



Accelerating Digital Literacy:

Empowering women
to use the mobile
internet

2015



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Contents

Acknowledgements	2
Definitions	3
Executive summary	4
I. Introduction	9
II. Understanding mobile literacy and digital skills in the context of mobile internet	15
III. Barriers to mobile literacy and digital skills for women	28
IV. Recommendations for key stakeholders	39
Appendix	45
I. Case studies	45
1. Google: Helping Women Get Online	46
2. Telecentre Foundation and ITU	48
3. The SEWA RUDI Sandesha Vyavhar (RSV)	50
4. Intel: She Will Connect	52
5. Grameen Foundation, Cashpor, and Eko: Using Mobile Money	54
II. Personas of mobile internet users and non-users	56
III. Methodology	68

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Definitions

Mobile internet: GSMA's Digital Inclusion report (2014) defines mobile internet access as wireless access to the internet through a mobile phone, smartphone, USB wireless modem, tablet, or other mobile device. For the purpose of our research, we only considered access to the internet via a mobile device (basic/feature or smartphone).

Smartphone: GSMA Intelligence defines a smartphone as a mobile handset enabling advanced access to internet-based services with computer-like functions. Smartphone platforms, such as Android, iOS, Windows Phone and BlackBerry, support native applications created by third-party developers, whereas feature phones use closed platforms that do not support native development, although downloadable applications are often supported using Java.

Unique subscriber: GSMA Intelligence defines a unique subscriber as a single individual who has subscribed to a mobile service and may hold multiple mobile connections (i.e., SIM cards).

Mobile internet user (or 'user(s')): An individual who regularly or occasionally uses mobile internet on an owned or borrowed/shared mobile device (i.e., someone who has used mobile internet more than once).

Mobile internet applications (or 'apps'): Internet-based application software designed to run on smartphones, tablet computers, and other mobile devices. Apps are stand-alone programmes that we distinguish from accessing internet content through a browser (although a browser itself is an application). Examples include email applications such as Gmail and Yahoo mail, search engines such as Google and Bing, and social networking applications such as Twitter and Facebook.

Mobile internet service: In this report, this term refers to accessing the internet through a browser on a mobile device versus a stand-alone application, defined above.

Developing countries: We have defined developing countries as those the World Bank has classified as low-income and middle-income countries (using the World Bank Atlas method). Low-income economies are defined as those with a GNI per capita of \$1,045 or less in 2013; middle-income economies are those with a GNI per capita of more than \$1,045 but less than \$12,746; and high-income economies are those with a GNI per capita of \$12,746 or more. *(Note: the term 'countries' is used interchangeably with 'economies'.)*

Executive Summary

In developing countries, mobile phones are the most popular way to connect to the internet. Just as they have introduced billions to telephony over the last 20 years, mobile phones are today introducing people to the internet in unprecedented numbers. The number of unique subscribers using mobile internet in developing countries grew from 728 million in 2010 to 1.8 billion in 2014.¹ This has profound implications for women's economic, social, and political empowerment. From entrepreneurship opportunities to affordable healthcare and peer learning platforms, mobile internet is beginning to empower women in inspiring ways.

However, women continue to lag behind men in accessing mobile phones and mobile internet. Women face a variety of barriers to mobile access, with cost and network connectivity topping the list, but technological advancement in the form of falling smartphone prices and expanding mobile internet coverage, will help many more women in developing countries come online via their mobile phones.

For women who are new or novice mobile internet users, low mobile literacy and a lack of digital skills are major barriers to harnessing the full potential of the internet. Studies² by GSMA and other organisations have highlighted how a lack of knowledge and digital skills deter new users from accessing mobile internet, and inhibit existing users from using mobile internet on their own.

This report aims to analyse the challenges women face when accessing mobile internet with low mobile literacy and digital skills, understand how women learn these skills, and identify the barriers women run up against in various learning channels. Our findings are based on detailed ethnographic research conducted through focus group discussions and individual user tests with women in three countries: Kenya, India, and

Indonesia. The research included both current users of mobile internet, as well as women who had access to mobile phones, but did not use mobile internet. Our primary research was supported by interviews with global experts and local practitioners across the developing world, and an in-depth review of available secondary research.

