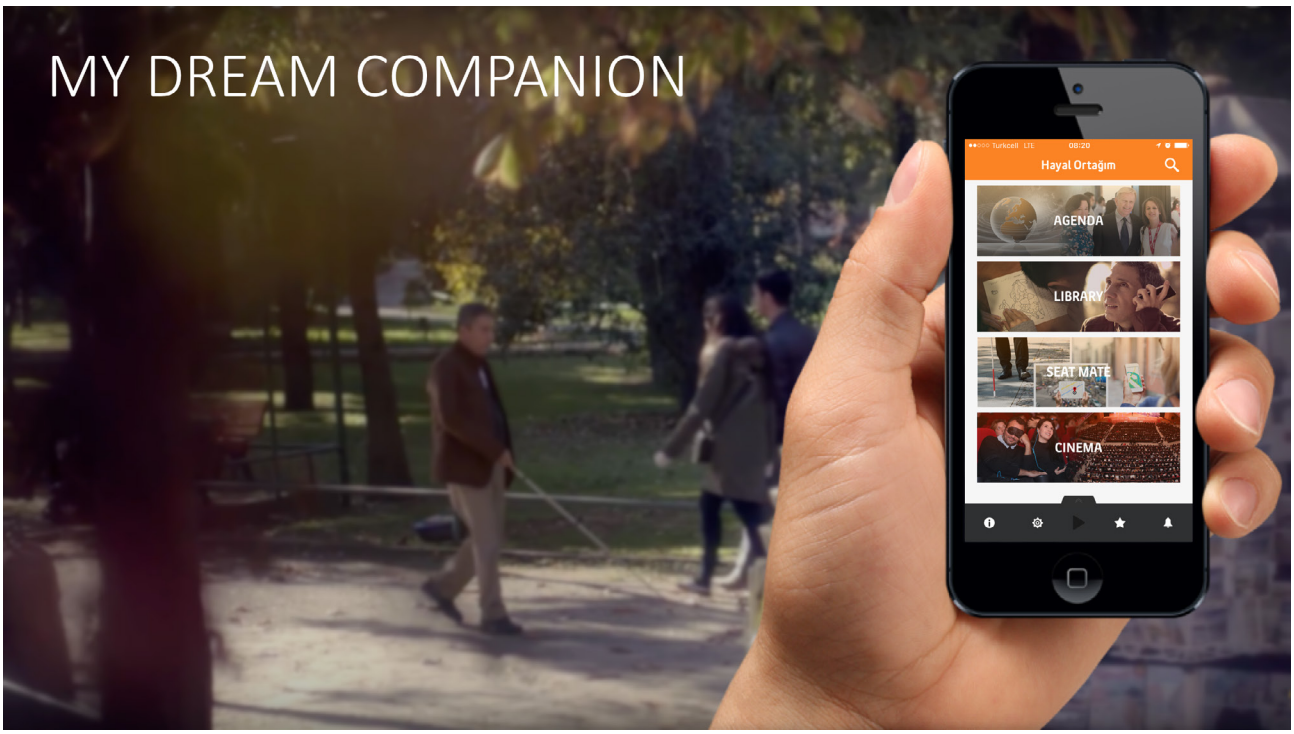


Photo credit: YGA

84. World Bank (2019). "Kenya, Overview". See: https://www.worldbank.org/en/country/kenya/overview.
85. World Health Organization (2011). World Report on Disability.
86. OECD (2019). Turkey.
87. Republic of Turkey, Ministry of Family and Social Policy (n.d.) Turkey initial report on the Convention on the Rights of Persons with Disabilities. See: http://www.un.org.tr/humanrights/attachments/article/9/CRPD_C_TUR_1_7029_E.pdf.
88. International Disability Alliance (2016). Compilation of UN Human Rights Recommendations—Turkey. See: https://www.internationaldisabilityalliance.org/resources/compilation-un-human-rights-recommendations-turkey.
89. Yilmaz, V (2019). An examination of disability and employment policy in Turkey through the perspective of disability non-governmental organisations and policy-makers. *Disability & Society*. DOI: 10.1080/09687599.2019.1649124.

Making services accessible to persons with disabilities

Turkcell has actively been developing and supporting innovations for persons with disabilities, particularly for people with visual impairment, hearing impairment and autism.

'My Dream Companion' is a platform that makes information and entertainment more accessible for persons with visual impairment, designed in partnership with the Young Guru Academy in Turkey.[90] 'My Dream Companion' uses audio description to enable users to access the latest news and listen to audio books and other useful information, such as the weather and support to use public transportation. 'My Dream Companion' also provides indoor navigation and audio descriptions when a person with visual impairment goes to the cinema.

Another product developed by Turkcell is their sign language app, 'İşaret Dilim',[91] for customers with hearing impairment and those who do not understand sign language. The app uses an avatar to translate written text and spoken words into Turkish Sign Language, has a comprehensive digital Turkish Sign Language dictionary, provides training materials to learn sign language and gives information in sign language, such as the latest global news.

