

Bridging the divide
Enhancing digital literacy
in the AI era



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Authors

Sayali Borole, Senior Analyst
Shroug Ganawa, Senior Analyst
Tim Hatt, Head of Research and Consultancy

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info@gsmaintelligence.com

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Executive summary

Artificial intelligence (AI) represents one of the most transformative technological shifts, offering the potential to drive significant gains in productivity, economic inclusion and social development. However, realising this potential at scale depends on a critical enabling factor: ensuring people have the digital skills and capabilities to participate effectively in an increasingly AI-enabled world.

Drawing from primary and secondary research, and learnings from the implementation of Huawei's Skills on Wheels initiative, this research explains how digital literacy must be understood as a layered and evolving capability. It progresses from foundational

skills to broader literacy linked to trust and safety, and increasingly AI-related capabilities such as evaluating AI-generated information and understanding AI system limitations.

The digital divide is not defined by access alone

Global connectivity has expanded rapidly, but meaningful participation remains far from universal. Almost 96% of the world's population lives within reach of a mobile broadband network, but 3.1 billion people still do not use mobile internet despite being covered.

This gap is becoming more pronounced across low- and middle-income countries (LMICs). Many users in LMICs have access to devices and networks

but lack the skills, confidence or support needed to navigate digital services independently. Barriers such as device and data affordability, limited literacy, language constraints, safety concerns and lack of relevant content continue to constrain meaningful use. Exclusion increasingly occurs when users do not transition from initial adoption to sustained and productive engagement.

AI reshapes digital participation

AI is reshaping digital participation in two opposing ways. On the one hand, AI can lower barriers by simplifying access through voice interfaces, translation and guided interactions, and enabling wider participation across socioeconomic groups. If accompanied by the appropriate skills and support, these capabilities can help reduce existing digital inequalities and broaden access to information, services and economic opportunities. On the other hand, AI raises the capability required for participation, particularly as users must now assess reliability, recognise manipulation and understand automated decision-making systems. Without sufficient skills,

there is a risk of inequalities widening between those able to use AI effectively and those unable to do so.

The implications extend beyond access and usability. Digital capabilities are increasingly linked to economic participation and productivity. Digital skills carry significant wage premiums, particularly in LMICs, while closing the mobile internet usage gap could contribute approximately \$3.5 trillion in global GDP between 2023 and 2030. The transition to AI-enabled economies will shape how people participate digitally but also how widely the benefits of digital transformation are shared.

Steps to balance inclusion and AI adoption

- **Parallel progress** – Deploying AI in the expectation that skills will automatically follow risks widening participation gaps. Inclusion in the AI era depends on strengthening user capabilities while reducing the capability demands embedded in digital and AI-enabled systems.
- **Joint responsibility** – Responsibility for inclusion cannot rest on users alone. Many digital services continue to assume levels of literacy, language familiarity and digital confidence that large segments of the population do not possess. Interface complexity, limited language coverage and a lack of human support can undermine even strong

skills programmes. Digital systems themselves (including hardware and software) must therefore become more inclusive by design, particularly for public/essential services.

- **Trust and human support** – Barriers to adoption cover a mix of social and technical concerns that cannot be addressed in isolation. Barriers to adoption and continued use include lack of confidence, fear of fraud, social norms and peer influence. Combining technology with trusted community-based support is essential, particularly for underserved groups.

- **Continuous learning and applied use** – Digital literacy must extend beyond one-off training to enable ongoing, self-directed learning. AI tools can support access to knowledge, offer new pathways for learning, entrepreneurship and access to services across sectors. Ensuring users can effectively use AI in their daily lives will be critical to narrowing the digital divide. Without this, the benefits of AI risk being captured disproportionately by those who are already digitally skilled.
- **Measurement of digital inclusion progress** – Genuine inclusivity will be reflected not just in access and reach but in increased levels of independent, confident and sustained use. Moving beyond access and reach to indicators of independent and sustained use will be critical to understanding whether digital and AI-enabled systems are genuinely inclusive.

Opportunities for stakeholders



Governments increasingly need to treat digital and AI literacy as core to digital transformation and inclusion. This means embedding practical AI awareness into national digital skills frameworks, strengthening online safety and consumer protection, supporting multilingual digital ecosystems and ensuring AI-enabled public services remain understandable and accessible by default.



Mobile operators are uniquely positioned to support inclusion at scale through their direct interactions. Operators can integrate digital and AI literacy into onboarding journeys, provide assisted support for lower-confidence users, support trusted educational content and strengthen fraud protection mechanisms.



NGOs, educators and community-based organisations remain essential to reach those most at risk of exclusion. Their role extends beyond skills delivery to building trust, relevance and confidence – areas that technology alone cannot fully address. Hybrid models combining digital tools with trusted human support are likely to become increasingly important.



Technology providers and platforms can play a key role in shaping inclusion outcomes. Design choices around language support, interface design, explainability and accessibility directly influence the capability demands placed on users. Inclusive AI adoption will increasingly depend on whether systems are designed to reduce complexity rather than increase it.



About this research

This research investigates the shifting dynamics of the digital divide in the AI era and assesses the consequences for digital literacy and inclusion initiatives. The research addresses the following questions:

- How is AI reshaping digital participation and widening/narrowing capability gaps?
- What approaches are most effective in building digital and AI literacy?
- What are the implications for stakeholders, and how can impact be scaled through co-ordinated action?

The study is based on primary and desk research. Interviews with six stakeholders from non-governmental organisations (NGOs), regulators and mobile operators provided insights into the ecosystem and real-world conditions.

Additionally, GSMA research, consumer surveys and connectivity data help form an understanding of the evolution of digital literacy and user requirements. Finally, a case study highlights Huawei's DigiTruck and its broader Skills on Wheels initiative as examples of hybrid, community-driven models for capability development.

1

Digital literacy as the gateway to inclusion

1.1 Context: a question of capabilities

Digital technologies are increasingly central to economic participation, public service delivery and social inclusion. Mobile internet has become the primary gateway to financial services, education, healthcare, employment opportunities and digital commerce for billions of users, particularly in low- and middle-income countries (LMICs).

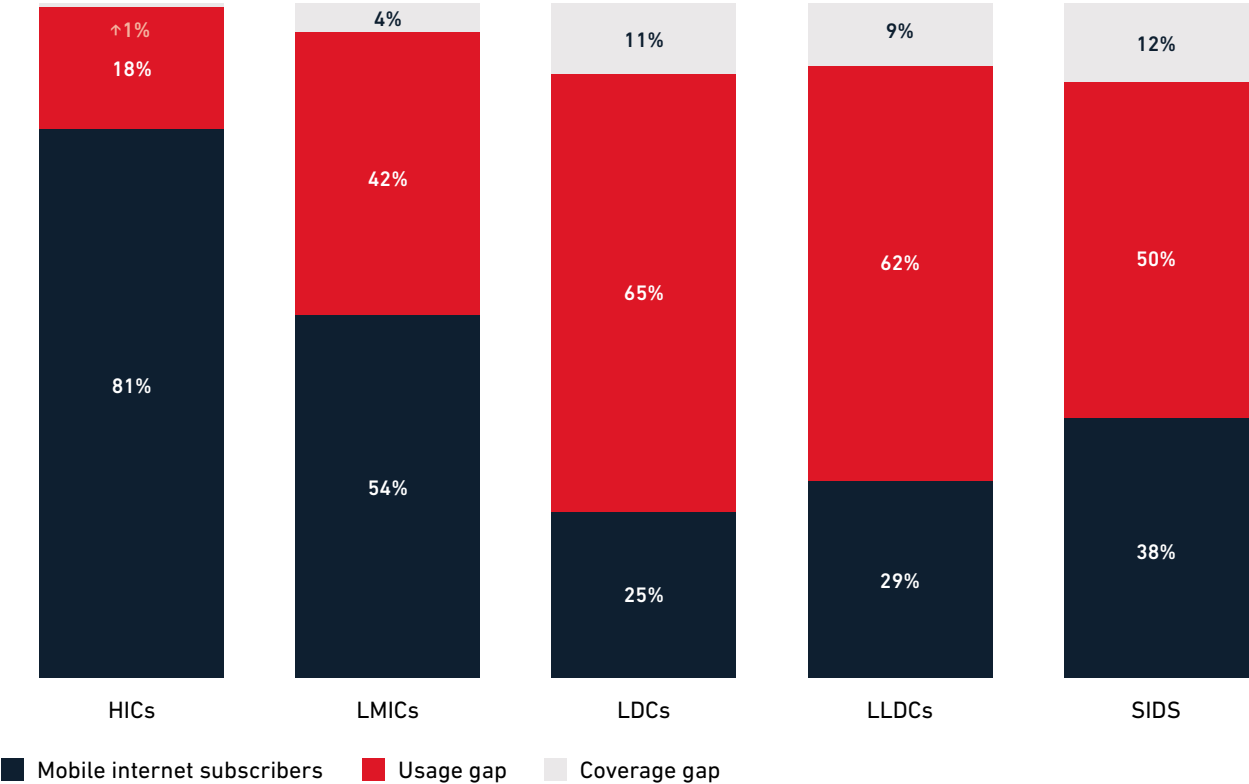
Over the past decade, significant progress has been made expanding connectivity, reducing device costs and improving network coverage. However, expanded connectivity has not translated uniformly into meaningful digital participation – particularly in LMICs, where many users remain limited to basic and infrequent forms of digital engagement.

Almost 96% of the global population lives within range of a mobile broadband network, yet 3.1 billion people within that footprint do not use mobile internet (the usage gap) as of 2024. In LMICs, and particularly least developed countries (LDCs),¹ infrastructure coverage remains a key barrier in some countries, but the majority of the digitally excluded face other barriers to mobile internet adoption. These include affordability, digital and literacy skills, safety and security concerns, lack of perceived relevance and other fundamental enablers to access.

¹ According to The UN Office of the High Representative of for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States, the LDC category includes 44 countries, with the majority in Sub-Saharan Africa, identified by the UN according to income, human assets and economic vulnerability criteria.