We tested participants on a set of five functional skills to assess their overall ability to use mobile internet. (1) Set-up internet access on their phone, and install and sign up for services and applications they are interested in; (2) Search and navigate both familiar and unfamiliar applications and services; (3) Consume and evaluate diverse online content and, at a more advanced level, discover and assess new content; (4) Create and share content, including posts and messages on social media, and; (5) Configure and manage settings (especially privacy settings) on familiar and unfamiliar applications. These five functional skills incorporate all aspects of 'mobile internet literacy', as well as some elements of 'advanced mobile internet literacy', as defined by GSMA's framework for digital literacy on mobile devices (Figure 1).³

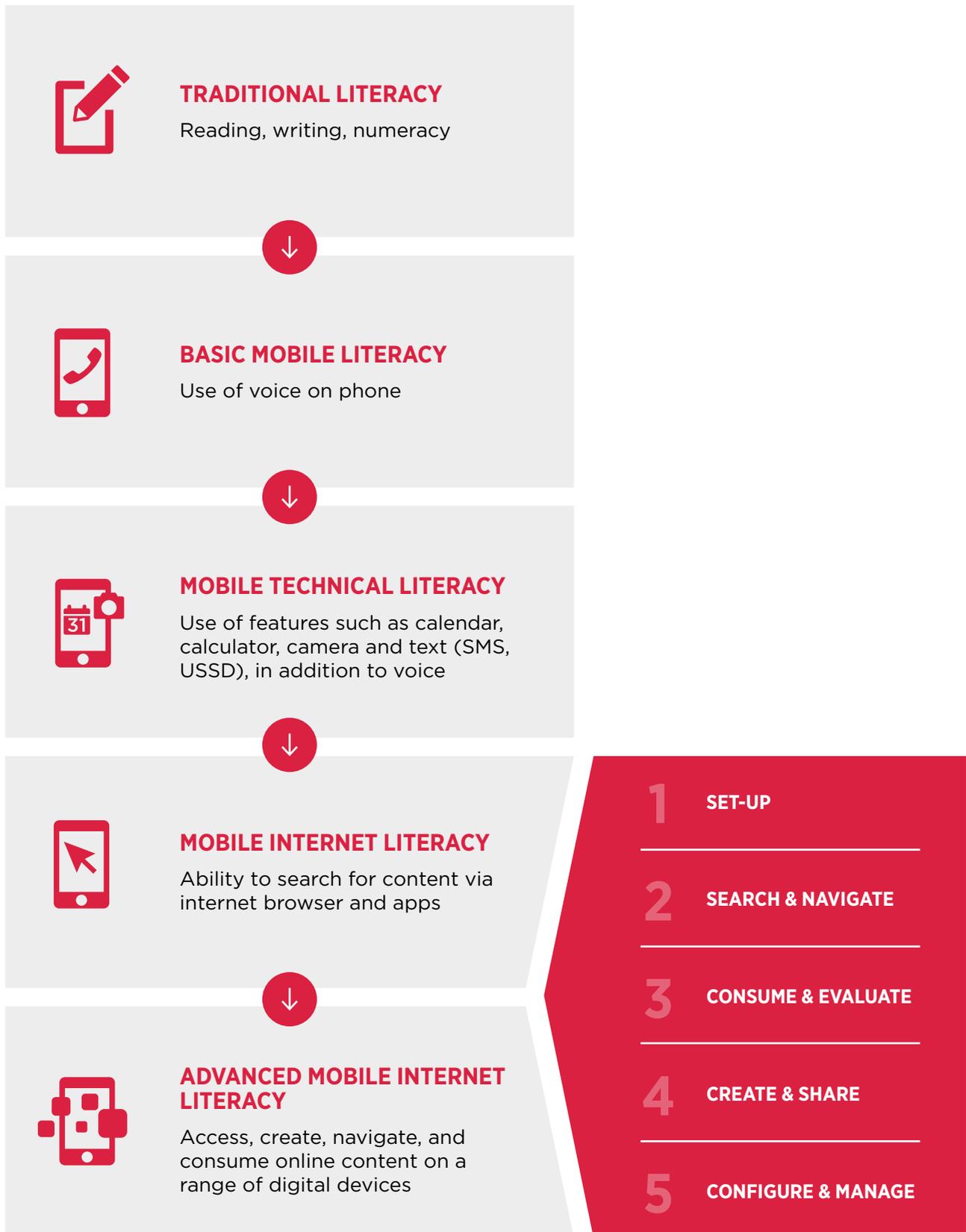
1. GSMA Intelligence, Q4 2014

2. GSMA, 2015, "Bridging the Gender Gap: Mobile access and usage in low- and middle-income countries"; Intel, 2012, "Women and the Web".

