



Understanding people's mobile digital skills needs

Insights from India
and Ghana

May 2021



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Introduction

With 250 million people connecting to mobile internet for the first time in 2019, and almost half the world's population – 3.8 billion people – now using mobile internet, its value is becoming ever more apparent. Mobile is the primary and often only way of accessing internet in low- and middle-income countries (LMICs), enabling access to life-enhancing services, driving economic growth, and creating multiple opportunities for citizens and businesses to thrive.

Despite these significant gains, over half the world's population is still not connected. In 2019, 3.4 billion people who lived in areas covered by mobile broadband were still not accessing mobile internet services.¹ These people tend to live in LMICs and are disproportionately rural, female, less educated and elderly.

Data from the GSMA's *The State of Mobile Internet Connectivity Report 2020* shows that a lack of literacy and digital skills are the greatest perceived barriers to mobile internet adoption among mobile users who are aware of the internet.² However, understanding which digital skills people need and how they can develop them is a challenge. Detailed and comparable data on digital skills development is lacking, particularly in relation to access via mobile phones. Although organisations such as the International Telecommunication Union (ITU) and the World Economic Forum's Coalition for Digital Intelligence are exploring the subject, the focus is typically on computer-related skills and competencies. This is despite the fact that most users, especially in LMICs, access the internet on a mobile platform.³ While computer-related skills are important to understand, this focus does not capture the extent of the

digital skills barrier nor the levels of digital skills in LMICs more generally. This makes it particularly challenging to design interventions that tackle the digital skills barrier effectively.

As societies around the world become ever more digitised, it is increasingly important for individuals to develop the digital skills that enable them to participate fully. Almost every government has a digitisation agenda that includes policies on digital skills development, often focused on upskilling the labour force and teaching information communication technology (ICT) in schools.⁴ For some groups, however, including those not in school and those working in the informal economy, such policies do not help them access information and services in a digital society. Therefore, it is vitally important to understand the needs of groups that may not be included in the current agenda and how to support those needs.

This report examines digital skills needs in India and Ghana, and explores the dynamics around the development of digital skills, particularly in relation to mobile internet. It does this by looking empirically at the “skills journey” people go through to engage in “effective use” of mobile internet.

► “Effective use” occurs when individuals have the knowledge and skills to use mobile internet in ways that help them achieve their goals or “lead the kind of lives they value”.⁵

1. GSMA. (2020). *The State of Mobile Internet Connectivity Report 2020*.

2. Ibid.

3. UN Broadband Commission. (2020). *Annual State of Broadband Report*.

4. See: <https://en.unesco.org/themes/ict-education/action> and <https://www.worldbank.org/en/topic/edutech/brief/ict-education-policies>.

5. For more detailed discussion of “effective use”, see pp. 116–118 in Donner, J. (2016). *After Access: Inclusion, Development and a More Mobile Internet*. “Effective use” is defined as “the capacity or opportunity to successfully integrate [mobile internet] into the accomplishment of self or collaboratively identified goals”. Source: Gurstein, M. (1 December 2003). “Effective Use: A Community Informatics Strategy beyond the Digital Divide”. *First Monday*. Vol. 8, no. 12.

The report does not theorise about definitions of basic, intermediate or advanced digital proficiency or what it means to be “digitally included”. Instead, considerations such as variety of use cases, and time since initial adoption, are used to categorise how people are engaging with mobile internet.⁶ This approach is underpinned by an understanding that ICT “does not exist as an external variable to be injected from the outside to bring about certain results. Rather it is woven in a complex manner into social systems and processes”.⁷ Therefore, this study recognises that the digital skills people need may differ across countries, communities and individuals.

The report demonstrates the importance of designing targeted strategies to support the development of mobile digital skills. It shows that while mobile internet can fulfil people’s needs across all spheres of life, it tends to meet some needs more rapidly and frequently than others. Individuals also tend to prioritise their life needs differently, and they often do not recognise that mobile internet can be used to address some of their needs.

The process of digital skills development can also vary depending on the motivations and barriers that the individual experiences, where they are in the learning journey and what mobile internet use cases are most relevant to them. Although new users

often have similar entry points to mobile internet, the pathways they follow as they progress can vary widely, and their strategies and preferences for acquiring digital skills also change. Training support is typically provided informally by friends and family and is tailored to the learner’s needs using a range of common training methods.

The report recommends that, in order to drive mobile digital skills development among underserved populations, it is important to identify target segments and tailor support to their priority needs, the use cases that motivate them, their barriers to use, and the stage the individual is at in their learning journey. It is also valuable to deliver training support through the media and channels that are most accessible to the user and that will make the learning process most engaging for them.

This study was conducted as part of a larger effort by the GSMA, to develop needs-based mobile digital skills training materials for key segments in India and Ghana. The purpose of this research is to inform the design and development of the training materials, which will be refined and piloted with mobile network operators (MNOs) in later stages of the project. Once finalised, the training materials will be made freely available to all as an open-licensed digital public good.⁸



6. We acknowledge that some people do not progress to high frequency use, or a wide variety of use cases, and effective use is not achieved within a specific time frame.
 7. Warschauer, M. (2003). *Technology and Social Inclusion: Rethinking the Digital Divide*. Cambridge, MA: MIT Press.
 8. www.digitalpublicgoods.net.



Methodology

This report is based on qualitative research conducted in India (Uttar Pradesh and Tamil Nadu) and Ghana (Greater Accra and Ashanti) between October 2020 and March 2021, that aimed to understand the digital skills needs of underserved groups in each country.

The report is based primarily on the first phase of research, which included desk research, interviews with key stakeholders and in-depth interviews with 30 mobile digital skills “trainers” and 104 mobile internet users and non-users.⁹

A cross-section of the population in each country was sampled accounting for differences in gender, socio-economic status, education level, residency (urban/rural) and age. All participants were of middle to lower socio-economic status (socio-economic classes C1, C2, D and E), and the sample was skewed towards underserved groups, including women, those with lower socio-

economic status, rural residents and those with lower levels of education.

Interviews were analysed using thematic analysis. Life needs were categorised to develop a model of needs and user archetypes were developed based on a sample in each country. User journeys were also mapped for each archetype, accounting for motivating use cases, drivers and barriers throughout the journey.

Later research phases confirmed and added nuance to the initial findings through in-depth interviews with 72 additional mobile internet users and non-users.¹⁰

Given that this research was conducted during the COVID-19 pandemic, mitigation of health risks was of highest priority. Therefore, data collection methods differed slightly over time and across locations.¹¹



9. Mobile digital skills trainers (India n=15, Ghana n=15) and sampled population (India n=59, Ghana n=45).

10. Sampled population included n=42 in India, and n=30 in Ghana.

11. For more information on sample, research locations, data collection during the COVID-19 pandemic and risk mitigation strategies, see Appendix 1.



The digital skills training landscape

The digital skills training landscape is varied and fragmented with a range of initiatives underway around the world. Some national and regional initiatives exist, such as Google's Digital Skills for Africa programme.¹² These are often led by large technology companies, but implemented by a range of smaller, local organisations. Many digital skills initiatives operate on a much smaller scale, supporting specific communities, localities and groups. Unfortunately, there is very little publicly available information on the success of these initiatives, making it challenging to establish what, if any, impact they have had or which training techniques and approaches have been most effective.

Many of the initiatives identified in this study focus on computer-related skills and are primarily classroom-based, with trainees either owning a computer or accessing one provided by the training organisation. Although India and Ghana are different training landscapes in many ways, they share key similarities in terms of an emphasis on computer-based skills training and the limited or non-existent role of mobile-based training.

12. Google Digital Skills for Africa: <https://learndigital.withgoogle.com/digitalskills>



India

Many digital skills initiatives in India aim to build basic digital skills among underserved populations, particularly in rural areas and with women. The largest of these programmes is led by the Government of India. In its most recent iteration, the PMGDISHA programme aimed to train 60 million rural residents by March 2020 in basic digital skills, for activities that included making digital payments and accessing public services.¹³

Digital skills training programmes in India tend to be classroom-based and computer-centric, particularly those that support the government-led initiative. However, some organisations are exploring alternative approaches to teaching digital skills that are increasingly embedded in people's everyday lives and concerns.