Figure 1

Mobile internet connectivity across different country groups, 2024



Note: HICs – high-income countries; LMICs – low- and middle-income countries; LDCs – least developed countries; LLDCs – landlocked developing countries; SIDS – small island developing states.
Source: GSMA Intelligence

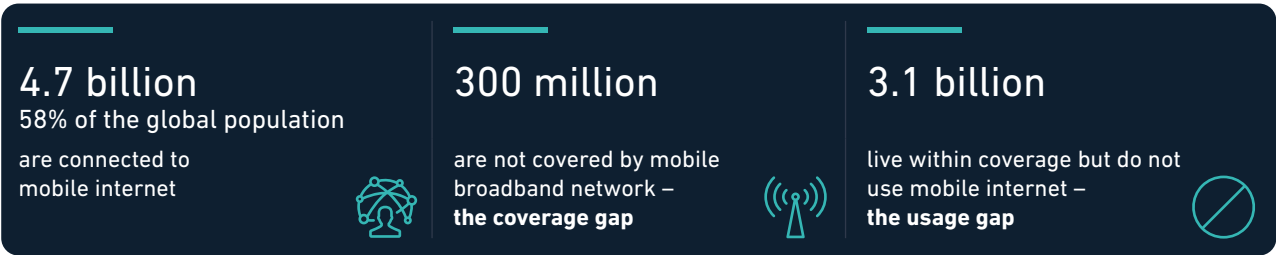
AI-enabled services are now embedded across sectors including education, finance, healthcare, public services and communication platforms. These have the potential to simplify digital interaction through conversational interfaces, localisation and adaptive learning, potentially expanding access for underserved populations.

At the same time, AI is reshaping the nature of digital participation itself. Users are increasingly expected to navigate digital systems but also interpret AI-generated information, assess reliability, manage digital risks and adapt continuously as technologies evolve. This raises the minimum capability threshold required for participation and creates the risk that existing inequalities may deepen if digital capability development does not keep pace.

For users at the threshold of digital adoption, particularly in LMICs, this represents a fundamental shift. The capabilities required at the point of entry are higher than in previous phases of digital development, and the pathway from access to meaningful participation is becoming more complex. AI is changing what they need to know on the day they first connect.

As a result, digital literacy can no longer be understood as a single threshold of competence. It is increasingly a layered and evolving capability that extends from foundational access skills to critical engagement with AI-enabled systems.

1.2 Persistent usage gaps and barriers



The usage gap remains

The persistence of the usage gap in mobile internet connectivity shows that connectivity alone is insufficient to drive meaningful digital participation. As of 2024, 4.7 billion people worldwide use mobile internet (on their own devices), while another 3.1 billion, despite living within covered areas, do not access mobile internet.²

With a usage gap of 3.1 billion, the primary challenge relates to usage and user capability. GSMA Intelligence interviews with NGOs and regulators highlight that the gap reflects limited capability among users rather than a lack of infrastructure.

In LMICs surveyed by the GSMA in 2024,³ affordability (primarily of handsets) and literacy & digital skills are among the most significant barriers to mobile internet

adoption reported by those aware of mobile internet but not using it.⁴ Device and data costs remain high relative to income in many LMICs, while limited literacy and digital skills are constraining first-time use.

Barriers evolve

As people adopt mobile internet and begin to engage with it, reported barriers change and vary more by country. Literacy and digital skills become less dominant as barriers to further use than they are for adoption, and concerns tend to shift towards affordability (primarily of data), safety and security, and quality of connectivity experience. For example, in Pakistan, 40% of those aware of mobile internet but not using it cited a lack of literacy and digital skills as their top barrier to adoption, compared to 21% of existing users reporting lack of literacy and digital skills as their top barrier to further use.

Table 1

Regional patterns in the top reported barriers to mobile internet adoption and further use across the user journey

Region Surveyed countries only	Adoption stage Non-users who are aware of mobile internet	Further use Existing mobile internet users
Sub-Saharan Africa	Affordability (primarily handset cost) is the most commonly reported as the top barrier, followed by limited literacy and digital skills	Affordability (primarily of data) and lack of literacy and digital skills persist, alongside safety and security concerns
South Asia	Limited literacy and digital skills and affordability are key challenges	Lack of literacy and digital skills and affordability issues (primarily of data) persist, alongside safety and security concerns

Source: GSMA Consumer Survey 2025

² [The State of Mobile Internet Connectivity 2025: Overview Report](#), GSMA, 2025
³ The annual GSMA Consumer Survey was conducted in 15 LMICs in 2024. Interviews were conducted face-to-face and were nationally representative.
⁴ [The State of Mobile Internet Connectivity 2025: Barriers to Mobile Internet Adoption and Use](#), GSMA, 2025

Perceived safety and security concerns become increasingly prominent as engagement with mobile internet deepens. In Mexico, 66% of mobile internet users surveyed report safety and security concerns as their top barrier to further use, including concerns about fraud, misinformation, data privacy, exposure to harmful content and being contacted by strangers. This compares to 28% of those aware of mobile internet but not yet using it identifying safety and security concerns as their top barrier to adoption. Similar patterns are observed in Senegal and Indonesia, where scams and information security risks represent major barriers to further mobile internet use, according to the GSMA Consumer Survey.

Social and structural determinants also affect access. In some markets, particularly where gender norms are more restrictive, access is influenced by household dynamics and gatekeepers.

Perceived relevance is a further cross-cutting constraint. Many individuals do not see sufficient value in mobile internet due to limited awareness of use cases or a lack of locally relevant content. While not a top barrier overall, in India, approximately 20% of users identify the absence of relevant content or insufficient content in the local language as a barrier to further use.

Availability and awareness of online content and services that meet user preferences and needs – including content that is accessible, easy to use and in local languages – are key enablers of mobile internet adoption and usage. Without them, people will not have a compelling reason to invest time and resources into accessing the internet. Furthermore, relevance intersects with other major barriers. For example, it influences perceived value and willingness to pay, both of which directly impact affordability.

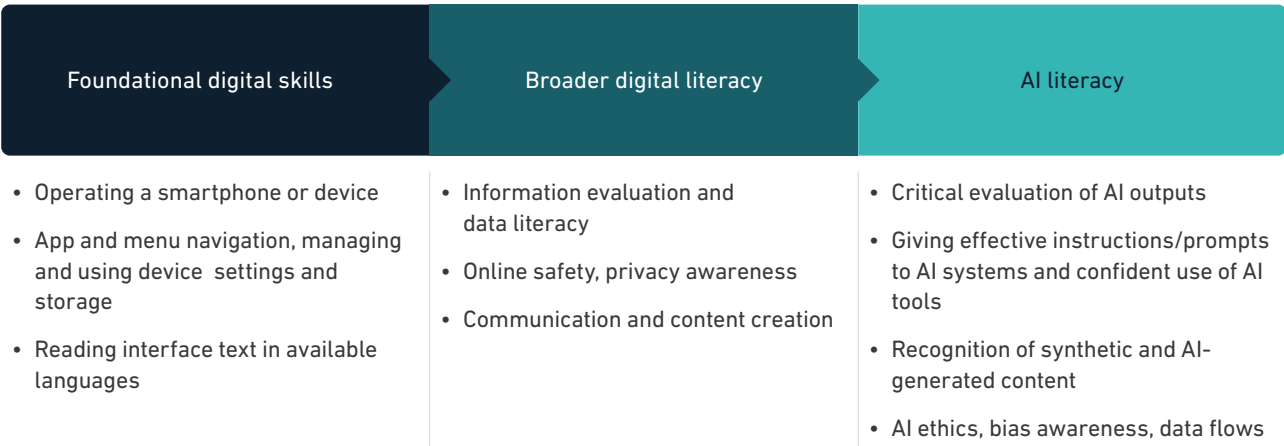
1.3 Digital capability constraints across interconnected layers

Constraints on digital capabilities can be grouped according to three layers of literacy: foundational digital skills, broader digital literacy (including safety

and trust) and emerging AI-related capabilities. These layers are interdependent and have evolved as digital ecosystems have become more complex.

Figure 2

Layers of digital literacy in the AI era



Source: GSMA Intelligence

Foundational digital skills: basic literacy challenges

This layer includes the ability to operate a device, navigate applications and understand basic interface functions. These remain the primary barriers for first-time users, particularly in LICs and LMICs, where literacy, language and education levels strongly influence digital access. See Figure 3.

What remains the primary barrier to developing digital and AI-related skills?

🔗 **NGO perspective:** Low foundational literacy, limited confidence and fear of making mistakes continue to constrain mobile internet adoption, particularly among first-time users and lower-income populations.

While AI can improve productivity for digitally confident users, individuals with limited digital literacy risk being left behind as digital systems become increasingly AI-enabled.

Broader digital literacy: user concerns around fraud and online safety

As users begin to engage with mobile internet, broader digital literacy becomes more important. This includes the ability to evaluate information, communicate, create content and interact safely online. Concerns around fraud, misinformation, data privacy and loss of control over personal data are increasingly cited as barriers to deeper engagement and are often more pronounced among existing users.⁵ Such concerns are expected to intensify as AI-enabled fraud (including voice cloning and deepfakes) becomes more prevalent, particularly in markets with limited consumer protection.

In many LMICs, broader digital literacy extends to the ability to use digital platforms for everyday economic activities such as buying, selling and marketing goods, often through social and messaging platforms. These interactions frequently involve mobile money and informal transactions, making trust, fraud awareness and financial safety critical components of broader digital literacy.

GSMA Intelligence stakeholder interviews indicate that trust should not be understood solely as a user-side limitation. Trust is shaped by how digital and AI-enabled services are designed, communicated and governed. When systems lack transparency, explainability or clear pathways to human support, they increase the capability demands placed on users and raise the risk of disengagement, even among those with basic digital skills.