3. GSMA, 2014, "Digital Inclusion".

Figure 1

Stages of digital literacy in using a mobile device



KEY FINDINGS

1 **Women using mobile internet often find themselves stuck on “application islands”.**

The mobile internet users we interviewed demonstrated proficiency in many key functional mobile internet skills, but seemed to do so only within the context of the applications they were familiar with, such as Facebook or WhatsApp. They appeared to face difficulties in applying these same skills to unfamiliar applications. Importantly, they were unable to use these skills to search for new services and applications. As a result, mobile internet users in our sample were unable to expand their mobile internet usage beyond the few applications they were already familiar with (which were often suggested to them by their social circle).

2 **The phenomenon of “application islands” goes hand in hand with a limited ‘mental model’ of the internet.**

Most mobile-only users, as well as the non-users we spoke with, lacked an understanding of the depth and breadth of online content. Instead, they viewed the internet through the lens of the one or two applications and services they were familiar with. Moreover, concepts like web browsers, search engines, URLs, and websites, which enable traditional PC users to sense and explore the depth and breadth of the internet, were not very relevant in the context of mobile internet applications. It is important that efforts to promote mobile internet literacy and digital skills acknowledge these usage differences and build on familiar mobile concepts like messaging, rather than simply trying to reinforce PC-based internet concepts.

3 **Women face barriers to learning on their own.**

Most women rely on their social circle or mobile phone agents for initial set-up, but a significant proportion of participants, especially younger women, said that where possible, they would like to learn to use the internet by experimenting on their own. However, when they tried to learn in this way, they confronted a variety of barriers. Participants often did not have enough opportunities for trial, and were afraid of losing money if they experimented too much. The design and usability of mobile internet applications, especially complex login and password recovery processes, and inconsistent and unintuitive terminology and iconography, were also roadblocks to learning. Finally, and importantly, many non-users of mobile internet did not understand the utility of the internet and, as a result, had no incentive to invest in learning mobile internet skills on their own. Our sample did not include illiterate users, who are likely to face even more formidable barriers to independent learning; this will need to be studied in greater detail.

Key Findings (Continued)

- 4 Across the three countries, the women we interviewed appeared to rely heavily on their social circles, including family and friends, especially for set-up, troubleshooting, and discovering new applications and services.** There were, however, several drawbacks to relying on these learning channels. First, people in women's social circles often had very limited knowledge themselves, and were unable to suggest relevant content beyond one or two widely known applications. They also did not usually have an incentive or sufficient knowledge to transfer their skills. Second, family members sometimes actively discouraged women from learning about mobile internet due to negative perceptions of women using the internet.

- 5 It was uncommon in all three countries to seek learning assistance from community resource persons, such as local mobile phone retailers, except at the time of purchase and set-up.** In India and Indonesia, women seldom approached mobile phone agents directly, due to cultural norms and lack of easy access, respectively. In Kenya, women often had to pay a fee to consult local retailers. Moreover, these agents had no incentive to take the time to teach their customers, and often set up phones without educating their customers at all.

- 6 Most of the women we interviewed had not received any formal training in how to use the internet, but even those who had still had limited skills.** In Kenya and India, a few women had taken computer classes, but these classes did not include internet use. In contrast, most young women we interviewed in Indonesia, where basic internet education was introduced to junior and senior high school curriculums in 2006, had studied the topic in school. However, even in Indonesia, the curriculum was generally limited to basic concepts like search and email. None of the internet training in the three countries included specific use cases (e.g., job search) that women would value.

Given these complex, varied, and interrelated barriers, a multi-stakeholder approach is required to improve women’s digital literacy and mobile internet skills.

Mobile network operators (MNOs), donors and non-profits, governments, handset manufacturers and handset operating system (OS) developers, internet application and service providers, and academic and research organisations could all contribute and collaborate to help more women gain the skills they need to use mobile internet effectively. This report provides practical recommendations for these various stakeholders to enable women’s learning, including:

- Supporting women to learn on their own;
- Leveraging women’s social circles as a learning channel;
- Expanding learning through community resource persons, including mobile phone and network agents;
- Emphasising mobile internet in schools and ICT training;
- Improving design and usability;
- Creating incentives to learn; and
- Deepening our understanding of how women learn to use mobile internet.

Although we found few examples of large-scale initiatives specifically focused on teaching women mobile literacy and digital skills for mobile internet, a number of organisations have begun to address this gap in developing countries.