For example, the Digital Empowerment Foundation (DEF) has been developing a game-based toolkit that covers topics ranging from the basics of computers and using applications to media literacy and online safety and security. DEF aims to transform the toolkit

▶ Digital skills initiatives tend to target rural populations with basic computer-based training. However, some recent programmes have explored alternative training approaches that are embedded in people's everyday lives.

into an audio-visual curriculum to include those who cannot read or write.¹⁴ Anudip Foundation provides basic digital skills training to help learners enter the workforce using employer-led curricula to ensure students gain the skills businesses need. Anudip uses a blended learning format, combining scheduled in-classroom time at their resource centres with self-led learning on smart devices, such as tablets loaned from the company.¹⁵ Meanwhile, Google and Tata Trusts have explored how to leverage rural women's peer networks to support digital skills training, focusing on mobile as an entry point to the internet.¹⁶



Case study: Google and Tata Trusts: Internet Saathi initiative

Between 2015 and 2019, Google, in partnership with Tata Trusts, led the Internet Saathi initiative to equip women in rural India with internet skills. "Saathis", meaning "friends", were selected from among village women to become digital ambassadors in their communities. They were provided with phones and power banks, and attended four days of practical training that emphasised the use of voice commands in local

languages. These women were tasked with sharing their knowledge and providing smartphone access to others in their communities, training their neighbours and women in nearby villages to access and use the internet. By December 2019, it was reported that the programme had trained more than 83,300 women to be Saathis, who, in turn, introduced an estimated 34 million women to the internet.¹⁷

13. "Making one person in every family digitally literate is one of the integral components of the Prime Minister's vision of 'Digital India'. Pradhan Mantri Gramin Digital Saksharta Abhiyaan is the scheme to make six crore persons in rural areas, across States/UTs, digitally literate, reaching around 40% of rural households by covering one member from every eligible household by 31st March, 2020." See: <https://www.pmgdisha.in/about-pmgdisha/>

14. Digital Empowerment Foundation: <https://www.defindia.org/>

15. Anudip Foundation: <https://www.anudip.org/>

16. Foundation for Rural Entrepreneurship Development (FREND): <https://internetsaathiindia.org/>

17. Wired.com. (4 January 2021). *In India, Smartphones and Cheap Data Are Giving Women a Voice.*

Ghana

The digital skills discourse in Ghana is framed by concerns about youth unemployment and young people lacking the skills they need to enter the workforce. Organisations such as the International Finance Corporation (IFC) have highlighted the urgency of addressing the “digital skills gap” in the region.¹⁸ Since the onset of COVID-19, industry figures have further emphasised the importance of youth developing digital skills “if they want to be relevant now and in the post-COVID-19 era”.¹⁹

A range of digital skills training initiatives have launched in recent years that target young adults and aim to bridge the skills gap between education and work. Ghana has a thriving technology ecosystem with a network of hubs, such as MEST, iSpace Foundation, Hapaspace, Impact Hub and Kumasi Hive driving innovation and entrepreneurship, in part through digital skills training. Several social enterprises, such as Soronko Academy and Developers in Vogue, also provide digital skills training for underserved youth, especially women and girls.

The primary objective of many of these organisations is transforming young people's lives and employment prospects. Therefore, they often include a soft skills

▶ Digital skills initiatives primarily target young people in urban areas with computer-based training for intermediate to advanced skills.

component, for example, teaching communication and leadership, and providing links to industry through networking opportunities, partner placements and mentorship programmes. In recognition of the gender gap in digital skills, several of these programmes specifically target young women.

Digital skills training programmes in Ghana tend to be classroom-based and computer-centric. There is an emphasis on teaching intermediate digital skills, for example related to social media marketing and coding, as well as more advanced skills related to web development and artificial intelligence (AI). Many of these programmes are concentrated in the urban hubs of Accra and Kumasi, and serve several hundred people each year.²⁰ Therefore, populations outside these locations may have less access to digital skills training, particularly those who are not in education or recently graduated.



18. IFC. (2019). *Digital Skills in Sub-Saharan Africa: Spotlight on Ghana*.

19. Techgh24.com. (7 September 2020). *Vodafone CEO: Digital skills no longer a choice but necessity for the youth*.

20. Some examples of organisations offering largely classroom-based, computer-centric training outside Accra and Kumasi include: Ghana Investment Fund for Electronic Communications (GIFEC), which was established with telecommunications funding to expand access to internet and computer technology to rural and underserved communities; DreamOval Foundation, whose Females in Tech Initiative (FemITI) involves collaboration with the Ghana Education Service (GES) to train 50,000 girls in Volta, Ashanti, Eastern, Central and Western regions.



The role of mobile internet in supporting people's needs

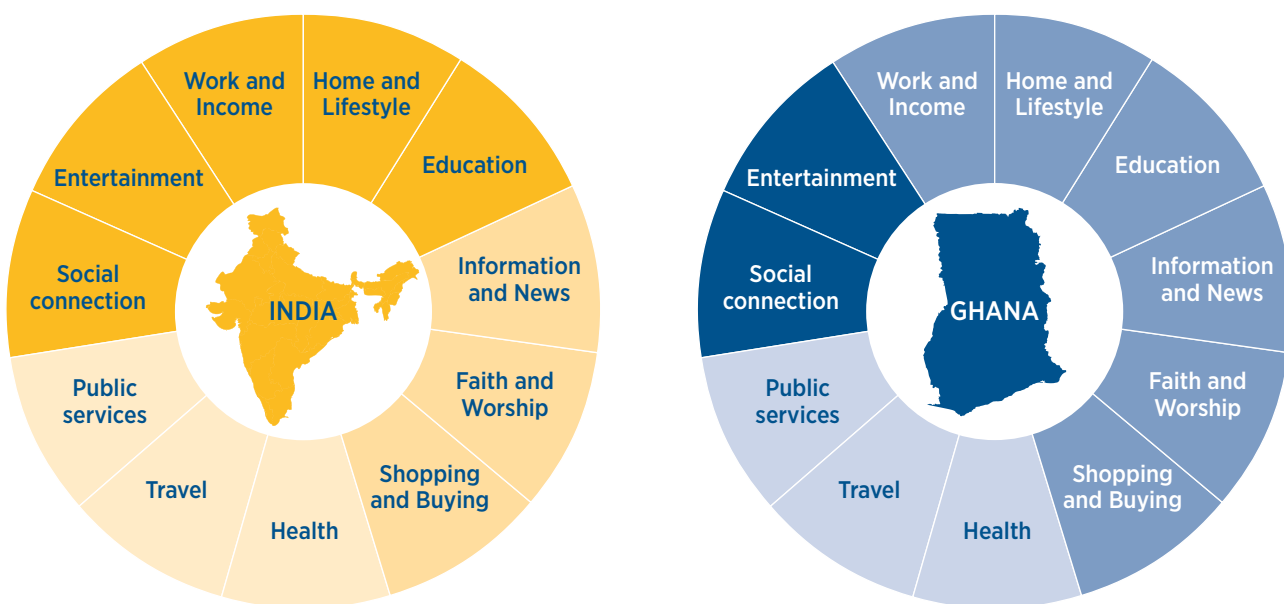
Key finding 1: Life needs fall into 11 categories and mobile internet fulfils them in different ways

Life needs were identified by exploring people's goals and aspirations, their daily activities and areas where they experienced problems or frustrations. Using this approach, the research identified 11 broad categories, or "spheres of life", in India and Ghana (see Figure 1). Saving time and money were priorities for people across all spheres.

Internet users in both countries used mobile internet to support their needs across all 11 spheres, but they tended to use it for some needs more often and sooner than others. This varied slightly between the two countries. In India, more needs were met using mobile internet, more frequently and sooner.

Figure 1

Model of needs: India and Ghana



- Mobile internet central to fulfilment of these needs
- Mobile internet plays a role for many in fulfilment of these needs
- Mobile internet plays a role only for some in fulfilment of these needs

Mobile internet was often central to meeting users' needs for *Social Connection* and *Entertainment*. All internet users in the sample used mobile internet to fulfil at least one of these needs, and these needs also tended to be the first ones fulfilled for new mobile internet users, particularly in Ghana. However, in India, mobile internet also tended to be central to meeting needs for *Work* and *Income*, *Home* and *Lifestyle* and *Education* (of children).

In India, mobile internet also played a role for many users, in supporting them to meet their needs for *Information and News*, *Faith and Worship*, and *Shopping and Buying*. For many users in Ghana, mobile internet helped support these same needs, as well as *Work* and *Income*, *Home* and *Lifestyle* and *Education* (of children). People who were more confident mobile internet users tended to use mobile internet to meet these needs.

Mobile internet only helped some people fulfil their needs for *Health*, *Travel* and *Public Services*. It was often only more confident users who used mobile internet to support these additional life needs.

Within each category of needs, mobile internet was used in a range of ways. For example, for *Work* and *Income*, individuals used mobile internet to promote their business or products to a wider audience; communicate with employers, employees and clients; and to receive payments. For *Home* and *Lifestyle*, people used mobile internet to manage household administration online (e.g. pay bills); gain inspiration for household management (e.g. cooking recipes, sewing techniques); and keep up with trends (e.g. clothes, hairstyles). There was also some variation in

use between the two countries, in part because mobile internet use cases were influenced by the online and offline services available to users, as well as differing local concerns and values.²¹

Saving time and money is a priority

Across all life needs in India and Ghana, saving time and money were priorities. Mobile internet was perceived by users in both countries as a valuable way to support these priorities. For example, using mobile internet to support *Social Connection* was considered a time saver, as people were perceived to respond more quickly on social media than via SMS. It was also considered a money saver because it is often cheaper to communicate with people, particularly abroad, using data or Wi-Fi than SMS or calls via a telephone network.

The role of mobile internet in saving time and money can also be specific to certain people. For rural women in the India sample, mobile internet played a particularly important role in saving time to meet needs related to *Home* and *Lifestyle* and *Travel*. For these women, travel to local towns was necessary for tasks such as buying household items and visiting the bank. Yet, travel by public transport could be unpredictable and time consuming, with long wait times and uncertain schedules. This, in turn, inhibited their ability to do other tasks, such as household chores and childcare. Tools that could help them manage their travel time (e.g. online bus timetables and information on delays) or eliminate the need for it altogether (e.g. online banking and bill paying options) were therefore highly desirable.