AI literacy: building capabilities with new skills

As AI becomes embedded in digital services, users require additional capabilities to interact effectively with AI-driven systems. These include the ability to interpret AI-generated outputs, recognise misinformation, understand system limitations and make informed decisions about when and how to rely on AI-generated content.

Beyond these core capabilities, AI is also beginning to facilitate everyday digital and economic activities. Users are increasingly interacting with voice-to-text systems, AI assistants and automated agents to search for information, manage simple business tasks and support activities such as marketing, sales and customer engagement. For micro-entrepreneurs and informal workers, AI-enabled tools can support learning and productivity, lowering the barriers to participation in digital economies.

AI also presents opportunities for accessibility, particularly for persons with disabilities, through voice interfaces, assistive technologies and adaptive systems. Those with disabilities remain less likely to access and use mobile internet and tend to engage with fewer digital services, reflecting persistent barriers related to affordability, skills and trust. However, mobile and AI-enabled technologies can act as powerful assistive tools, improving accessibility and supporting greater independence. This highlights both the opportunity and risk of exclusion depending on how systems are designed.⁶

International frameworks such as Unesco's AI Competency Framework and the OECD's AI literacy work reflect this evolution, positioning AI-related skills as an extension of digital literacy rather than a separate domain.

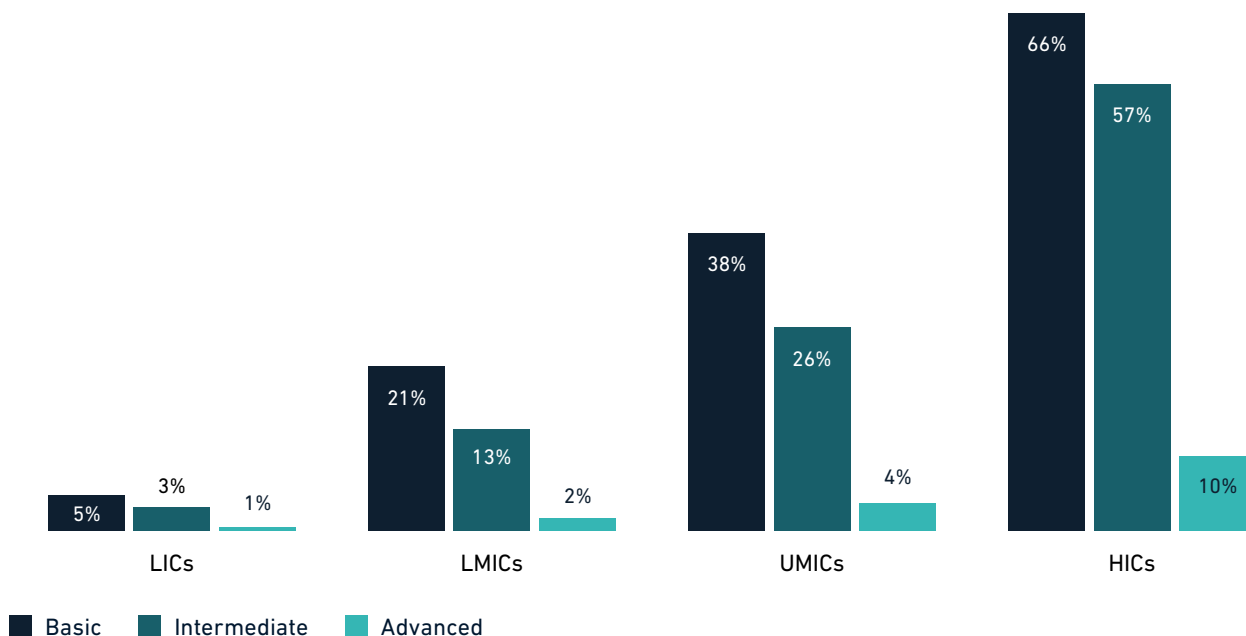
⁵ GSMA Consumer Survey 2025

⁶ [The Mobile Disability Gap Report 2025](#), GSMA, 2025

Figure 3

Digital skills by income group, 2024

Percentage of population



Note: LICs – low-income countries; LMICs – low- and middle-income countries; UMICs – upper-middle-income countries, HICs – high-income countries.
Source: World Bank

Perception of value and relevance: a key barrier

Across all three layers, perception of value and awareness of relevant use cases remain critical barriers. In many contexts, individuals do not see sufficient practical value of acquiring digital skills because available services fail to reflect local needs, languages or economic realities. This is partly a function of content and service availability and what is offered in local languages. This challenge appears across sectors:

- In education, the challenge shows up as a shortage of curriculum-aligned content in widely spoken African and South Asian languages, and few low-bandwidth options for learners with intermittent connectivity.
- In livelihoods, it appears in the limited reach of platforms that match informal-sector workers with paid-for digital work, limited options available in agricultural advisory services, and limited digital tools for micro- and small enterprises.

- In public services, it shows up in government information and benefit systems that remain accessible only through urban offices or through interfaces that presume literacy levels higher than the level attained by large segments of the population.

Digital capability development relies not just on user expertise but on the relevance, accessibility and usability of digital systems in local settings.

Digital literacy levels versus the growing complexity of digital public services

Regulator perspective: Although digital connectivity is strong, digital skills are still lagging behind the demands of complex public services. Key efforts should promote practical digital literacy tied to government services, increase awareness of digital identity and cybersecurity, expand inclusive training programmes, and build citizen trust in official digital and AI-enabled channels.

1.4 Uneven distribution of capability gaps

Digital capability gaps are not evenly distributed across populations. Access, skills and confidence are shaped by a combination of socioeconomic, geographic and demographic factors. Women across LMICs are 12% less likely than men to use mobile internet – a gap that

has narrowed only gradually since 2022.⁷ Importantly, the gender gap persists even when controlling for income, education and employment, indicating that social norms, household device-sharing dynamics and confidence factors are at play alongside resources.⁸

In LMICs...

65%

Proportion of women who use mobile internet



12%

Gender gap in mobile internet adoption



810 million

Women not using mobile internet



Rural populations continue to face lower levels of digital literacy and mobile internet use than urban users, reflecting differences in education access, exposure to digital systems and availability of local support. These disparities widen further in the lowest-income regions. Sub-Saharan Africa has the highest rural–urban gap in mobile internet use, with rural adults 48% less likely to use mobile internet than their urban counterparts.⁹

Income and education levels also strongly shape capability outcomes. Users with lower incomes and

lower levels of formal education are disproportionately represented among those lacking foundational and intermediate digital skills.

Capability gaps persist in developed economies too. In the EU, although 93% of individuals use the internet at least once per week, around 40% still lack at least basic digital skills.¹⁰ Under EU frameworks, these basic skills include competencies related to information management, communication, content creation, safety and problem-solving. Having basic digital skills means the user has at least one of these five skills.

⁷ Mobile Gender Gap Report 2026, GSMA, 2026

⁸ The Impact of Mobile on People's Happiness and Well-Being, GSMA and Gallop, 2018

⁹ The State of Mobile Internet Connectivity Report 2025: Trends in Mobile Internet Connectivity, GSMA, 2025

¹⁰ Digitalisation in Europe – 2026 edition, Eurostat, 2026



1.5 Digital literacy in an AI-driven economy

The digital divide applies to mobile internet access but also meaningful participation by those using it. While connectivity has expanded, many users remain focused on basic activities, with limited participation in higher value uses such as education, financial services and digital work.

As AI becomes integrated across digital ecosystems, the capabilities required for meaningful digital participation are changing. Digital literacy is no longer limited to operating devices or navigating applications. Users increasingly need the ability to evaluate AI-generated information, recognise manipulated or misleading information and understand decision-making, among other abilities.

AI both lowers and raises barriers to participation. On the one hand, conversational interfaces, voice assistants and local-language AI systems can simplify access for users with limited literacy or familiarity with digital systems. On the other hand, users are increasingly required to judge whether AI-generated outputs are reliable, identify misinformation and scams, and understand the limitations of automated systems.

Users who lack the skills required to navigate AI-enabled environments risk exclusion from economic opportunities but also increasingly from essential services and information systems that are becoming progressively automated.

Adoption of generative AI (genAI) tools reflects the widening capability gaps. Around 24% of internet users in high-income countries report using genAI tools, compared to approximately 5% in LMICs and less than 1% in low-income countries.¹¹ The gaps reflect differences in skills, confidence, language accessibility and awareness. GSMA Intelligence interviews with an education-focused regulatory organisation from an Arab country confirm that users increasingly require the ability to verify information, critically assess AI-generated outputs and adapt continuously as AI systems evolve.

GSMA Intelligence interviews with local organisations from Asia and Africa highlighted that AI is increasing the risk of exclusion for populations who still lack foundational access, devices and digital confidence. Stakeholders noted that AI literacy cannot be treated separately from basic digital capability development.

Figure 4

Use of genAI tools by income group

Low-income countries



Low- and middle-income countries



Upper middle income countries



High-income countries



Source: World Bank, 2025

11 Who on Earth Is Using Generative AI? Global Trends and Shifts in 2025, World Bank, 2025



Responsibilities and capabilities

Digital adoption has historically progressed gradually. Users have typically moved from basic connectivity to more advanced forms of engagement over time, building skills incrementally as familiarity and confidence increase. While this pattern continues for many users, particularly in LMICs where significant drop-offs remain between adoption and regular or diverse use, AI-enabled systems are increasingly appearing earlier in the digital journey. Many users now encounter AI-driven systems from the outset of their digital journey. This raises the minimum capability threshold required for participation much earlier in the adoption process.

GSMA Intelligence interviews with operators highlighted that many users are digitally active but not necessarily digitally resilient. For example, while users may understand how to access social media platforms, many still struggle to evaluate information critically, understand algorithmic influence or identify AI-generated scams and manipulation.

However, responsibility for inclusion is no longer limited to users alone. Technologies such as voice interfaces and multilingual AI tools can reduce barriers and simplify interaction, but poorly designed systems can increase complexity and widen exclusion.