In this report, we describe the efforts of MNOs like Telkomsel, Airtel, Idea Cellular and Uninor, which among others have launched programmes to help users overcome digital literacy barriers as part of a broader push to expand mobile internet usage in developing countries. We also profile on-the-ground training programmes by organisations like the Telecentre Foundation and ITU (International Telecommunication Union), Intel and Google, which aim to create safe learning spaces and locally relevant content to help women learn about mobile and internet technology. Finally, we present lessons in design and usability from the experience of grassroots non-profits that have created mobile-based applications for new users in developing countries with low literacy levels, including the Self Employed Women’s Association (SEWA), Grameen Foundation, and Cashpor.

Improving mobile literacy and digital skills for mobile internet is still an emerging area of research. This is therefore a foundational report, in which we provide some early insights drawn from primary research and the perspectives of practitioners and experts in the field. Our analysis and recommendations are meant to be a starting point, and should be further validated through larger studies, as well as testing, prototyping, and piloting the type of learning solutions we propose in this report.



I

Introduction

In developing countries, mobile phones are the most popular way to connect to the internet. The number of mobile internet connections in developing countries is roughly three times that of fixed-line infrastructure internet, according to the ITU (International Telecommunication Union).⁴ GSMA Intelligence estimates that in 2013, the number of people using mobile internet reached 2.2 billion — a number that is expected to grow to 3.8 billion by 2020, driven by growth in developing countries.⁵ Indeed, the next generation of unconnected individuals will connect to the internet for the first time through their mobile phones.⁶

It is well recognised that internet access has tremendous potential to empower women — economically, socially, and politically. In the words of the Executive Director of UN Women, internet access “enhances women’s economic empowerment, political participation and social inclusion through initiatives that support increased productivity and income generation, mobilization and accountability, as well as improved livelihoods and expansion of services.”⁷ Respondents to Intel’s 2012 Women and the Web survey, said that apart from expanding economic

and educational opportunities and enhancing social connectivity, using the internet provided them with “empowerment, confidence, a sense of connection and participation, even a feeling of liberation”.⁸

However, women still lag behind men in both mobile phone ownership and mobile internet usage.

According to GSMA’s recently released report, Bridging the Gender Gap: Mobile access and usage in low- and middle-income countries, which surveyed 11,000 men and women in 11 low- and middle-income countries, women in these countries are, on average, 14% less likely to own a mobile phone than men. In South Asia, women are 38% less likely to own mobile phones than men. In addition, female mobile phone owners are less likely to access mobile internet than male mobile phone owners in 9 of the 11 survey countries (Figure 2).⁹ This gap varies significantly across countries, but is particularly wide in Kenya, India, Indonesia, the Democratic Republic of Congo, and Niger. GSMA’s findings are supported by data from the ITU, which suggests that women are 12% less likely to use the internet (both mobile and fixed-line) than men.¹⁰

4. ITU, 2014, “Global ICT Statistics”.

5. GSMA Intelligence, Q4 2014.

6. GSMA, 2014, “Digital Inclusion”.

7. Intel, 2012, “Women and the Web: Bridging the internet gap and creating new global opportunities in low and middle-income countries”.