“

“It makes work faster and easier [...] I just send my supplier a picture and tell him to take a close look.”

Male, 18–28, rural, Ghana

”

“

“I’m able to pass information [to people] easily, unlike sending a picture at the post office.”

Female, 29–50, rural, Ghana

”

21. For examples of mobile internet use cases aligned with life needs, see Appendix 2.



Key finding 2: Priority needs vary by demographic group

Regardless of which needs are met first or most frequently with mobile internet, people tend to prioritise meeting some needs over others. Among those in the sample, the needs that people chose to prioritise varied to some extent across demographic groups.

In India, gender and location (urban/rural) were primary indicators of priority needs (see Figure 2). There were also some differences by age, but these were

less prominent.²² For men in India, *Work and Income* was a priority, as they were typically responsible for supporting themselves and their families financially. This was followed closely by the need for *Social Connection*, particularly with friends. By contrast, women often prioritised the needs of the family and household first, including *Education* (for children) and *Home and Lifestyle* (e.g. managing the household, cooking for the family, sewing, etc.).

Figure 2

Priority needs: India

	Priority needs for men	Priority needs for women
Urban	<ul style="list-style-type: none"> • Work and Income (including communicating with employees/employers and clients, marketing a business) • Social Connection (with friends, especially younger men) • Entertainment 	<ul style="list-style-type: none"> • Education (for children) • Home and Lifestyle • Work and Income (for some younger, unmarried women only) • Social Connection (with family and friends)
Rural	<ul style="list-style-type: none"> • Work and Income (specifically selling goods) • Social Connection (with friends, especially younger men) 	<ul style="list-style-type: none"> • Education (for children) • Home and Lifestyle • Social Connection (with family in particular) • Travel

Needs are qualitatively ranked in order of priority.

22. For more detail on user archetypes identified in India based on these demographics, see Key finding 8.



Conversely, in Ghana, age was a primary indicator of priority needs (see Figure 3). There were also some differences by gender and location (urban/rural), but these were less prominent.²³ For younger people, *Social Connection* and *Entertainment* were a priority, partly due to their life stage. Younger people were more likely to still be living in the family home and at least partially supported by other family members. Additionally, peers from school were often still significant members of their social network. Consequently, younger people tended to have fewer responsibilities and more free time to consume entertainment and connect with friends. However,

Work and Income was still important among this group as they were in the process of figuring out what they wanted to do in the future and how to become more independent from family.

Those in older age groups tended to prioritise *Work and Income*, as they typically had a range of financial responsibilities and were supporting other family members. They had less time available than younger people, so although *Social Connection* needs were a priority, this group had to fit them around other responsibilities. *Entertainment* was considered more “nice to have” when time is available.

Figure 3

Priority needs: Ghana

Priority needs for younger adults (18–28 years)	Priority needs for older adults (29–50 years)
<ul style="list-style-type: none"> • Social Connection (with family and friends) • Entertainment • Work and Income 	<ul style="list-style-type: none"> • Work and Income • Social Connection (with family and friends)

Needs are qualitatively ranked in order of priority.

“Most of these people are into trading or are self-employed. For example, recently I had a customer, she is a seamstress. She had not had too much education but she could sew. What she told me was, she wants to be able to post her work on her WhatsApp status so that people who have her number can actually see the work. It’s a way of advertising for her. The world is gradually going digital so they need to be able to keep abreast.”

MNO trainer, Ghana

23. For more detail on user archetypes identified in Ghana based on these demographics, see Key finding 8.



Key finding 3: People are often unaware that mobile internet provides a potential solution to their needs

In some instances, people in our sample identified problems in their lives they were seeking to resolve. These tended to centre around new and unfamiliar challenges, such as those experienced during the COVID-19 pandemic, including bank closures in Ghana that limited people's ability to manage their finances, and school closures in India that shifted learning online and limited the ability of some families to access education for their children. In these cases, people were highly motivated to find new ways to meet their needs, which could include the use of mobile internet.

However, people were often not fully aware that mobile internet could help to meet their needs. This may be because they had already found other ways to meet their needs (at least in part) and did not recognise that mobile internet could help them meet these needs more fully or efficiently. This was evident in some non-users' perspective of using mobile internet to support *Social Connection*.



"What's the need for a video call?"

Male, 29-50, rural, India



This mindset was particularly apparent among older age groups in the sample (29-50 year olds) and those with children. These people tended to live habitual lifestyles with long, exhausting days filled with work and chores. In some instances, these non-users were aware of "the internet" or platforms such as WhatsApp or Facebook, but did not know how they were personally relevant. Unless there was a clear benefit to them acting differently and adopting mobile internet, these people often doubted whether it was worth the effort or risk of changing their routine.

Instead, individuals typically identified their needs and how they could be met more effectively with mobile internet via observation and engagement with other people. This could involve direct advice and input from trusted individuals, especially family members and friends, or by observing what others "like me" do, both of which could shed light on ways mobile internet could improve their life. These people were typically motivated to use mobile internet to improve what they were already doing and were more likely to seek training because they saw a personal benefit in learning.

Yet, even among mobile internet users, adoption of mobile internet was often platform-led. For these people, the desire was simply to "keep up" and feel socially included, which was evident in statements such as *"I want to learn to use WhatsApp, because everyone else around me does."* (Ghana).



"I told my mother I want to learn new recipes. When I came to Lucknow there are classes where they teach it and it was costly. My friend told me you can learn cooking through your phone."

Female, 18-28, urban, India





Mobile digital skills acquisition

Key finding 4: Personal and social motivations drive mobile digital skills acquisition, but people encounter a range of barriers and these vary by country, demographic group and individual

In our research sample, two key factors were found to drive digital skills acquisition: the mindset of the individual and social exposure to mobile internet. One's mindset influenced personal curiosity about mobile internet, which in turn guided motivations to explore and expand their digital skillset, both during the early stages of mobile internet adoption and as they continued to develop and progress.

The individual's social network tended to drive their exposure to mobile internet and influence their motivation to learn how to use it. As mentioned in Key finding 3, the desire to access particular online platforms was often triggered by observation of others "like me" experiencing the benefits combined with a drive to feel socially included. This motivation was particularly apparent among younger people (18–28

years old). Additionally, when people wanted to learn how to use mobile internet, they often sought support from those in their social network who they considered to have sufficient digital skills to provide guidance.

“

“I watch a pastor’s videos on YouTube... I’ve noticed people are able to upload videos to YouTube; I want to post videos of my pastor preaching.”

Female, 18–28, rural, Ghana

”



Barriers to digital skills acquisition

For those in the research sample, lack of social exposure could limit opportunities to acquire digital skills. Some people had very few individuals in their social network who knew how to use mobile internet. Others were subject to social norms that stigmatised mobile internet use and left very few individuals they felt they could ask for support. Even then, those who provide support may be a limited resource if they lack a range of digital skills themselves and the time or patience to teach.

Lack of social exposure was particularly evident among some demographics. In India, the women in the sample tended to have relatively limited social networks centred around family and domestic spaces combined with gender norms that stigmatised female internet use. Consequently, many of the women knew very few people “like them” who had digital skills, and did not necessarily feel that they could approach their husbands, fathers, brothers or children for support with learning. This lack of social exposure was particularly evident in rural areas where people often had fewer individuals in their network with access to mobile internet in general.



“We cannot suddenly go and speak to a 40 year-old man [in a top-up shop].”

Female, 18–28, rural, India



In Ghana, demographic differences in social exposure were less pronounced, and gender differences in the older (29–50) age group were the reverse of India. Women in the Ghana sample were more likely to have been exposed to mobile internet due to the nature of their work. They tended to engage in more social professions than men, for example, working as hairdressers and market traders where they regularly interacted with a wide range of colleagues, clients and suppliers. Additionally, mobile internet use

among women in our sample was not stigmatised, so they tended to be exposed more regularly to people “like them” who used it and felt more comfortable asking those around them for support with learning. In contrast, the men in the sample tended to engage in less social professions, for example, construction work on building sites. They consequently had less regular exposure to mobile internet and encountered fewer people “like them” using it.

In addition to a lack of social exposure, a combination of real and perceived barriers also tended to limit people's digital skills development. These can be organised into three broad categories: underlying literacies (language, functional and mobile²⁴); mindset; and time, cost and device-related issues. In practice, these barriers overlapped and reinforced one another. The barriers also varied to some extent by country, demographic group and individual, and could limit digital skills acquisition at any stage of a user's learning journey.



“At first, I wasn't using [WhatsApp] for my work... A friend posted something and there was a price on it so I asked ‘What is it? Are you selling it?’ She came to my place and taught me how to do it.”

Female, 29–50, urban, Ghana



24. “Functional literacy” refers to the practical skill set needed to read and write. “Mobile literacy” refers to the practical skill set needed to use a mobile handset, such as turning it on/off, making a call and using a keypad.