Key insights

- Around 3.1 billion people are within network coverage but remain unconnected due to skills, affordability and relevance barriers.
- Device and data affordability, skills and literacy, and capability constraints remain core barriers to initial adoption.
- As users engage with digital systems, barriers evolve across the user journey, from entry challenges (skills, awareness) to deeper constraints (trust, safety, relevance).
- Digital literacy is a layered capability (foundational skills, safety/trust, AI-related skills).
- Digital capability development relies not just on user expertise but also on the relevance, accessibility and usability of digital systems within local settings.
- AI is raising the minimum capability required at the point of entry, making early-stage participation more complex.

2

Digital capability gaps and exclusion

2.1 Digital exclusion as an economic and social risk

Bridging digital literacy gaps is no longer just about improving technical skills; it is also about enabling meaningful participation in digital economies. Digital exclusion increasingly carries measurable economic and social costs. Without targeted, scalable and inclusive approaches, the benefits of digital and AI transformation risk remaining concentrated among those already best positioned to capture them.

Governments across regions are therefore increasingly positioning digital literacy as a core pillar of digital transformation strategies, recognising its direct link to productivity, service delivery efficiency and inclusion. Initiatives such as the EU Digital Decade (targeting 80% basic digital skills by 2030), the US Digital Equity Act, and national digital skills strategies across Africa and Latin America reflect this growing policy priority.

Who is at risk of being left behind?

Digital exclusion affects groups differently. It disproportionately impacts populations facing intersecting vulnerabilities, including women and girls, older adults, persons with disabilities and rural communities. These groups often experience barriers spanning affordability, literacy, social norms and accessibility of digital interfaces. For example, women in LMICs are consistently less likely than men to access and use mobile internet, while older populations and persons with disabilities face additional constraints related to usability, confidence and accessibility.

These disparities are social in nature but have direct economic implications. Exclusion from digital systems limits access to education, healthcare, financial services and employment opportunities, reinforcing existing inequalities and reducing the overall inclusiveness of digital transformation. Ensuring digital literacy initiatives are inclusive by design is therefore critical, to advance social equity and maximise the economic returns of digital development.

Social and service delivery impacts

In many countries, services are increasingly delivered through digital-first or AI-enabled systems, improving scale, efficiency and accessibility. However, while digitalisation improves efficiency and scale, it also risks deepening exclusion for populations unable to navigate complex digital environments. This is particularly visible in LMICs, where mobile devices are often the primary or only gateway to digital services.

AI-enabled tools such as chatbots, voice assistants and multilingual interfaces are increasingly being used to improve accessibility to healthcare information, financial services and public support, particularly in low-resource environments. These AI tools can help reduce barriers linked to lower literacy levels and language. However, the tools also create new forms of exclusion. Users must be able to assess reliability, understand automated decisions and manage risks related to fraud, misinformation and data privacy.

Economic participation and productivity

Mobile internet serves as the primary gateway to financial services, employment opportunities, entrepreneurship, education and market access in most LMICs.

Globally, mobile technologies and services generated approximately \$7.6 trillion in economic value in 2025 (6.4% of global GDP). This is expected to grow to \$11.3 trillion by 2030, as AI and digital adoption accelerate.¹²

However, increased connectivity has not always directly translated into meaningful economic participation. Many mobile internet users remain focused on basic digital activities, with limited engagement in more productive use case such as online commerce, digital financial services, content creation or AI-assisted work.¹³ This creates a clear participation divide between users who can leverage digital and AI-enabled technologies to improve productivity and income, and those who remain confined to lower-value or passive forms of engagement. Stakeholder interviews confirm that digital exclusion today is driven less by access and more by capability, trust and confidence.

What is the impact of lack of digital skills?

👁 **NGO perspective:** People lacking basic digital skills are left behind economically and in terms of a good quality of life in general.

¹² [The Mobile Economy 2026](#), GSMA, 2026

¹³ [The State of Mobile Internet Connectivity 2025](#), GSMA, 2025

Labour markets are also evolving, placing greater value on adaptive capabilities rather than narrow technical proficiency alone, as evident from regional and country-level initiatives on digital transformation. Problem solving, information evaluation, communication and the ability to work alongside AI-enabled systems are becoming more important across both formal and informal sectors.¹⁴

Digital capability development is increasingly linked to productivity and income outcomes. A World Bank working paper analysing more than 67 million job postings across 29 countries found that digital skills command significant wage premiums globally, with particularly strong returns in LMICs, where such skills remain relatively scarce.¹⁵ Requiring at least one digital skill raises advertised wages by 1.6% on average, with returns of 1.3% in HICs and 7.5% in LMICs. GenAI literacy represents the highest-value skill category, with wage premiums up to 36%, far exceeding returns for both digital and traditional AI skills.

Table 2

Wage premiums associated with digital, AI and genAI skills

Skill category	Skill type/requirement	HICs	LMICs
Digital skills (baseline)	Requires ≥1 digital skill	+1.3%	+7.5%
	Each additional digital skill	+0.5%	+2.6%
	Intermediate / advanced digital skills	+0.8%	+3.0%
AI skills	Traditional AI skills	+2.9%	+2.9%
GenAI skills	GenAI development (technical roles)	+7–9%	+7–9%
	GenAI literacy (non-technical roles)	+25–36%	+25–36%

Source: World Bank 2026

At the macroeconomic level, capability gaps translate directly into lost economic potential. With 3.1 billion offline due to usage barriers, it is estimated that closing the usage gap could contribute approximately \$3.5 trillion in additional global GDP between 2023 and 2030. More than 90% of this benefit (\$3.2 trillion) would accrue to LMICs, given they account for the majority of the unconnected. Just over \$1.3 trillion in total additional GDP over the period would come from closing the gender gap in mobile internet adoption across LMICs.¹⁶

However, many digital literacy programmes fall short of delivering sustained impact. Training alone rarely leads to continued, productive use. Without ongoing support, relevant use cases and clear economic benefits, users often revert to basic online activities. For long-term impact, digital skills initiatives must be linked to practical outcomes and supported by affordable, trustworthy digital ecosystems.

The capability gaps are becoming even more pronounced in the context of AI, where differences in skills, confidence and access are increasingly shaping which individuals and countries are able to adopt and benefit from new technologies.

14 "The AI Pyramid A Conceptual Framework for Workforce Capability in the Age of AI", Alok Khatri et al.

15 Reproducibility package for Click, Code, Earn: The Returns To Digital Skills, World Bank, 2026

16 The State of Mobile Internet Connectivity 2024, GSMA, 2024

2.2 An emerging AI adoption gap

The potential of AI to support economic and social development is widely recognised. More than 1.2 billion people have used AI-enabled tools, outpacing the early adoption of both the internet and smartphones.¹⁷ However, AI adoption remains deeply unequal. The disparities are particularly pronounced for groups already facing digital exclusion, including women, older adults and persons with disabilities, who may benefit from AI-enabled accessibility and productivity gains but are also at greater risk of being left behind where capability gaps, trust barriers and accessibility constraints persist.

Usage rates in high-income economies are roughly twice those observed in LMICs, with the gap widening sharply in countries with GDP per capita below \$20,000.¹⁸ The disparities cannot be explained by connectivity alone. They reflect differences in skills, confidence, language accessibility and institutional capacity.

AI development depends on foundational elements including data, compute, skills and enabling policy environments. Many LMICs face constraints across these areas, limiting their ability to adopt and benefit

from AI technologies at scale. Weaknesses in any of these elements can limit the adoption and diminish the impact of AI. Interviews with NGOs and operators consistently highlight that AI adoption gaps are shaped not only by infrastructure and affordability but increasingly by trust, awareness and confidence. Several stakeholders note that users often disengage from AI-enabled services when systems become overly automated or insufficiently transparent.

The imbalance is also visible in language and representation. Most large AI models continue to be trained primarily on high-resource languages and datasets originating from developed markets. This limits the accessibility, relevance and performance of AI systems for many populations in multilingual and lower-resource environments.

These challenges create a compounding effect. Countries already facing gaps in connectivity, education and digital capability are also less likely to possess the infrastructure, datasets and institutional ecosystems required to support AI adoption at scale. As a result, there is a risk that AI amplifies existing digital inequalities rather than narrowing them.

¹⁷ "AI Diffusion Report: Mapping global AI adoption and innovation", Microsoft, November 2025

¹⁸ [Bridging the Language Gap](#), GSMA, 2026



Evolving policy frameworks

As digital systems evolve, digital literacy frameworks are being redefined to reflect the growing role of AI. This signals a broader shift in how participation in the digital economy is understood. In AI-enabled economies, individuals are increasingly expected to access digital systems but also evaluate information critically, manage risks and adapt to evolving technologies.

Several international initiatives now explicitly incorporate AI-related competencies into digital skills agendas:

- The Organisation for Economic Co-operation and Development (OECD) frames AI readiness as part of workforce and digital skills policy, particularly around labour market adaptation and AI-related competencies.
- The European Commission, through initiatives such as the Digital Decade policy programme 2030 and the Digital Education Action Plan, has expanded digital skills definitions to include data literacy, AI awareness, cybersecurity and critical engagement with digital systems.
- Unesco has advanced frameworks through its AI competency and digital literacy work linked to the Unesco Recommendation on the Ethics of Artificial Intelligence, emphasising critical thinking, responsible AI use and public awareness.
- The International Telecommunication Union (ITU) has integrated AI capacity building into its digital inclusion and meaningful connectivity agendas, particularly through its AI for Good initiatives and digital skills development programmes.

Regional organisations are also integrating AI readiness into digital inclusion agendas. The Asian Development Bank (ADB) has highlighted AI-related skills development and digital capability building as part of broader digital transformation and inclusive growth strategies across Asia-Pacific economies. The African Telecommunications Union (ATU) has supported continental AI and digital capacity-building discussions through the African Union AI agenda and regional digital transformation strategies, with a growing focus on local-language inclusion, digital skills and workforce readiness.

Together, these developments reflect growing recognition that digital literacy and AI readiness must be developed in parallel.