Turkcell has also supported 'Otsimo', a social enterprise that developed a digital education platform for persons with autism.[92] Typically, augmentative and alternative communication (AAC)[93] apps are expensive. The application offers an affordable platform with educational games for educators and families to communicate with their children with autism. The app has more than 100,000 users worldwide. The curriculum, developed with the Inclusive Education Association in Turkey, offers materials for AAC with tasks to learn how to communicate emotions, senses, colours and daily activities, among other things.

A champion in disability innovation

Turkcell's efforts have been widely recognised. In 2014, Turkcell's 'My Dream Companion' was the winner of the 'Social and Economic Development' award by the GSMA Global Mobile Awards and, in 2016, won 'Best use of mobile for accessibility and social inclusion'. Otsimo won the 'Best Social Impact' award by Google Play in 2018.

90. Young Guru Academy (2018). My Dream Companion, Navigation and Audio Description. See: https://vimeo.com/262118688.
91. Turkcell (n.d.) İşaret Dilim.
92. Otsimo. See: https://otsimo.com/en/.
93. Alternative and augmentative communication (AAC) refers to tools and strategies that aid communication for people with speech difficulties. Communication may be enabled through the use of pictography, letters or technology. More information can be obtained from Communication Matters.



5 Conclusions and recommendations

Mobile phones have become life-changing technologies for many persons with disabilities. Yet, disability is still a determinant of ownership and access to mobile. This gap could be addressed by offering mobile products and services for persons with disabilities, most of whom are already regular consumers. The inclusion of persons with disabilities as customers makes sense as a contribution from the industry to the SDGs[94] but also as a way to target the disability market, estimated to be worth $8 trillion.[95] This section summarises the key insights from inclusion initiatives and concludes with opportunities for mobile operators to drive change while capturing value when delivering services and products for persons with disabilities.

94. Sustainable Development Goals from the United Nations. See: https://sustainabledevelopment.un.org/?menu=1300.
95. Accenture (2018). The accessibility advantage: why should we care about inclusive design.

Several cases were presented in this report, highlighting how mobile operators are closing the mobile disability gap and also driving disability inclusion. The report provided two case studies of mobile operators championing disability inclusion—Safaricom and Turkcell. The review and case studies helped to identify the customer-facing and internal activities that typically form part of mobile operators' disability inclusion strategies (see Figure 2).

Figure 2

Framework on activities included in disability inclusion strategies by mobile operators



Some mobile operators are engaging in customer-facing activities by: making their customers with disabilities aware of suitable products and services for them; making accessible handsets and tailored service packages available to these customers; ensuring that customer services and digital products are accessible to all, as well as their physical shops and shop-level services; and developing disability-driven product and service innovation for their customers with disabilities.

Largely focused in human resources, internal activities aim to increase diversity and inclusion at the workplace. Operators active in this area are: providing disability training and sensitisation to their staff; training and developing skills of persons with disabilities for their employability; employing persons with disabilities; ensuring that the workplace nurtures an inclusive environment for employees with disabilities; and driving a diversity and inclusion strategy that considers disability.

Based on the findings presented in this report, recommendations can be made for mobile operators to consider during their journey to actively promote the participation of persons with disabilities.

- **Change perceptions of disability inside and outside the organisation.** Driving the digital inclusion of persons with disabilities requires a change of mindset throughout the organisation. As shown by Telenor's Open Mind example in Pakistan, successful strategies often require an initial period to engage and sensitise other employees. This can be done through disability awareness training, volunteering with DPOs and programmes to mentor persons with disabilities.

- **Identify the needs of customers with disabilities and provide better suited products and services.** Focusing on the customer journey may help uncover challenges that are not evident to product development teams. Safaricom leveraged their partnership with KUB to identify customers with visual impairments and understand their customer journey when using mobile money services. This led to changes in the way services were provided which was not only beneficial for persons with disabilities, but also to other communities in need such as those with low literacy levels and the elderly.

- **Opportunities to innovate for customers with disabilities.** Operators such as Telefónica and Safaricom have delivered business value to investing in improving services for customers with disabilities, whether by changing the way in which mobile-enabled services are currently provided or by introducing services specific for them. Others have developed solutions that can support their customers with disabilities more broadly in their everyday tasks (i.e. access to information, navigation services, and employment opportunities).

- **Co-design or tailor products and services with customers with disabilities, DPOs, public sector, and tech start-ups.** The longstanding collaboration between Singtel and SgEnable has demonstrated the advantages of codesigning with DPOs. Working with DPOs gives operators the expertise required when designing products, services and strategies for customers and employees with disabilities.

- **Champion and lead wider strategies to promote disability inclusion.** Safaricom in Kenya and Singtel in Singapore are examples of how operators are engaging in disability inclusion both internally and externally. Both operators are members of business disability networks in their countries, and champion tackling disability stigma and increasing the digital inclusion of persons with disabilities.

Mobile operators can play an important role in closing the mobile disability gap faced by persons with disabilities in many parts of the world. The GSMA will continue to engage with operators in different markets to generate insights on access, ownership and use of mobile phones by persons with disabilities, and also to better understand how to support operators to develop their own disability inclusion agendas and identify market opportunities where innovations could be impactful in enabling the participation of persons with disabilities in society.

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