India

In India, low levels of various underlying literacies were reported as a significant barrier. This was because the internet was perceived to be in English and, to a lesser extent, Hindi, which many people in the sample, particularly in rural areas and in the southern state of Tamil Nadu, did not feel sufficiently literate in to use the internet effectively or safely. This, in turn, reinforced a range of mindset barriers, including perceptions that the internet was highly complex and only for “educated people” (see Figure 4). These types of barriers prevented some non-users, particularly women and rural populations, from feeling able to take the first steps towards using the internet. Digital skills acquisition was perceived to require a steep learning curve and significant mental effort, time and practice.²⁵ When combined with perceptions that the internet was not personally relevant and could be a dangerous space, particularly for women, the investment that skills acquisition would require did not seem worth the effort to some.²⁶ This also prevented some users from pursuing

on-going digital skills development, as they preferred to keep using the platforms and features they felt familiar with and could navigate without having to tackle the barriers that caused them concern.

Many of the time, cost and device-related barriers reported by those in the sample were associated with a wider range of mindset barriers. Although the affordability of data prevented some from experimenting with the internet, this appeared to play less of a role across the sample.

“*Educated people like my daughter will learn by themselves... for uneducated people like myself, it would be a big thing.*”

Male, 29–50, rural, India

Figure 4

Barriers to digital skills development: India

Underlying literacies	Mindset	Time, cost and device-related
<ul style="list-style-type: none"> • Lack of English or Hindi and a perception that English or Hindi are necessary • Low functional literacy (reading and writing) and a perception that reading skills are necessary • Low mobile literacy, for example an inability to type or take photos 	<ul style="list-style-type: none"> • Low confidence (particularly women; rural 29-50 age group) • Perception that internet is not personally relevant or beneficial (particularly women; rural; 29-50 age group) • Perception that internet is ‘for men’ or ‘educated people’ or ‘rich people’ (particularly women; rural) • Perception that new platforms/features are complex and difficult to learn (particularly women; rural; 29-50 age groups) • Fear and inertia due to lack of comprehension (particularly women; rural; 29-50 age groups) • Shame due to lack of skills (particularly 18-28 age groups) • Safety and security concerns especially around Facebook (particularly women) 	<ul style="list-style-type: none"> • Lack of time to learn; perception that significant time investment is necessary (particularly 29-50 age groups; women; rural) • Lack of regular device or internet access to practice (particularly women; rural) • Fear of breaking the device; perceived as fragile and expensive (particularly women) • Perception that a smartphone is necessary for the best experience • Cost of data (particularly women)

Barriers are not ranked in order of priority

25. For additional data and analysis on barriers to mobile internet adoption for women, see GSMA (2020), *The Mobile Gender Gap Report 2020*.

26. Most frequently mentioned dangers include the addictiveness of using the internet; exposure to inappropriate information; unsolicited contact from strangers; cyberbullying; scams and fraud.



Ghana

In Ghana, underlying literacies were reported less frequently as a barrier, although some people in the sample with lower levels of education, particularly older age groups (29–50 year olds) and those living in rural areas, were less confident with English and written text, particularly with typing.



“She was not educated, so for WhatsApp, she was not going to be typing...WhatsApp allows her to record a voice note instead, so that was one education I gave her when I helped her download WhatsApp, and she was happy with that.”

MNO customer trainer, Ghana



Several mindset barriers relating to the perceived relevance and complexity of the internet prevented some people from acquiring digital skills due to the mental effort, time and practice they felt it would require. Safety and security were also major concerns for some due to perceptions that scams and fraud were ubiquitous online. This prevented some from progressing to wider and more varied internet use because they only felt confident engaging in particular activities and using specific, familiar platforms and features (see Figure 5).

Cost and device-related barriers were reported frequently by those in the sample, in part because smartphones were perceived to be the only type of handset that could access the internet, and these were often considered unaffordable.²⁷ This was reinforced by perceptions that data is expensive and could be used up without the user realising it. This prevented some non-users from taking the first steps towards using the internet, and some users from

progressing to wider and more varied internet use. In these cases, users limited themselves to particular activities they perceived as most valuable, using platforms and features where they generally understood how much data they were using.



“One time I tried a new app, and I lost all my contacts and everything, it was some sort of fraud. So when I see something I don’t understand, I don’t try it at all.”

Male, 29–50, peri-urban, Ghana



“I do not just go anywhere or open anything on a phone...that is why I feel it is safe. I want to save my data too.”

Female, 29–50, peri-urban, Ghana



“I used to think internet was for rich people but it [can be] part of everyday life for anyone.”

Male, 18–28, rural, Ghana



27. Feature and smart feature phones tended to be grouped with basic phones as “yam phones”, and had no perceived functional advantage.

Figure 5

Barriers to digital skills development: Ghana

Underlying literacies	Mindset	Time, cost and device-related
<ul style="list-style-type: none"> Lack of English and a perception that English is necessary (particularly the 29-50 age group, lower education) Low functional literacy (reading and writing) and a perception that reading skills are necessary (particularly the 29-50 age group, lower education) Low mobile literacy, for example, the inability to type (particularly the 29-50 age group, lower education) 	<ul style="list-style-type: none"> Low confidence (particularly the 29-50 age group) Perception that internet is not personally relevant or beneficial (particularly the 29-50 age group) Perception that internet is for 'rich people' Perception that new platforms/features are complex and difficult to learn Safety and security concerns (particularly Facebook-related for some women) 	<ul style="list-style-type: none"> Lack of time to learn; perception that significant time investment is necessary (particularly the 29-50 age group) Perception that only smartphones can access the internet Perceived cost of smartphones Perceived cost of using data and lack of ability to control data use

Barriers are not ranked in order of priority

Key finding 5: New users begin at similar starting points, but their journeys diversify as they progress

Several key digital platforms served as initial entry points to mobile internet, although these differed slightly by country. In India, this included WhatsApp, YouTube and for some people (often men) also Facebook, whereas in Ghana it was primarily WhatsApp and Facebook. New users engaged with a few basic features on these platforms in the early stages of their learning journey, generally for use cases around Social Connection and *Entertainment* and, for some, also *Work* and *Income* and *Home* and *Lifestyle*.

In the early stages of skills development, people performed basic activities on these platforms that were quick to learn and provided immediate reward and reciprocity. In India, this included messaging (primarily voice) and calling (voice and video) on WhatsApp; playing videos on YouTube, which had often been discovered via voice search; and, for some, viewing content and "liking" on Facebook. It was also common for users in India to learn skills to engage in a few basic activities on at least two or more platforms in these early stages.

In Ghana, early skills development tended to focus on messaging (text and voice), calling (voice and video), engaging in group chats, and viewing and changing one's status on WhatsApp. On Facebook, it included viewing content, "liking" and searching for and adding friends. People in Ghana tended to learn skills to engage in more activities in these early stages, but they often remained on a smaller range of platforms.

In both countries, basic skills that enabled users to limit data usage were often learned early on. For example, learning how to switch off data when not using mobile internet. This prevented data from getting used up quickly and helped users to save costs.



Transferable skills

As users progress, they tend to use the skills they develop during the early stages to support a wider range of needs and use cases. For example, an individual in Ghana may apply the search skills they gained on WhatsApp to a new platform, such as Jumia, to find products to buy, while also developing new skills to make a purchase on Jumia using mobile money.

Key transferable skills vary according to the activities engaged in during early use. In India, common transferable skills learned in early use included those that support search, especially with voice, and those that support image and video sharing (see Figure 6). By contrast, in Ghana, common transferable skills learned in early use included those that support search and those that help users increase their social connections (see Figure 7).

Figure 6

Key transferable skills: India

Key skills:




Search, especially via voice

Early use:

- YouTube searches for videos on subjects of interest (Entertainment, Work and Income, etc.)

Transferred to:


- Location searches on Google Maps
- Information search on Google
- Other uses of voice command (e.g. voice notes on WhatsApp)



Enter text into a 'bar' (those with sufficient functional literacy)

- Writing WhatsApp messages to friends, family, work contacts

- Text-based search (e.g. location searches on Google Maps, information on Google)
- Other text search (e.g. Play Store for apps, products in online stores such as Amazon)
- Messaging on other platforms (e.g. Instagram)



Upload and share pictures or videos from my library

- Sending images/videos via WhatsApp to friends, family, work contacts
- Sharing images on Facebook (some)

- Marketing a business via WhatsApp, Facebook, Meesho
- Editing photos via Instagram



Turn off data to manage cost

- Adjusting mobile handset settings

- Other ways to manage cost (e.g. download of YouTube videos via Vidmate to view offline)



Figure 7

Key transferable skills: Ghana

Key skills:



Early use:

- WhatsApp search for contacts
- Facebook search for friends

- Facebook friend requests

- Adjusting mobile handset settings

Transferred to:

- Google search for information
- YouTube search for videos
- Play Store search for apps
- Instagram search for friends/accounts to follow
- Jumia search for products to buy

- Instagram follow requests
- Snapchat adds

- Other ways to manage cost (e.g. checking data usage in Settings, managing background data use)





Progression towards increased use

The pathway for each individual can look quite different depending on the life needs they aim to fulfil and which mobile internet use cases are relevant to them. People in the sample who engaged in “regular use” often continued to use the same entry point platforms for similar use cases, but had added any number of digital platforms, use cases and digital skills to their repertoire.²⁸

Figure 8 shows how the journey diversified for users in the sample as they progressed, and includes examples mentioned by participants. It is not an exhaustive list of all possible digital platforms or uses, and not all people who engaged in regular use engaged with all the platforms or uses in the list. Instead, users tended to engage with a range that they felt was most relevant and useful for them.