Emerging core competencies

The capabilities required for digital participation are shifting from purely technical skills towards applied, adaptive and trust-related competencies. Alongside foundational skills such as device use and navigation, there is a greater importance placed on information verification, online safety, AI awareness and the ability to interact confidently with automated systems.

For many users in LMICs, foundational barriers remain unresolved. This creates a risk that AI adoption advances faster than capability development, widening existing gaps. In practice, this means integrating basic AI awareness into early-stage digital literacy programmes, while continuing to prioritise foundational skills and confidence building. Rather than treating digital literacy and AI literacy as separate, they must evolve together through layered approaches.

In response, governments, operators and technology providers are increasingly experimenting with AI-enabled approaches designed to simplify interaction and personalise digital learning.

What new skills do citizens need?

🔗 **Regulator perspective:** Citizens increasingly need skills related to navigating AI-assisted interfaces, understanding automated responses, verifying digital information, protecting personal data, recognising fraud and misinformation, and requesting human review when necessary.

There is a clear transition from basic digital literacy towards broader AI-related literacy that emphasises critical, safe and responsible use of digital technologies.

2.3 AI-enabled approaches for digital literacy

AI is increasingly being used to support digital literacy and inclusion, with governments, operators, technology firms and development organisations testing approaches to simplify interaction, personalise learning and expand access for underserved populations.

Voice and conversational AI

One of the most visible developments is the expansion of conversational and voice-based AI systems. Voice assistants, multilingual chatbots and AI-enabled interfaces help users with limited literacy or digital confidence by reducing reliance on text-based interaction. Initiatives such as Vambo AI and Project *tɛkyerɛma pa* are developing local-language and voice-driven AI systems designed to make digital interaction more accessible for underserved populations.

The role of voice and multimodal AI systems is particularly significant in LMICs, where many first-time internet users rely primarily on smartphones and may have limited familiarity with traditional digital interfaces.

How are AI solutions helping the underserved currently?

🔗 **Operator and NGO perspective:** The use of voice-based AI systems can lower barriers for users with lower levels of literacy by reducing dependence on reading and typing, particularly when deployed within familiar community settings.

Adaptive AI learning and personalised digital skills

AI-powered adaptive learning systems are increasingly being used to personalise digital literacy, and for livelihood opportunities. Learn.ink, a digital learning platform for Africa, offers a digital training solution optimised for agent workforces. It aims to unlock productivity through accessible training, especially for those who have not used or owned smartphones before. Interviews with NGOs focused on digital literacy highlight the growing use of AI in educational settings to support lesson planning, personalised learning and learner-centred teaching approaches. AI-enabled tools

can help both teachers and learners improve efficiency and access information more easily, particularly when supported with clear institutional guidelines and structured learning frameworks.

Local-language AI ecosystems

Language remains a significant barrier to digital participation, particularly in multilingual and lower-literacy environments.¹⁹ Most AI systems and large-language models remain heavily concentrated around the dominant global languages and high-resource datasets, limiting accessibility and relevance for large parts of the world.

This challenge is increasingly driving initiatives focused on local-language AI ecosystems. The GSMA African AI Languages Model project aims to improve representation of African languages in LLMs, recognising that inclusive AI adoption depends on making AI systems accessible within local linguistic and cultural contexts. Meanwhile, project SEA-LION in Southeast Asia is developing multilingual regional AI models that are better adapted to local languages and contexts.

AI for livelihoods and economic participation

AI-driven literacy initiatives are also being linked directly to livelihoods. For instance, Karya combines AI data work with digital livelihood opportunities for rural communities in India, enabling individuals to contribute to AI training datasets in local languages while also generating income and improving digital familiarity. Evidence from AI applications in agricultural advisory systems for smallholders in Indonesia further shows how AI is being tested in sector-specific, local-language contexts to improve access to information and productivity.²⁰

However, evidence increasingly suggests that AI-led approaches alone are not sufficient to drive sustained digital participation, particularly among first-time and lower-confidence users. While the approaches demonstrate strong potential, their impact depends on how effectively they are integrated with broader support systems, including infrastructure, skills development and local delivery models.

2.4 Community-based approaches to adoption

Training alone is rarely sufficient to drive meaningful digital participation. Confidence, trust, social norms and support networks play a critical role in determining whether individuals adopt and continue using digital services. This is particularly relevant for first-time users, women, rural populations and lower-literacy groups.

Community-based delivery models

Community-anchored and human-centred delivery models are central to effective digital literacy programmes. Partnerships between mobile operators, NGOs, educational institutions, community organisations and local governments are often key to building trust and relevance in local contexts.

The role of trusted intermediaries and human support structures

Trusted intermediaries, such as local trainers and community networks, play a key role in supporting users during the early stages of internet adoption. They help address technical and behavioural barriers, translating new technologies into familiar and low-risk contexts.

GSMA Intelligence interviews highlight the role of intermediaries in trust around new solutions and making new technologies accessible in low-risk settings. Peer-based and informal groups encourage learning, with questions welcomed. Stakeholder interviews highlight that users adopt AI tools more readily when introduced gradually in familiar, trusted environments.

¹⁹ [Bridging the Language Gap](#), GSMA, 2026

²⁰ [Improving the Livelihoods of Smallholders in Indonesia: The AI Opportunity](#), GSMA, 2026

Hybrid delivery models

Scaling digital inclusion increasingly requires a hybrid approach. While technology enables reach and personalisation, sustained participation depends on trust, human support and relevance to everyday needs.

A range of models are being implemented, including operator-led onboarding support, government-led national skills programmes and multi-stakeholder initiatives. These highlight the importance of combining digital tools with local delivery structures. Approaches include the following:

- Mobile operators across LMICs, such as Orange Sierra Leone and MTN Ghana, are delivering digital skills training programmes, in-store onboarding support, agent-assisted services for first-time users, and zero-rated educational content. For example, Orange Sierra Leone has implemented an agent-based digital skills training programme providing face-to-face onboarding support through retail agents.²¹
- Governments in markets as varied as Rwanda, Kenya, Nigeria, Egypt, India, Philippines, Indonesia and Brazil have published digital skills strategies. In some cases, these are bundled with device-distribution and connectivity-subsidy programmes targeted at students, women and rural populations.
- Regional initiatives such as the African Union's Continental AI Strategy, ASEAN's digital initiatives and the Inter-American Development Bank's digital skills programmes target digital and AI skills development.
- Multi-stakeholder initiatives – including the GSMA Digital Skills programme, EQUALS, the ITU Digital Skills Coalition and Generation Unlimited – operate across LMICs in partnership with operators, platforms and governments.

- Industry-led delivery models such as Huawei's DigiTruck initiative (part of its broader Skills on Wheels programme) demonstrate how vendor- and partnership-led approaches can extend digital skills training to remote and underserved communities, tailored to local needs. In parallel, major platform providers including Google, Meta and Microsoft run large digital skills programmes that have reached millions of users globally, primarily through online and blended learning models.

Community-based approaches help overcome challenges related to trust and engagement. Achieving inclusive AI requires alignment across technology, institutions and social networks. Stakeholder interviews highlight that coordinated action among governments, operators, NGOs and communities is essential for effective interventions in areas such as infrastructure, affordability, skills and trust-building. Ongoing cooperation between public and private sectors, educational bodies, civil society and international partners remains crucial, as shown by the collaborative development of AI strategy and capacity-building initiatives by multiple governments at the national and regional levels.

What works to build confidence?

NGO perspective: Effective strategies for building confidence include hands-on practice within supported group environments. Community-based learning enables individuals to progress at their own pace and openly ask questions. Peer learning has been shown to enhance both confidence and engagement. The involvement of trusted local trainers is crucial. Additionally, maintaining transparency regarding AI operations and data collection practices is essential.

²¹ "Insights from Orange Sierra Leone: Approaches for implementing a successful agent-based digital skills training programme", GSMA, November 2023

2.5 Limits of AI-enabled approaches

Infrastructure and scalability constraints

Many AI-enabled initiatives remain limited to pilot or early-stage deployment. Scaling the models requires reliable connectivity, cloud infrastructure, compute capacity and locally relevant datasets, which are unevenly distributed across regions. Without these foundations, AI-driven digital transformation may increase capability gaps within and between countries.

Trust, safety and information reliability

Trust remains a fundamental barrier to mobile internet use. As AI systems become more integrated into digital services, concerns around misinformation, impersonation scams, fraud and unreliable AI-generated content are becoming increasingly significant, particularly for lower-confidence and first-time users.

Stakeholder interviews indicate that concerns about transparency, data use and reliability can limit adoption of mobile internet, particularly among lower-confidence users. These risks are increasing with the rise of AI-generated content and automated systems. Interviews emphasised that improving digital literacy must increasingly include AI awareness, cybersecurity and critical verification skills.

In one interview, an operator reported significant increases in AI-enabled fraud, impersonation and scam activity. In 2025 alone, the operator blocked more than 967 million spam and scam messages and blacklisted more than 244,000 fraudulent SIMs. While AI can reduce operational complexity through conversational interfaces, it simultaneously increases the importance of judgement, trust evaluation and critical engagement.

Stakeholder interviews highlighted trust should not be understood solely as a user-side limitation. Trust is shaped by how digital and AI-enabled services are designed, communicated and governed. When systems lack transparency, explainability or clear pathways to human support, they increase the capability demands placed on users and raise the risk of disengagement, even among those with basic digital skills.

Measurement and impact evaluation gap

A key limitation across most initiatives is measurement. Many programmes track participation and reach, but far fewer measure long-term behavioural change, sustained digital confidence, progression into productive use or economic outcomes. As a result, there is limited evidence on which interventions lead to durable capability development at scale.

Stakeholder input suggests that future measurement frameworks should move beyond access and basic skills indicators towards measures of effective and independent use. Potential indicators include the ability to engage fully in digital services without intermediaries, awareness of when interactions or decisions are automated, capacity to verify information and detect fraud, sustained use of services beyond basic communication or entertainment, and levels of trust in official digital channels. Such indicators would better reflect readiness to participate in AI-enabled digital environments.