Figure 8

Mobile internet user journey: India and Ghana

Stage	Mobile internet adoption		Increased use of mobile internet services
India use	First use	Early use	Regular use
	WhatsApp YouTube Some: Facebook	+ Zoom (for education), Some: Google, Jio TV/Zee TV + More features and use cases in WhatsApp, Facebook, YouTube	+ Instagram, Snapchat, TikTok (previously), Google Pay, Paytm, Flipkart, Amazon, Maps, online banking, image or video editing via Videocutter, browsing via Chrome, gaming, food delivery + More features and use cases in WhatsApp, YouTube, Facebook
Ghana use	First use	Early use	Regular use
	WhatsApp Facebook	+ YouTube, Google (on browser) + More features and use cases in WhatsApp and Facebook	+ Instagram, Snapchat, Jumia, Uber/Bolt, Zoom, online banking, Flo period tracking, workout apps + More features and use cases in WhatsApp, Facebook, YouTube

Key operational skills related to account creation, including digital identities or profiles, and privacy settings, were often not developed until later stages of the learning journey. These activities were typically considered too complex for new users, and some, such as account set-up, were viewed as one-off events, so were not a learning priority in the early stages. Instead, people were often introduced to mobile internet by someone who had set up their email account and password, helped them to download key apps if they were not already installed (e.g. WhatsApp, Facebook, YouTube) and set up their social media accounts.

This can become an issue for users if they get logged out or lose their phone, as some users do not know their email address and password and are unable to log back in. Some also cannot download new apps from their app store for a similar reason.²⁹



“You take them through how to create a Google account...you tell them because of the system their phone uses they need to get this account... and then they tell you they don't know how to do it, so do it for them, then you help them. Sometimes you teach them and some of them would let you know that even if you teach them they can't do it so then you do it for them.”

MNO trainer, Ghana



28. Research participants were categorised as engaging in regular use if they had started using internet more than six months ago; were using mobile internet at least once a week; and use mobile internet for at least one use case. See Appendix 1: Detailed methodology, for more information on the sample.

29. Across the sample in India and Ghana, email was primarily a tool for logging in to accounts, not for communication.

“

“Most of the people can't make their Gmail ID and they can't open their ID and some of the people can't access their ID as it gets expired.”

Mobile retailer/trainer, India

”





Key finding 6: Users' preferences and strategies for acquiring mobile digital skills change as they progress

In the early stages of digital skills development, mobile internet users tended to have a strong preference for face-to-face training with practical support, ideally from a family member, friend or neighbour. This was due to the perceived complexity of internet and digital skills required to use it, combined with concerns about the risks involved in making mistakes online.

These new users tended to approach people for support they considered trustworthy and sufficiently expert in digital technology. Trustworthiness was a particular concern in India where “strangers” and people the user did not know well were considered far less desirable trainers, particularly for women. However, in Ghana, new users were comfortable approaching a wider range of people for support, including those outside their immediate family and friends.

Many non-users and new users in the sample felt that digital skills could not be self-taught, at least not initially. They instead wanted interactive approaches that would allow them to ask questions and be reassured they were performing activities correctly. One-on-one training was often preferred for this reason, however, group training was also perceived as valuable, particularly for women in India. This was because a group setting could provide the women with a support system to overcome challenges in the learning journey, and some women and their families considered it more socially acceptable.

Support materials, such as videos, were seen by some new users as beneficial when combined with in-person training, but were rarely considered a substitute for in-person techniques during the early stages. Some new users also appreciated having access to training materials that help them review and practice in their own time and space.



“In the village everybody does trust me, I have given training to 80 per cent male and only 20 per cent female... not many women come as they have more burden and they are not allowed to go outside or use phone...It is the mentality of the people in the village.”

Mobile retailer/trainer, India



“I would love the video because I can play it over and over again, but in-person training, after two hours, whether you understand or not, you have to go home and that is it.”

Female, 29–50, peri-urban, Ghana



“I need someone to teach me because I need to ask if I have doubts. If I see [videos] alone, I will not be able to. If I keep seeing the video one or two times I will understand, but if someone teaches me, I will understand better.”

Female, 29–50, rural, India



Learning strategies as users progress

As users acquired more digital skills, they tended to develop more confidence using mobile internet. These users were often more willing to explore and learn by themselves. For example, they were more likely to follow on-screen prompts and respond to familiar icons, such as the search bar. They were also more likely to use Google and YouTube to troubleshoot specific problems they experienced while using the internet.

These users may still rely on in-person guidance when using new platforms or features, but it is typically more light touch, providing reassurance. They may also seek support when they attempt to engage in more complex use cases. For example,

this was reported by trainers in India who often received requests for support from users who wanted to access public services that required them to complete online forms. In some instances, users were also comfortable receiving guidance via messages or calls to limit travel time and costs.

“

“The more you use it, then, the more you learn... as you use it, you will learn.”

Male, 18–28, urban, India

”



“

“Some people can do almost everything unless it has to do with a new app and they want to know how it is used. Like when Zoom came out due to COVID. What they needed was to ask what is Zoom about... and you tell them it is an app that is used for video calls, for your meetings, and they are like, oh they think they would need it for their work. Then they just go ahead and download it. Some even read about it before they come. Some of them ask you just for a recommendation.”

MNO trainer, Ghana

”



Key finding 7: Training is typically tailored to learners' needs, and a range of training methods are used to support the learning process

People in our sample generally received mobile internet training informally and for free from family, friends or colleagues. Mobile agents and retailers also provided informal training to individuals who approached them in the community. Such “training” was generally in person and tailored to a learner’s

requests in the context and time available. Training was usually short (no more than 30 minutes), in part to avoid overwhelming the learner with new information. In both countries, these informal trainers tended to use a range of similar methods to support digital skills development:



- **Base training on relevant use cases and platforms.**

These were typically defined according to what the learner requested support with, although the trainer's perceptions of the learner also influenced what was taught. For example, when introducing YouTube in India, trainers often showed Work and Income-related videos, such as farming techniques to men, and Home and Lifestyle-related videos, such as cooking recipes, to women.

"If somebody wants to go somewhere then I tell them how to do the reservation and I tell them, come here and I will arrange the ticket for you." – Mobile retailer/trainer, India

- **Make training practical.** This typically involved the trainer demonstrating the steps to perform the activity on the learner's phone, followed by the learner imitating the process on their phone. This was often repeated several times so that it became more familiar, and was considered particularly important for new users and those who lacked confidence.

"Most of the time I have experience with the phone so I prefer to show it to them instead of going through a booklet since it is easier that way and they can understand it fast." – MNO trainer, India

When the learner had a new handset, the trainer typically completed the set-up process, including setting up email accounts and IDs/profiles (e.g. on Facebook). However, they often aimed to engage the learner in certain steps, such as choosing their own email ID and password and learning how to download apps, as these were perceived as key for users' on-going engagement.

- **Highlight workarounds for functional or mobile literacy when this is a barrier.** This often involved drawing the learner's attention to voice command options and relevant iconography to recognise on key platforms, such as the microphone icon or the search box. In India, trainers also typically changed the default language to one the learner was more familiar with, if the option was available.

"My neighbour... said there is arrow logo, and I must click it. This human logo is there, I must click that for searching." – Female, 18-28, urban, India

"For WhatsApp, for example, they don't need to type, they just have to press and hold the voice recorder to record what they want to type and send. So all they need is how to open the app, how to record and how to send." – MNO trainer, Ghana

- **Integrate safety, security and privacy topics.** For example, if a trainer is teaching about a social media platform, they often demonstrate how to manage privacy settings, passwords and, in India, how to "block" people, especially for women users. More generally, trainers aimed to instil basic principles for the learner to avoid becoming a victim of fraud or scams. This included supporting the learner to understand the importance of being wary of calls or messages asking them to share personal or financial details, and how to respond in these situations.
-

- **Offer on-going support and recaps.** This typically involved encouraging the learner to return when they needed help or to contact the trainer using their new digital skills. Trainers observed that this can also help the learner to practice and embed their skills. On-going support was perceived as particularly important for older learners and those with lower education levels, as these groups tended to need more time, reassurance and encouragement to learn.

"If I talk about old age people, I face problems giving them training about anything, as they learn and understand everything and go back home and then they forget certain things. Then they come back again and say that they forgot and tell us again about it." – Mobile retailer/trainer, India





In India, some organisations offer formal mobile skills training.³⁰ This addresses similar learning needs and priorities, although it is generally more structured and may use training tools and materials to support the sessions. For example, to ensure the training feels relevant to learners, training organisations may conduct a pre-training needs assessment and aim to match the learner profile with the trainer profile (e.g. gender, age, education

level, caste). Training materials, such as inspirational videos, may be used to demonstrate potential internet uses, and are localised to ensure learners see people similar to themselves using the internet. Localisation techniques can include using animation to make characters suitably generic, and dubbing with the local language. To boost learners' confidence and motivation, some offer certification at the end of the course.