Coordination and design mismatch

Weak coordination between literacy interventions and service design also limits impact. Users may receive digital skills training but still encounter services that remain overly complex, text-heavy, unavailable in local languages or poorly adapted to lower-literacy environments.

What are the main gaps in enhancing digital literacy – skills, funding, co-ordination or public awareness?

🔗 **Regulator perspective:** The most prominent gap today is not limited to infrastructure alone, but rather lies in the link between access, skills, trust and inclusive service design. Four key gaps appear particularly significant:

- An applied skills gap, where many users possess basic digital abilities but are not necessarily equipped to interact with more complex services or automated components.
- A public awareness gap, particularly in relation to safe usage, source verification and distinguishing between official services and fraud or impersonation.
- A coordination gap between stakeholders involved in digital transformation, consumer protection, data protection, digital literacy and education.
- A targeted inclusion gap, which concerns the need for more precise and tailored programmes and services designed specifically for groups most at risk of exclusion.

Rising capability requirements

AI is rapidly reshaping the skills required for digital participation. The shift from basic navigation to interpretation, judgement and critical evaluation is increasing the capability threshold for users.

This highlights an important but often overlooked point that digital inclusion depends not only on improving user capability but also reducing the capability demands imposed by digital systems themselves. Without this balance, AI risks accelerating the gap between system complexity and user readiness, rather than closing it.

The limitations highlight the need for delivery models that combine infrastructure, skills development, trust-building and contextual adaptation. Mobile and community-based initiatives such as DigiTruck illustrate how hybrid approaches are being used to address these interconnected barriers in practice.





Key insights

- Digital capability gaps are translating into economic and social exclusion, limiting access to education, services and livelihoods.
- These gaps are unevenly distributed, disproportionately affecting women, rural populations, older adults, persons with disabilities and low-income groups.
- AI is introducing a new participation divide, driven by differences in skills, confidence, language and access to tools.
- Trust, safety and confidence are critical barriers to deeper and sustained engagement.
- Many digital literacy initiatives do not result in sustained, independent and productive use, highlighting a gap between training and long-term impact, and the need to move beyond measuring reach towards outcome-based measurement frameworks.
- AI-enabled solutions can support inclusion but cannot substitute for foundational skills, trust building and human support structures.
- Addressing digital exclusion requires both user capability and system-level change.

3

Skills on Wheels: bringing digital skills to underserved communities

The education domain of Huawei's digital inclusion initiative has reached 700,000 beneficiaries and more than 1,700 schools since 2019, spanning students and teachers, unemployed young people, women, elderly populations and rural communities. Within the portfolio, Huawei has developed multiple complementary delivery models, each designed to address different barriers to digital literacy.

Huawei's Skills on Wheels brings together a portfolio of programmes to help expand access to digital skills across different populations and contexts.

3.1 Programmes to help expand digital skills

Huawei is working together with governments, NGOs and international partners to co-develop locally adapted digital skills programmes, supporting content development, training delivery and capacity building. The initiatives are typically embedded into broader national strategies and target specific groups such as unemployed young people, older people, women and girls, students and teachers, and remote and rural communities.

Connecting Schools

The Connecting Schools initiatives, including DigiSchool and Technology-enabled Open Schools for All, focus on integrating digital skills into formal educational systems. The programmes provide infrastructure, connectivity and curriculum support to schools, often in partnership with governments and international organisations. They are designed to build foundational skills among students and teachers, and embed digital literacy into national educational systems.

Mobile delivery models (Skills on Wheels)

To reach populations beyond the reach of schools and training centres, Huawei has developed mobile delivery models as part of the Skills on Wheels initiative. These include SmartBus, SmartTruck and DigiTruck. Vehicles or containers are converted into self-sufficient digital classrooms capable of directly delivering digital skills training directly in underserved areas.

- **SmartBus** operates primarily in Europe, delivering interactive training on online safety, data privacy and digital citizenship to students. Since 2019, SmartBus programmes have reached more than 80,000 students across several European countries.
- **SmartTruck** targets specific groups such as older age groups and remote communities. Equipped with devices, connectivity and training resources, it delivers foundational digital skills and supports access to online services. Programmes in Saudi Arabia and Peru have reached thousands of beneficiaries. In 2024, STC's SmartTruck project won an ITU WSIS Excellence certificate for the Innovate for Impact use case.²²
- **DigiTruck** focuses primarily on LMICs and rural contexts, addressing foundational barriers to digital access and skills. It serves as the central model within the Skills on Wheels portfolio for reaching underserved populations at scale.

Across all three models, a common principle is to bring infrastructure, devices and training directly to users, reducing barriers related to distance, cost, awareness and confidence.

²² "Huawei and partners win prestigious international awards for demonstrations cases of AI in industry", Huawei, June 2024



Skills on Wheels at a glance

Mobile classrooms

DigiTruck, SmartBus and SmartTruck offer solar-powered classrooms converted from used shipping containers and buses, equipped with laptops, smartphones and internet connectivity.

Reaching the unreachable

The mobile classrooms can travel to remote communities that lack power and internet infrastructure, breaking down barriers for people who otherwise would lack access to digital skills training.

Partnership model

Partnerships are essential to the success of the projects. Working together with global partners (such as the GSMA, Unesco and the NGO Close the Gap) brings reach and domain

expertise. Partnerships bring in local knowledge and expertise to ensure relevance and an understanding of cultural context such as local languages. By understanding requirements, local partners can tailor courses to match local needs.

Courses

Practical, digital skills are in demand to help people find jobs, run businesses or improve their daily work. Training is offered across the basic level (e.g. using a computer, browsing the internet, email, online communications); intermediate level (e.g. office productivity tools, CV writing/improvements, online job applications); cybersecurity (e.g. online safety, avoiding fraud, data privacy); and AI skills (e.g. coding, robotics, an introduction to AI, and identifying risks such as fake news, scam messages, and manipulated images or videos). There is growing interest among trainees in learning AI tools for writing, research, business ideas and content creation among other activities.

3.2 Why the DigiTruck model matters

The DigiTruck model responds to a broader shift in the nature of the digital divide. While connectivity has expanded rapidly, meaningful participation has not kept pace. Traditional digital literacy models face several limitations. School-based approaches are constrained by limited infrastructure, particularly in rural areas. Online learning platforms assume baseline digital capabilities and access, excluding first-time users. Community centres, where they exist, often lack scale or reach. As a result, a critical segment of the population – particularly women, rural communities and low-income users – remains underserved.

DigiTruck addresses this by bringing infrastructure, devices and training directly to communities. It removes the need for users to overcome barriers related to distance, cost, awareness and confidence. It shifts the focus from access to capability and participation. Over time, the initiative has evolved from basic digital literacy to support digital livelihoods, access to services and (increasingly) participation in AI-enabled systems.

DigiTruck is a part of a broader digital inclusion ecosystem. Its effectiveness is closely linked to complementary enablers, including policy alignment, connectivity expansion, affordable devices and local partnerships. For example, in Kenya, DigiTruck deployments have aligned with government digital transformation priorities such as the National Digital Literacy Programme, and connectivity initiatives such as the National Optical Fibre Backbone Infrastructure (NOFBI) which have extended network access to underserved areas. DigiTruck projects have also targeted communities newly connected by rural base stations as a result of the universal service fund (USF), bringing digital skills to where they are urgently needed.²³

Meanwhile, operator-led device affordability initiatives, such as the provision of low-cost smartphones by Safaricom, have lowered barriers to continued use. Safaricom is a DigiTruck partner helping to enhance digital inclusion and literacy initiatives in Kenya. Together, the elements reinforce each other. Digital skills training delivers the greatest impact when embedded within a wider ecosystem of access, affordability and policy support.

3.3 Design and delivery model

The effectiveness of DigiTruck lies in its infrastructure, and how the model is designed around real-world constraints. DigiTruck classrooms are built from repurposed shipping containers and buses. The trucks are equipped with online access, and the electricity used in the truck is fully solar-powered. This allows training to be provided in areas with limited power supply or connectivity.

Aside from infrastructure, several key design elements help drive impact:

- **Mobility creates demand** – The arrival and presence of the DigiTruck creates visibility and engagement, particularly in communities with limited exposure to digital technologies.
- **Human-centred delivery** – Training is delivered through local facilitators, often in partnership with community organisations. This helps build trust, and

aligns closely with stakeholder interviews. These consistently highlight that local trainers remain essential to build confidence and trust, particularly among first-time users, women and those with lower levels of literacy.

- **Modular learning pathways** – DigiTruck programmes allow participants to move from basic to more advanced skills at their own pace. This is important where users could be first-time internet users. It also aligns with findings that many users remain stuck in basic use cases due to limited progression pathways. A layered approach reflects growing recognition that digital capability development is not linear, particularly in contexts where users may encounter AI-enabled systems before developing broader digital confidence.

23 "CA Undertakes Digital Skilling Exercise in Marsabit County", Communications Authority of Kenya, October 2024

- **Relevance to everyday use cases** – Training linked to practical needs such as communication, financial services and small business activities results in higher engagement. A lack of perceived relevance is a major reason for people not using the internet, even where connectivity exists.
- **Partnership-driven delivery** – Collaboration between Huawei, governments, NGOs and local institutions ensures programmes are aligned with national strategies while remaining responsive to local contexts. This enables both scale and localisation.