30. See, for example, Google/Tata Trusts Internet Saathi initiative; Digital Empowerment Foundation; Haqdarshak; and Anudip. Although there are a range of digital skills training organisations in Ghana, none were identified during this research that specifically offered mobile digital skills training.



Key finding 8: User archetypes can help identify target segments and design relevant mobile digital skills training

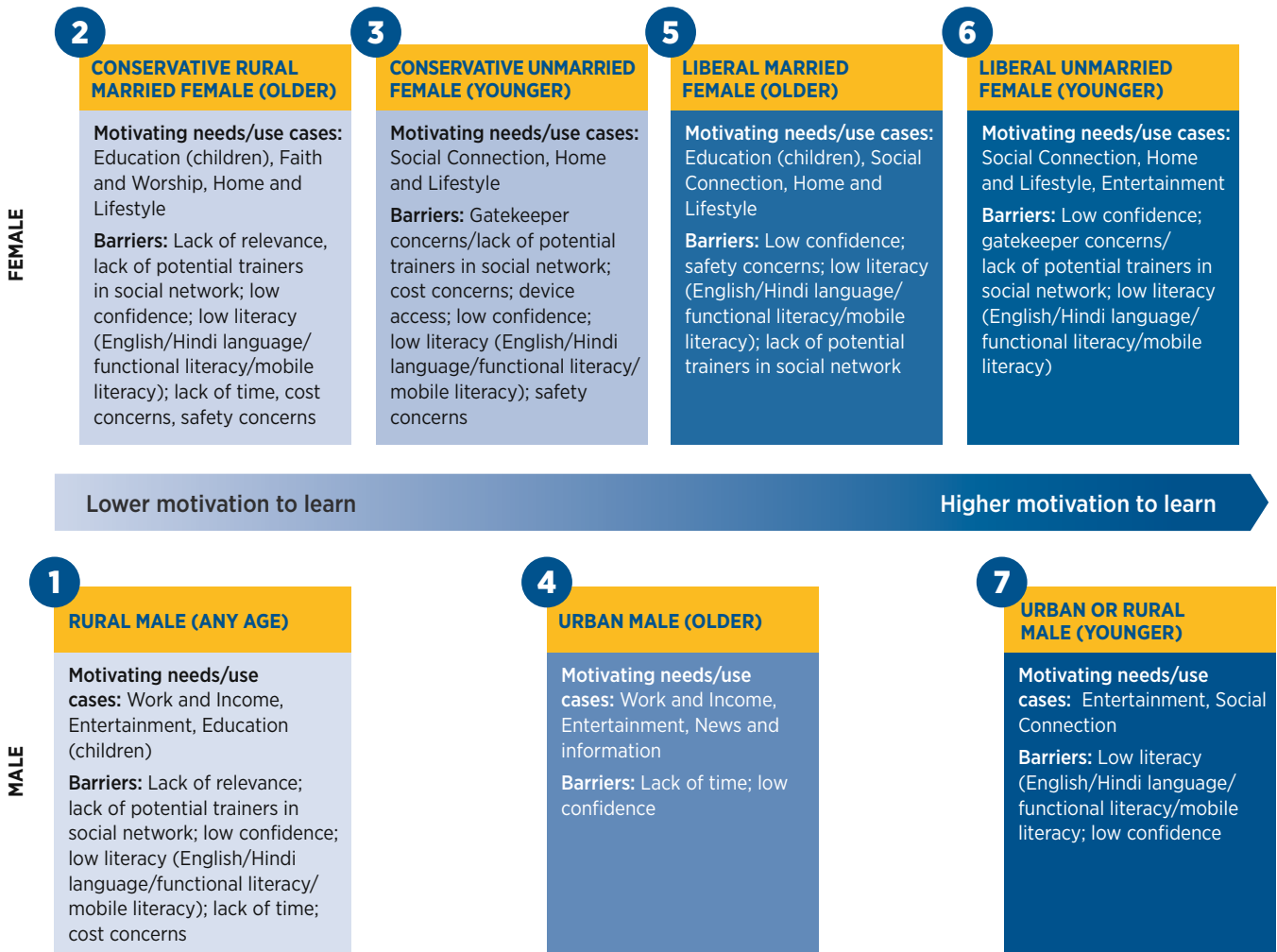
User archetypes can be valuable for guiding decisions about which segments of the population to target with mobile digital skills training, and how to develop the training to ensure it is relevant to them. In this study, archetypes were identified from the sample in India and Ghana that aligned with key demographic factors, and differed according to their key needs, motivating use cases and barriers to skills acquisition. These archetypes were positioned along a spectrum according to their motivation to gain digital skills (see Figures 9 and 10).

In India, seven archetypes were identified that largely aligned with key demographic factors: gender, location (urban/rural) and, to some extent, age or life stage.

Gender played a significant role in defining these archetypes, with many of the female archetypes sharing similar needs/motivating use cases and barriers, and many of the male archetypes also sharing key points of similarity. Location (urban/rural) and degree of liberalism also played an important role, but these factors did not always align. Some conservative archetypes were found in urban areas and some liberal archetypes in rural areas across both the states of Uttar Pradesh and Tamil Nadu. Age and life stage also played a role in defining the archetypes, as younger people tended to have greater motivation to learn. However, some rural males with low understanding or interest in internet could be any age (*Archetype 1*).

Figure 9

Key archetypes: India



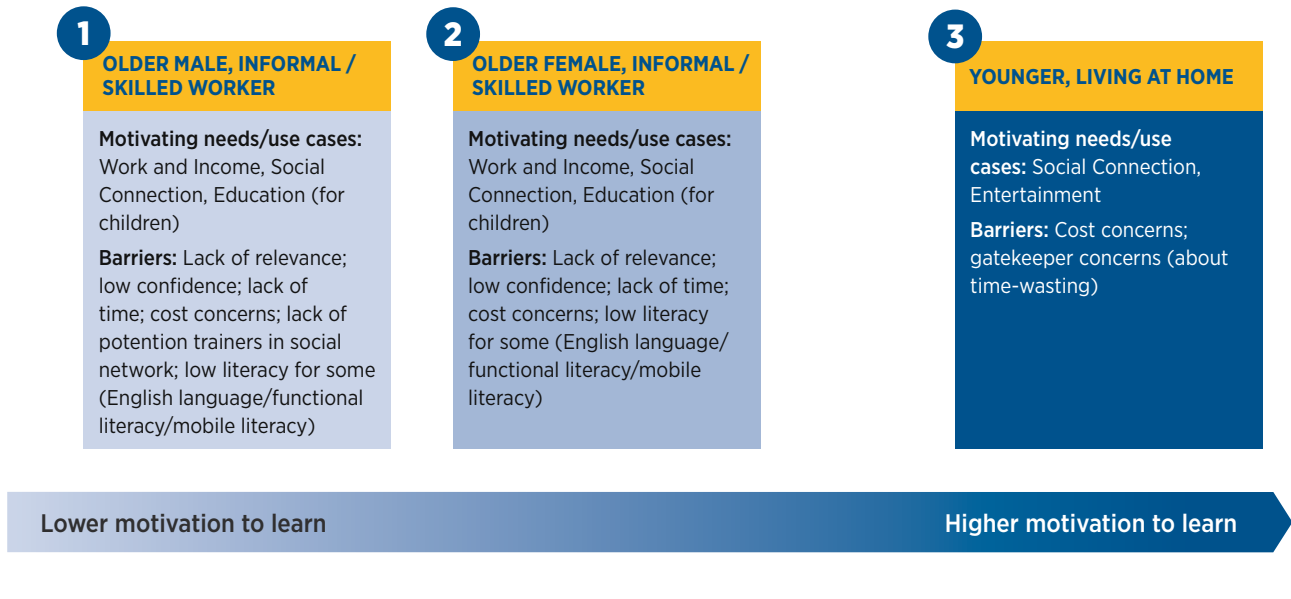


In Ghana, three archetypes were identified that largely aligned with age or life stage and, to some extent, gender. However, gender only played a role in the older (29–50) age group and appeared to be partly due to the types of professions women engaged in compared

with men.³¹ Location (urban/rural) was not a factor, suggesting that people living in rural areas who had mobile internet access also had similar training needs to those living in urban areas.

Figure 10

Key archetypes: Ghana



Targeting digital skills training along the motivation spectrum

Digital skills training that targets archetypes on the left of the motivation spectrum will need to invest in supporting individuals to understand how mobile internet is relevant and beneficial to people like themselves. More on-going support may be required since individuals who align with these archetypes are likely to have fewer people in their social network that they can go to for support with internet use, and a wider range of concerns and barriers that they need to overcome.

Conversely, training that targets archetypes on the right of the spectrum can involve more light-touch support, reassurance and encouragement. These people are highly motivated to learn, but lack confidence, and are not aware of how to address some of their concerns and the barriers they face.

31. See Key finding 4 for more detail on this gender difference.





Recommendations for driving mobile digital skills acquisition

The following set of recommendations are based on insights from the research in India and Ghana, and are aimed at those seeking to drive the acquisition of mobile digital skills among underserved populations.

Identify target segments

Strategies that aim to support digital skills development among underserved populations should start with identifying target user segments. Training programmes can then be designed to meet the digital skills needs of these segments, which will help to ensure the programmes are relevant and effective. Segments can be defined using a range of demographic characteristics, such as age, life stage, gender, socio-economic status, education level and geographic criteria, such as urban/rural location. Alternatively, any other criteria can be used that ensures target segments have similar training needs, such as a particular pastime, job, membership of an association, common activity or life need. Development of user archetypes can be valuable for identifying target segments and designing relevant digital skills training for these segments.

Focus on the learner's priority needs and motivating use cases

Identify the target segment's priority needs and motivating use cases so that digital skills training, and mobile internet more generally, can be made relevant to their lives. Priority needs and motivating use cases can be identified by exploring people's goals and aspirations, their daily activities and areas where they experience problems or frustrations. Once priority needs and motivating use cases are identified, it is possible to determine the digital skills the individual must learn to engage in those use cases. Messaging should also communicate the benefits of using mobile internet to meet the learner's goals and needs so that learners understand the personal relevance.

Address the learner's barriers to skills acquisition

Identify which barriers are limiting the target segment's ability to develop digital skills and ensure these are addressed. With mindset barriers, such as lack of confidence, it is particularly important to provide reassurance, positive encouragement and promote on-going practice and repetition.

Safety, security and privacy topics should be integrated in each use case and activity the individual learns about, particularly for social media use. This should include promoting behaviours that help learners to avoid fraud or scams and feel confident engaging with mobile internet safely.

If underlying literacies are a barrier, it is valuable to teach workarounds for language, functional literacy and mobile literacy early on. For example, highlighting voice command options and iconography on key platforms (e.g. the microphone icon, the search box).

Where local social norms limit the learner's exposure and stigmatise their use of mobile internet, identify relevant gatekeepers and explore approaches with them that frame digital skills acquisition as socially permissible and beneficial to the learner. It is particularly important to explore training approaches that can be integrated in learners' everyday lives with limited disruption to daily routines. This could involve the use of training materials that can be accessed by the learner whenever they have time during the day.

Identify where the individual is in their learning journey

It is important to determine where learners need more support to progress, and how to deliver that support. For learners in the early stages, it is valuable to identify the key skills that will be relevant to them across a broader range of platforms and features, and support them to recognise and develop these skills.

Explore a mix of channels to deliver digital skills training

It can be valuable to use a mix of media and channels to deliver digital skills training, as this can empower learners to choose how to engage in the training. Identify the most relevant and effective delivery channels for digital skills training by exploring the target segment's learning preferences. When selecting channels for delivery of the training, it is particularly important to consider the time, availability and access levels of target segments to ensure the training will fit into their daily life.

In the early stages, it is beneficial to build skills training around in-person activities, using training methods that strengthen the learner's confidence and encourage on-going practice. Training videos may be used in these sessions, but are especially valuable for providing inspiration and learning recaps after the individual leaves the face-to-face session.

As the learner progresses, training methods can rely more on remote channels and approaches that support solo experimentation. In-person training during these later stages may focus on providing reassurance and light-touch support for troubleshooting or introducing new platforms or features.



Appendix 1: Detailed methodology

Sample

In-depth interviews with key stakeholders (n=14): Included representatives from a range of organisations in India and Ghana involved in offering digital skills training programmes, services and products.

In-depth interviews with “trainers” (n=30): Primary sample criteria required the individual to have trained others (a minimum of 10 people, but preferably more) how to perform mobile internet-based activities on a mobile handset. The sample included mobile agents; mobile retailers/handset sellers; informal community “educators”; and representatives from formal training initiatives (where possible). We aimed for equal spread across selected regions and urban/rural locations, and an equal gender split. However, in India, all trainer interviewees were male.

In-depth interviews with mobile internet users and non-users (n=104 in foundational phase; n=70 in later phases):

A cross-section of the population from mid to lower socio-economic groups in each country were sampled. The sample was skewed towards underserved groups, which included women, those with lower socio-economic status, lower levels of education and those living in rural areas. Criteria included:

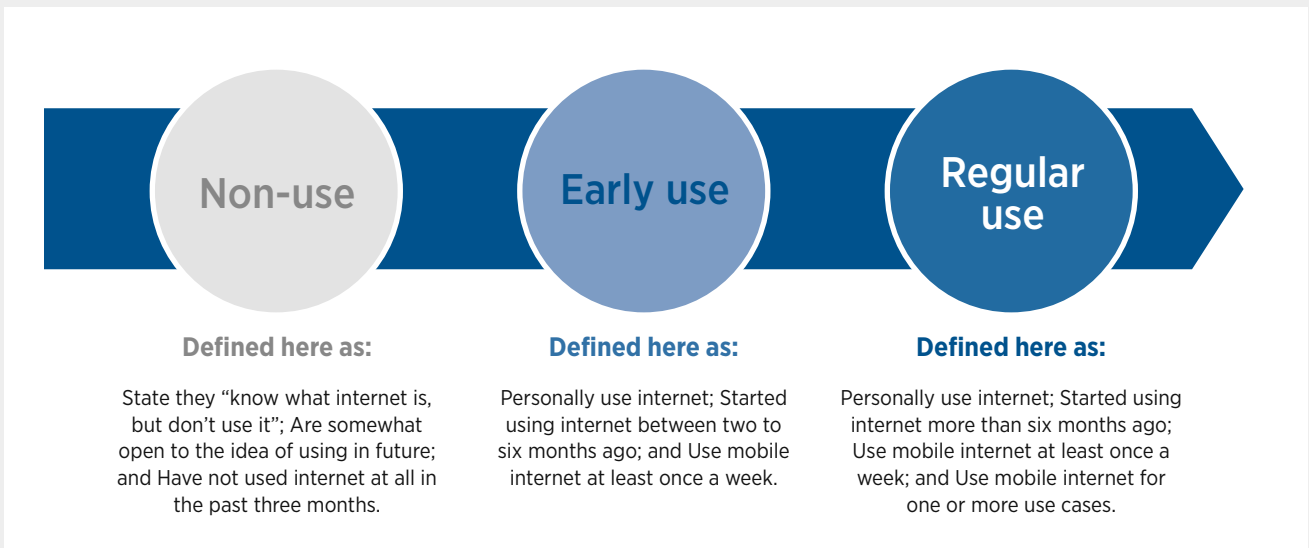
- Age/life stage: 18–29 years (mix of unmarried, married and those with children) and 29–50 years (majority to have children of any age)
- Socio-economic group: Mix of low affluence and low-mid affluence, classified by local income levels (C1C2DE)
- Profession: Range of occupations or activities, relevant to residency/socio-economic status
- Literacy: Majority to have school education only (primary only; primary and secondary only). None to be educated beyond school level (i.e. higher/tertiary education).
- Handset ownership and status: Mix of handset types across the sample: 50 per cent feature phone, 50 per cent smartphone. Majority to own a qualifying phone for personal use, others to have regular access to a borrowed phone.
- Mobile use and spend: All to make use of a paid mobile service for outgoing texts or calls once a week or more. All internet users to make use of a paid mobile data service once a week or more.
- Mobile internet openness: Non-users must be “non-rejecters” of adopting mobile internet for themselves personally, on their phone or someone else’s, at some point in the future.

We aimed to sample people across the mobile internet user journey, so a mix of non-users, new users and “regular” internet users were included.



Figure 11

Mobile internet user and non-user sample



Research locations

Research with mobile internet users, non-users and “trainers” was conducted in two regions of each country.