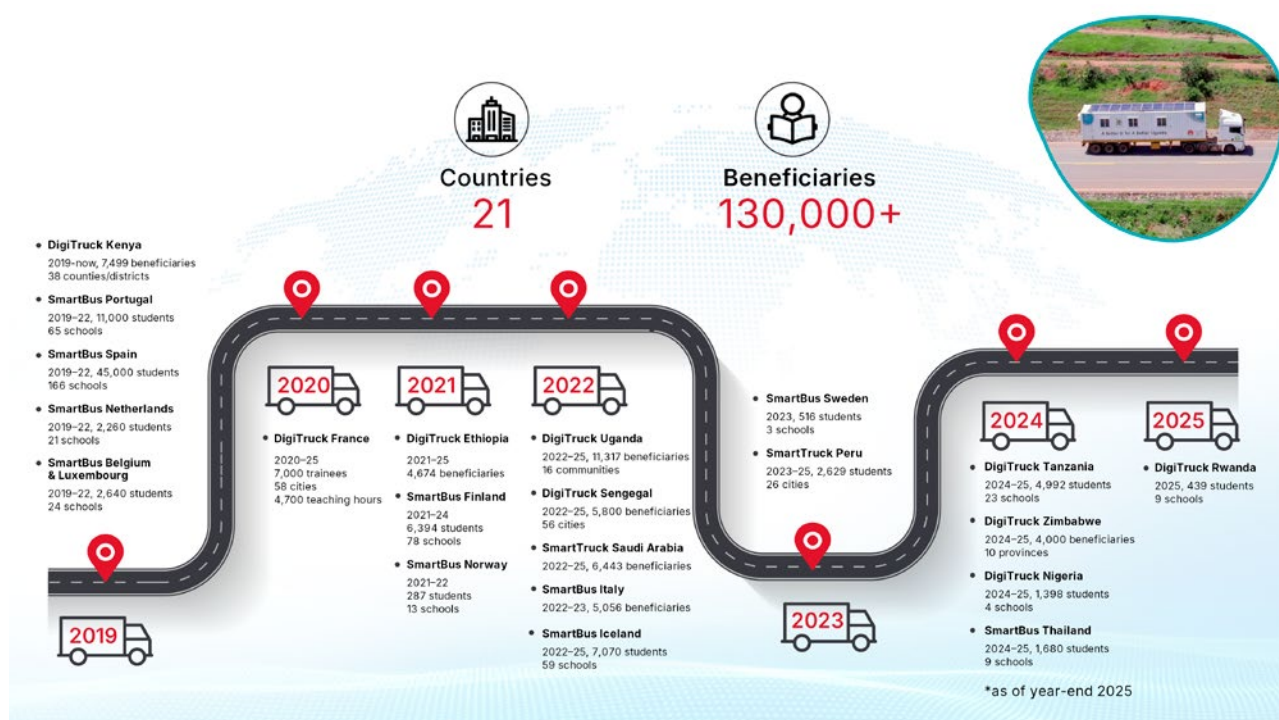
3.4 Scale, reach and outcomes

Through the broader Skills on Wheels initiative, programmes have been deployed across 21 countries, reaching more than 130,000 beneficiaries across

Sub-Saharan Africa, Europe, Latin America, Middle East and Asia.

Figure 5

DigiTruck impact across countries



Source: Huawei TECH4ALL

Deployments of DigiTruck illustrate the flexibility of the model across both developing and developed contexts. In LMICs, DigiTruck primarily addresses access and foundational skills gaps, while in more advanced economies it focuses on deepening skills and inclusion for specific segments, such as older age groups.

Training intensity varies by country, but the model consistently enables direct engagement with underserved populations, particularly those beyond the reach of fixed infrastructure. GSMA Intelligence interviews with NGOs underline that peer learning and supported group environments often produce stronger confidence outcomes than self-guided digital learning approaches.

DigiTruck: country-level insights

In **Kenya**, DigiTruck has operated since 2019 across 38 counties/districts, delivered through a partnership-driven model with government stakeholders. The programme aligns with Kenya's national Digital Literacy Programme and broader digital transformation agenda, reinforcing government efforts to expand foundational digital skills. In 2022, the project won the GSMA GLOMO award for outstanding mobile contribution to the UN Sustainable Development Goals.

PROJECT PARTNERS

Kenya's ICT Authority under the Ministry of Information, Communications and Digital Economy; Ministry of Youth Affairs; the National Youth Council; Kenya National Innovation Agency; Safaricom, the GSMA; and Close the Gap.

In **Senegal**, DigiTruck is delivered in partnership with local stakeholders, including Orange Sonatel, reflecting a strong operator/vendor collaborative model. Between 2022 and 2025, the programme reached 5,800 beneficiaries across 56 cities. Training in Senegal has gone beyond basic digital literacy to include coding and robotics, supporting progression to more advanced and applied digital skills among young people and women.

PROJECT PARTNERS

Ministry of Youth, Ministry of Education, Ministry of Communications, Close the Gap, Orange Sonatel

In **Tanzania**, DigiTruck deployments strengthen foundational digital skills among rural and underserved communities, with a particular focus on secondary school teachers, while supporting the integration of digital tools into teaching and learning. In many cases, it provides first-time access to digital technologies, reinforcing the importance of local-language delivery and human support.

PROJECT PARTNERS

Ministry of Education, Science and Technology, President's Office – Regional Administration and Local Government (PO-RALG), Close the Gap, Vodacom

In **France**, DigiTruck demonstrates a different dimension of the capability gap. Here, the focus shifts from access to skills depth and inclusion of older age groups, who may be connected but lack the ability to engage with digital services.

PROJECT PARTNERS

Close the Gap, Konexio (France) and Mission Ecoter

In **Thailand**, SmartBus extends the mobile classroom model to students. The programme demonstrates how mobile delivery can complement school-based and online approaches by bringing digital skills training directly to communities, particularly where access to fixed training centres is limited. It also incorporates green learning components, including courses that support the teaching and learning of climate action principles and sustainable practices. The initiatives aim to help communities access lifelong learning opportunities while improving their ability to adapt to climate change.

PROJECT PARTNERS

Ministry of Education and Unesco Bangkok

Beneficiary outcomes and experiences

DigiTruck programmes record strong participation across geographies and demographics. They expose users to a range of skills, from basic literacy to applied digital capabilities. The most significant outcomes are qualitative.

Across beneficiary groups, outcomes reflect different aspects of the digital capability gap:

- For young people, DigiTruck provides an entry point into digital learning and employment pathways. Participants report increased confidence and improved prospects for digital livelihoods.

“

I felt nervous, because it was my first time touching a computer and clicking the keys. I came out of the programme a person who now can confidently interact with computers...Now we have a programme where we teach basic computer skills to young people. The total number of kids I've taught in schools is 150.”

DigiTruck student, Kenya

- For women, the programme addresses both skills and social barriers. DigiTruck's localised and supported environment helps close the gap by building confidence and addressing safety concerns.
- For rural communities, DigiTruck often represents the first exposure to digital technologies. The initial interaction can trigger wider adoption within households and communities. It supports finding employment opportunities and encourages use in micro and small businesses.
- For older age groups, particularly in developed markets, outcomes relate to improved access to services and communication tools. Training also strengthens awareness of data privacy, online safety and fraud risks.
- For students and teachers, DigiTruck supports both learning delivery and independent digital engagement. Students develop foundational digital literacy skills and the confidence to use digital tools independently. This includes navigating devices, accessing online learning materials, and using digital platforms for education and communication. Teachers benefit from practical applications of digital tools in education. Training enables them to

develop lesson plans using digital content, conduct online meetings and classes, manage administrative tasks more efficiently, and access online research materials.

“

After attending the DigiTruck training, I have mastered how to make clean reports, find teaching materials online, and attend online meetings.”

Secondary school teacher, Tanzania.

DigiTruck programmes also point to a skills cascade effect that extends impact beyond direct participants. Participants are encouraged during training to share newly acquired digital skills with family members, peers and wider community networks, helping extend learning beyond the immediate cohort. Across multiple programme contexts, trainees report sharing skills through both informal support and more structured community roles. Evidence from the Kenya government survey of DigiTruck participants found that 79% of respondents reported passing on digital skills to others in their communities. Alumni frequently apply their skills within local institutions, small businesses and community settings, amplifying programme reach beyond those directly trained.²⁴

With around 40 hours of training, DigiTruck helps participants overcome the initial barrier to going online and build the confidence to continue learning independently. By enabling users to access online information and training resources on their own, the programme supports skills development beyond formal instruction. DigiTruck can therefore help strengthen long-term digital confidence and learning autonomy.

“

I didn't know how to type or use a keyboard. But I managed to get a job because of the basic skills taught on the DigiTruck. When I went for an interview, they gave us a computer competency test. I scored 95 out of 100.”

DigiTruck Trainee, Uganda

24 DigiTruck Digital Literacy Skills Program, Huawei

3.5 Takeaways from the DigiTruck model

While DigiTruck demonstrates the potential of mobile and community-based delivery models, it also highlights the complexity that occurs when projects are large in scope and span several years.

A key insight relates to the importance of strong local partnerships. Delivering mobile training programmes across geographically dispersed and infrastructure-constrained environments requires coordination across logistics, equipment, facilitators, connectivity and power. In practice, these challenges have proven manageable where programmes are anchored by partners that can implement at the local level. Local organisations, governments and community actors play a critical role in enabling delivery, ensuring contextual relevance and maintaining continuity of engagement.

Flexibility in programme design and delivery has been critical. DigiTruck deployments have been most effective when adapted to local needs, including language, literacy levels, user segments and priority use cases. Flexible delivery models allow programmes

to respond to different contexts, from first-time users requiring foundational skills to more advanced users seeking applied capabilities.

Another key lesson is the need to support learning beyond the training period. The aim is not only to teach basic digital skills, but to help learners apply them in everyday life, work and agriculture, know where to find information, jobs and further training, and continue building their skills over time. Training can help users overcome initial barriers and gain the confidence to keep learning independently. This is also where AI becomes important. When learners know how to use AI tools effectively, they can apply them in practical, everyday ways to support their activities and decisions.

Successful digital capability development depends on ecosystems that combine local partnerships, adaptable delivery models and sustained engagement. This approach enables DigiTruck to operate effectively even in complex environments, while remaining responsive to the needs of the communities served.