Figure 12

Research regions/states in each country

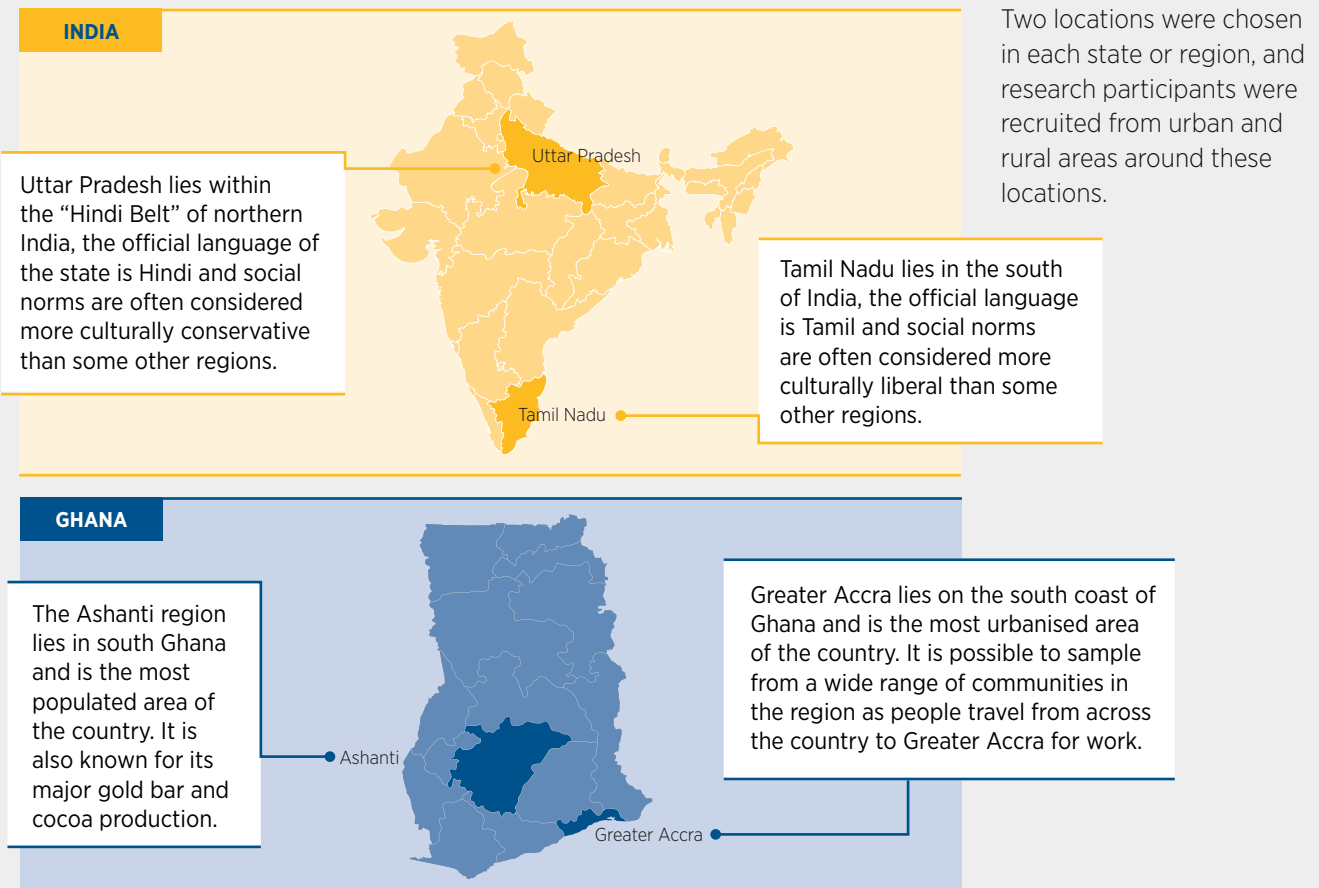




Figure 13

Research locations in each state/region

India

Uttar Pradesh	Location 1: Lucknow
	Location 1: Kanpur
Tamil Nadu	Location 3: Tiruvallar
	Location 4: Coimbatore

Ghana

Greater Accra	Location 1: Ofankor-Barrier
	Location 1: Dodowa
Ashanti	Location 3: Kumasi
	Location 4: Asokore

The later phases of research were conducted in the same states and regions, although the specific locations changed to some extent in line with the research themes under investigation (e.g. vicinity to an MNO store).

Data collection during the COVID-19 pandemic and risk mitigation strategies

The main research phase consisted solely of in-depth interviews. Key stakeholder interviews and “trainer” interviews were conducted remotely via video calls. Mobile internet user and non-user interviews were held according to the COVID-19 guidelines at the time of research and the research participant’s ability to navigate digital technology.

In India, the majority of interviews were conducted via video conferencing technology to avoid the research team travelling between areas or into communities. As many research participants did not have access to video conferencing technology and did not know how to use it, local community “fixers” set up a venue in the local area, which included a laptop with video conferencing. Research participants attended the venue individually at allocated times and sat in front of a laptop to participate in the interview. The local fixer managed all the technology and supported the remote research facilitator to conduct the interview. All COVID-19 guidelines were strictly adhered to; participants followed social distancing guidelines; interviews were conducted in spacious and airy

facilities; masks and hand sanitiser were provided; materials were not shared; and the venue was cleaned thoroughly between interviews.

In Ghana, the majority of interviews were conducted in person by a local research facilitator. COVID-19 guidelines were strictly adhered to: all participants followed social distancing guidelines; interviews were conducted outside or in spacious and airy facilities; masks and hand sanitiser were provided; materials were not shared; and the venues were cleaned.

The later phases of research in both countries were conducted mainly through video conferencing technology with in-person support from local community fixers. Two socially distanced “mini-groups” were held during later phases in India to explore group responses to research ideas. COVID-19 guidelines were adhered to throughout; participants followed social distancing guidelines; interviews were conducted in spacious and airy facilities; masks and hand sanitiser were provided; materials were not shared.



Appendix 2: Detailed life needs, mobile internet use cases and the perceived benefits

Colour key:

India and Ghana Ghana only India only

Needs	Mobile internet use cases (examples)	Benefits
Social Connection	<p>Talk to people I care about when not with them</p> <p>See people I care about, when not with them</p> <p>Exchange thoughts and comments with people I care about (but can't/don't want to talk to)</p> <p>Exchange photos and videos with people I care about</p> <p>Edit images and videos of myself to share with others</p> <p>Cooperate as a group with people I know/in my area</p> <p>Share other files with people I know (when with them, or not)</p>	<p>To feel closer to those around me and included in their lives</p>
Entertainment	<p>Watch movies/TV shows</p> <p>Watch and/or listen to music</p> <p>Watch sports</p> <p>Enjoy comedy (e.g. jokes, memes, etc.)</p> <p>Listen to the radio</p> <p>Play games alone and with others</p> <p>Read books</p> <p>Follow celebrity gossip and lifestyles</p>	<p>To pass time in an enjoyable way</p> <p>To relax after work/stresses of life</p>
Work and Income	<p>Market a business/product to a wider audience (e.g. showcasing items, key details)</p> <p>Sell products</p> <p>Communicate remotely with clients, employer or employees</p> <p>Market my skills</p> <p>Learn new skills/insights to improve income</p> <p>Receive payment for work/products</p> <p>Cooperate with others for mutual benefit [e.g. form a women's stitching group, local farmer group (India), or traders group (Ghana)]</p> <p>Gain a new job</p>	<p>To earn more money, to support family/improve living status</p>
Home and Lifestyle	<p>Manage household administration:</p> <ul style="list-style-type: none"> • E.g., in India, filling in forms, signing up for education, visiting the bank • E.g., in Ghana, managing bank account (deposits and withdrawals), paying bills, getting prepaid electricity <p>Learn and improve skills and gain inspiration for home management: cooking, sewing, rangoli, kolam</p> <p>Keep up with and be inspired by the latest trends (e.g. clothes, hairstyles)</p>	<p>To have a better home environment</p> <p>To have life run smoothly</p> <p>To receive praise for home and skills (women in India only)</p> <p>To improve lifestyle</p>

Needs	Mobile internet use cases (examples)	Benefits
Education	<p>For children:</p> <p>Support children in their education and acquisition of knowledge and skills (e.g. search for relevant information, help with homework, join online classes)</p> <p>For self:</p> <p>Learn new things or build on existing knowledge or skills</p> <p>Improve literacy by looking up new words</p> <p>For students: submit applications, research for studies, download learning materials (e.g. textbooks)</p>	<p>To enable children to “succeed in life”</p> <p>To know more</p>
Information and News	<p>Find answers to questions about the “wider world”</p> <p>Gain updates on current events (i.e. news, politics, sports)</p> <p>Know what the “wider world” is saying on a particular subject</p>	To feel and appear informed
Faith and Worship	<p>Share worship with others of the same faith</p> <p>Listen to prayers and music in relation to faith</p> <p>Perform guided worship (e.g. puja)</p> <p>Participate in church groups remotely</p> <p>Get inspirational content in relation to faith</p>	<p>To be a good, devout adherent of my religion</p> <p>To feel close to my faith/others of the same faith</p>
Shopping and Buying	<p>Research products and services for self and family</p> <p>Purchase products and services for self and family</p> <p>Pay for products and services</p>	To have what I/we need at an affordable price
Health	<p>Access information on medication, medical conditions (e.g. symptom search)</p> <p>Receive health-based updates (e.g. on COVID-19)</p> <p>Access healthcare remotely:</p> <ul style="list-style-type: none"> E.g., in India, if local services are overwhelmed/hard to reach, poor quality or rural areas are poorly supported E.g., in Ghana, avoiding long hospital queues, booking doctor appointments 	To be, and feel, safe and healthy
Travel	<p>Access private transport:</p> <ul style="list-style-type: none"> E.g., in India, taxi on Ola E.g., in Ghana, taxi on Uber or Bolt <p>Identify how to reach places that are unfamiliar</p> <p>Access public transport (e.g. how and when it runs, how much it costs, tickets, etc.)</p> <p>Share current location with others in order to meet</p>	To access other geographical areas conveniently, to pursue other needs (e.g. <i>Work and Income, Faith and Worship, Shopping and Buying</i>)
Public services	<p>Gain information about public services: what is available, how, when</p> <p>Access funds from government:</p> <ul style="list-style-type: none"> E.g., in India, subsidies, ration cards E.g., in Ghana, government loans <p>Access identity services:</p> <ul style="list-style-type: none"> E.g., in India, receive ID documents or change/update personal ID information (name on Aadhar, PAN card) E.g., in Ghana, submit applications for ID/certification, such as a passport and driving licence <p>Apply for government jobs</p>	<p>To participate and receive what I am due</p> <p>To gain more money to support my family</p>



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