Image: Huawei

3.6 DigiTruck and the transition towards AI literacy

As AI becomes increasingly integrated into digital services, the capabilities required for participation are changing. Users are increasingly expected to interact with conversational systems, evaluate AI-generated outputs and navigate growing risks related to misinformation, scams and data privacy.

In response, DigiTruck programmes are beginning to evolve beyond foundational digital literacy towards early-stage AI literacy and digital resilience. Emerging focus areas include adding AI as an element to data privacy and cybersecurity modules.

DigiTruck is beginning to support AI-augmented participation, exposing users to tools relevant for work and productivity. DigiTruck addresses multiple barriers including access, skills, confidence and relevance.

Engagement from the foundational stage

🔗 **NGO perspective:** AI literacy cannot be introduced independently of foundational digital capability. Programmes increasingly need layered progression models that move users gradually from basic digital access and safety awareness towards more advanced AI-enabled participation.

It is also important to integrate cybersecurity, misinformation awareness and responsible AI use into digital literacy programmes from the outset, rather than treating them as advanced or optional skills.

3.7 What's next? Indications from Skills on Wheels

As the Skills on Wheels portfolio (including DigiTruck) continues to evolve, it provides a clear indication of how digital literacy programmes are beginning to adapt to the growing role of AI. The next phase of digital inclusion efforts must focus on managing the transition from foundational digital skills to practical AI literacy, without leaving large segments of the population behind.

Ensuring basic digital access and skills are treated as a prerequisite before AI literacy is introduced

Too many initiatives risk focusing on advanced or specialised AI skills when people lack a device, a reliable connection or the foundational confidence required to use digital tools safely. Addressing these gaps, particularly among women and girls, persons with disabilities, and rural communities, remains the starting point for meaningful and inclusive AI adoption.

At the same time, AI literacy cannot be postponed indefinitely. Basic, practical AI awareness should be layered onto existing digital literacy programmes, once foundations are in place. This includes helping users

understand what AI tools are and how to use them appropriately in everyday contexts – without assuming technical expertise.

What can be included in AI literacy?

The focus of early AI literacy should remain practical and immediately relevant. Rather than advanced or technical AI functions, training can introduce common, widely available tools such as genAI for information search, drafting CVs, creating simple advertisements, or supporting small business activities. This may also include the use of AI assistants and agents to access business-relevant information – for example, helping micro-entrepreneurs and farmers check prices, weather conditions, crop disease information or market opportunities.

Similar approaches are emerging in related initiatives, including AI-focused DigiSchool programmes in China,²⁵ while some DigiTruck deployments have expanded into more advanced skills such as coding and robotics, as seen in Senegal.²⁶ In Ethiopia, the existing curriculum was expanded to include AI in

²⁵ "AI DigiSchool: Reaching China's Rural Schools with AI Training", Huawei

²⁶ "DigiTruck: Bringing Digital Skills to Senegal's Young People", Huawei

2025, with the aim to introduce basic concepts of AI and its application for practical use cases. Some of the modules in the new curriculum include an introduction to computer basics, internet basics and introductory coding, with AI introduced through an integrated robotics and AI module.

Training approaches need to remain hands-on, contextual and use-case driven, building on familiar tasks

Evidence from DigiTruck deployments suggests learning is most effective when users can immediately apply new skills to their daily lives, livelihoods or community roles. This reflects a broader model of impact, where overcoming the initial barrier to digital access enables users to continue learning independently through online resources and peer networks, often sharing knowledge within their communities. This reinforces the case for blended delivery models that combine guided instruction, peer learning and trusted facilitators, rather than purely self-directed or online-only approaches.

Cybersecurity and data privacy should be treated as foundational elements of both digital and AI literacy

As AI tools become more accessible, users face heightened risks related to fraud, impersonation,

misinformation and misuse of personal data. Practical training modules such as “how to stay safe online in the age of AI” are increasingly necessary to help users recognise risks, verify information and make informed choices. Early experience from DigiTruck highlights the value of integrating online safety and privacy awareness directly into skills programmes from the outset. In practice, these elements are not treated as optional add-ons but form a core and standard component of programmes, recognising their importance as users engage more actively with digital and increasingly AI-enabled services.

Scaling impact through coordination

Scaling impact will require continued ecosystem coordination. Skills programmes alone are insufficient without parallel progress on connectivity, device affordability, trusted service design and supportive policy environments. This also highlights the importance of partnerships in creating a sustainable and holistic digital inclusion ecosystem, where governments, industry players, NGOs and local players work together to address interconnected barriers.

This is particularly important to ensure that AI-enabled systems are accessible and inclusive by design, enabling people with diverse needs (including persons with disabilities) to participate fully, while avoiding the risk of reinforcing existing barriers.



Image: Huawei / DigiTruck Kenya

4

Enhancing digital literacy: the road ahead

4.1 Digital literacy is now also AI literacy

Digital capabilities develop unevenly and continuously. Someone can be highly active online but still lack the ability to recognise misinformation, protect personal data or assess what is safe.

At the same time, AI-enabled systems are appearing much earlier in the user journey. Many first-time users are now encountering conversational AI, automated recommendations and AI, automated recommendations and AI-generated content before developing strong foundational digital confidence.

This creates a pace mismatch. AI systems are evolving faster than many users' ability to understand and navigate them safely. Digital literacy and AI literacy

cannot be treated separately. Instead, digital and AI literacy programmes should adopt layered and adaptive approaches, grounded in real use cases. A practical transition approach emerging from this research involves strengthening foundational digital confidence, building digital resilience and layering in practical AI literacy. These elements should be developed together, reinforced over time and adapted to different user segments and contexts, rather than treated as sequential stages.

Importantly, AI should not be viewed as a replacement for foundational digital skills. AI works best as a complementary layer that supports learning, accessibility and confidence-building over time.

Inclusion depends on both people and system design

Digital inclusion depends on improving user capabilities but also reducing the capability demands imposed by digital systems themselves. Many services continue to assume literacy levels, language familiarity and digital confidence that large parts of the population do not possess. Users may receive digital skills training while still encountering interfaces that are overly complex, text-heavy, unavailable in local languages or poorly adapted to lower-literacy environments.

Digital systems need to become more inclusive by design. Design choices such as interface simplicity, language coverage, explainability, accessibility and the availability of human support directly shape whether users are able to participate confidently. This is particularly important for public and essential services, where users often have limited alternatives and where exclusion can have wider economic and social consequences.

AI can either reduce or reinforce these barriers. Well-designed AI systems can simplify navigation through conversational interfaces, localisation and personalised assistance. Poorly designed systems can increase confusion, opacity and mistrust, particularly among first-time users or those with lower confidence levels.

Many initiatives already demonstrate the potential of AI-enabled accessibility. However, stakeholder interviews consistently show that without inclusive design and trusted human support, AI can also increase complexity and accelerate disengagement. Poorly explained automation, limited transparency around decision-making and the absence of accessible support mechanisms can undermine confidence rather than build it. The next phase of inclusion is not about replacing existing approaches but aligning them more effectively around real user needs, behaviours and support requirements.

Trust and human support are still essential

Barriers to digital and AI adoption are both social and technical. These factors are complex and interdependent. Trusted intermediaries, peer learning environments and community-based support structures remain critical. Technology can expand reach and personalise learning, but sustained participation still depends heavily on human support

and trusted environments. Models such as Skills on Wheels and DigiTruck demonstrate that outcomes improve when infrastructure, local facilitators, relevant use cases and ongoing support are combined.

Many digital inclusion programmes already apply elements of this approach. However, in the AI era, support systems become even more important because users increasingly need reassurance, guidance and trusted spaces to learn safely as systems become more automated and complex. This research points towards a hybrid model that combines the following:

- digital tools and AI-enabled learning with community-based support systems
- government frameworks and operator scale with local partnerships and contextual delivery
- locally relevant content and languages linked to real user needs
- pathways connecting skills development to tangible economic and social outcomes, alongside practical knowledge of how to apply those skills and use AI tools to realise the benefits.

Measuring meaningful participation

A recurring issue across digital literacy initiatives is the lack of long-term outcome measurement. Most programmes continue to measure participation and reach rather than progression to meaningful and productive use.

Training completion alone reveals little about whether users continue engaging confidently and independently with digital services over time. This becomes even more important in the AI era, where capability requirements continue to evolve rapidly. Measurement frameworks must move beyond access and basic skills indicators to assess independent task completion, confidence in using digital services, sustained engagement over time, trust in digital and AI-enabled systems, and safe and responsible use. Regional organisations are increasingly evolving such frameworks. National governments will need to align with these approaches to ensure digital engagement is deeper, more sustained and more meaningful.

4.2 Implications for stakeholders

Governments increasingly need to treat digital and AI literacy as core infrastructure for digital transformation and inclusion

This includes embedding practical AI awareness into national digital skills frameworks, strengthening online safety and consumer protection, supporting multilingual digital ecosystems and ensuring AI-enabled public services remain understandable and accessible by default.

Policy frameworks should move beyond access targets alone, and focus more on meaningful participation and trusted use. As governments increasingly integrate AI into public services, literacy and trust-building efforts need to evolve alongside these rather than after deployment.

Mobile operators are uniquely positioned to support inclusion at scale through their direct interactions

Operators can integrate digital and AI literacy into onboarding journeys, provide assisted support for lower-confidence users, support trusted educational content and strengthen fraud protection mechanisms.

As AI becomes increasingly embedded into digital services, operators are also becoming important enablers of trusted digital participation through partnerships, ecosystem collaboration and co-created solutions.

NGOs, educators and community-based organisations remain essential to reach those most at risk of exclusion

The role of these stakeholders extends beyond skills delivery to building trust, relevance and confidence – areas that technology alone cannot fully address. Hybrid models combining digital tools with trusted human support are likely to become increasingly important.

Technology providers and platforms can play a key role in shaping inclusion outcomes

Design choices around language support, interface design, explainability and accessibility directly influence the capability demands placed on users. Inclusive AI adoption will increasingly depend on whether systems are designed to reduce complexity rather than increase it.

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