8. Ibid.

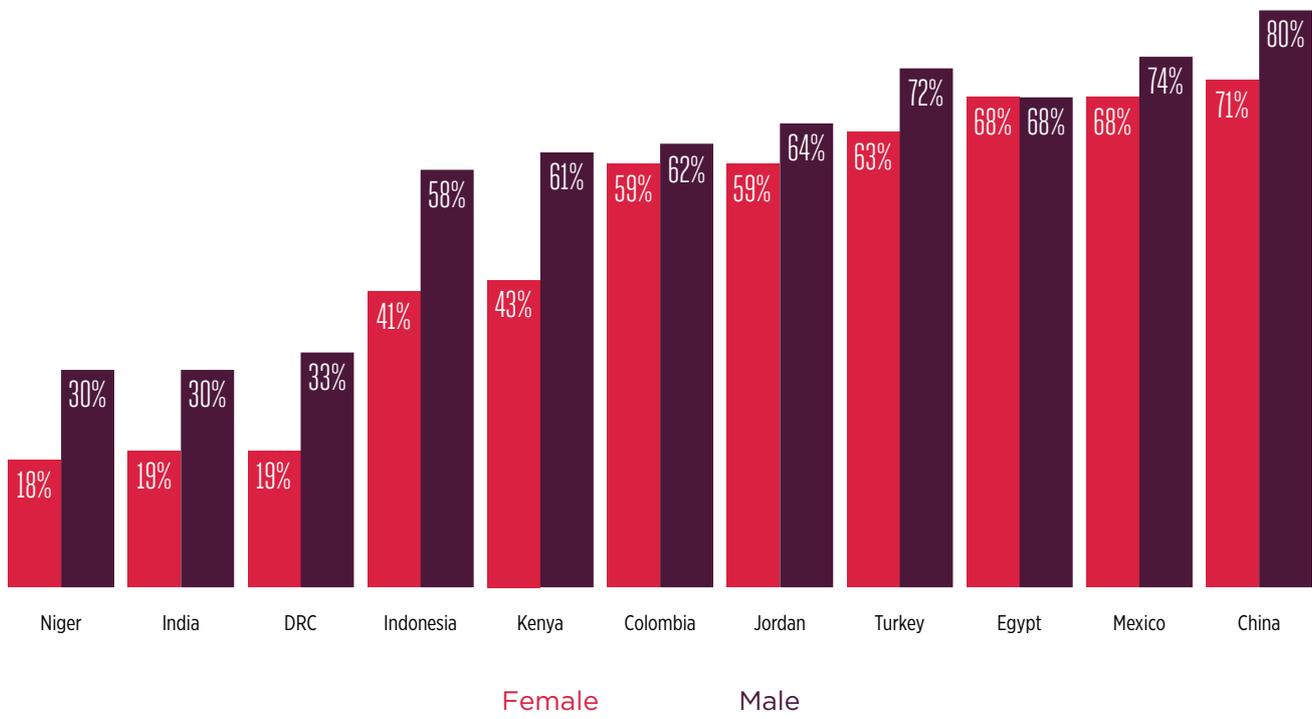
9. GSMA Connected Women, 2015, “Bridging the Gender Gap: Mobile access and usage in low- and middle-income countries”. The gender gap in mobile ownership is defined as: (Male phone owners (% of male population) – Female phone owners (% of female population)) / Male phone owners (% of male population). A difference of +/-4% between male and female response rates is considered significant.

10. ITU, 2014, “The World in 2014: Global ICT Statistics”.



Figure 2

Percentage of male and female mobile phone owners who report they have accessed mobile internet¹¹



Low mobile literacy and a lack of digital skills are significant barriers to women’s mobile internet usage. GSMA’s Bridging the Gender Gap study analysed a number of different barriers to women’s mobile phone access and usage. Male and female respondents from 11 countries were asked the “extent to which certain pre-determined barriers were preventing them from: 1) using a mobile phone more often or for a greater variety of purposes (if they already owned a mobile phone); or 2) using a mobile phone altogether (if they did not own a mobile phone).” Technical literacy¹² and, related to that, self-confidence in using mobile phones, was the fifth greatest barrier to usage among female mobile phone owners, after cost, network quality and coverage, security and harassment, and operator or agent trust. Among female non-

owners, technical literacy was the fourth greatest barrier to ownership, behind cost, network quality and coverage, and operator/agent trust. Figure 3 shows the percentage of male and female respondents across the 11 countries who agreed or strongly agreed that various aspects of technical literacy and confidence were preventing them from either using a mobile phone more often or for a greater variety of purposes, or from using a mobile phone altogether. These are issues for a large proportion of men and women in most countries, but they are more acute barriers for women, in part because women also tend to have lower literacy and education levels than men. Indeed, the report found that less educated women were more likely to report experiencing the range of challenges associated with technical literacy and confidence.¹³

11. GSMA Connected Women, 2015, “Bridging the Gender Gap: Mobile access and usage in low- and middle-income countries”. Shows percentage of male and female mobile phone owners who, when asked “When did you last use a mobile to use the internet on a mobile phone”, gave the following responses: “Yesterday”, “In the past 7 days”, “In the past 30 days”, “More than 30 days ago”. N ranges from 330 to 807 for females and from 133 to 234 for males.

12. GSMA Connected Women, 2015, “Bridging the Gender Gap: Mobile access and usage in low- and middle-income countries”. The report defines technical literacy as the “ability to use a mobile handset and the variety of services available on it to full benefit”.

13. GSMA Connected Women, 2015, “Bridging the Gender Gap: Mobile access and usage in low- and middle-income countries”.

Figure 3

Percentage of female and male respondents who cited technical literacy and confidence-related barriers to using mobile phones¹⁴



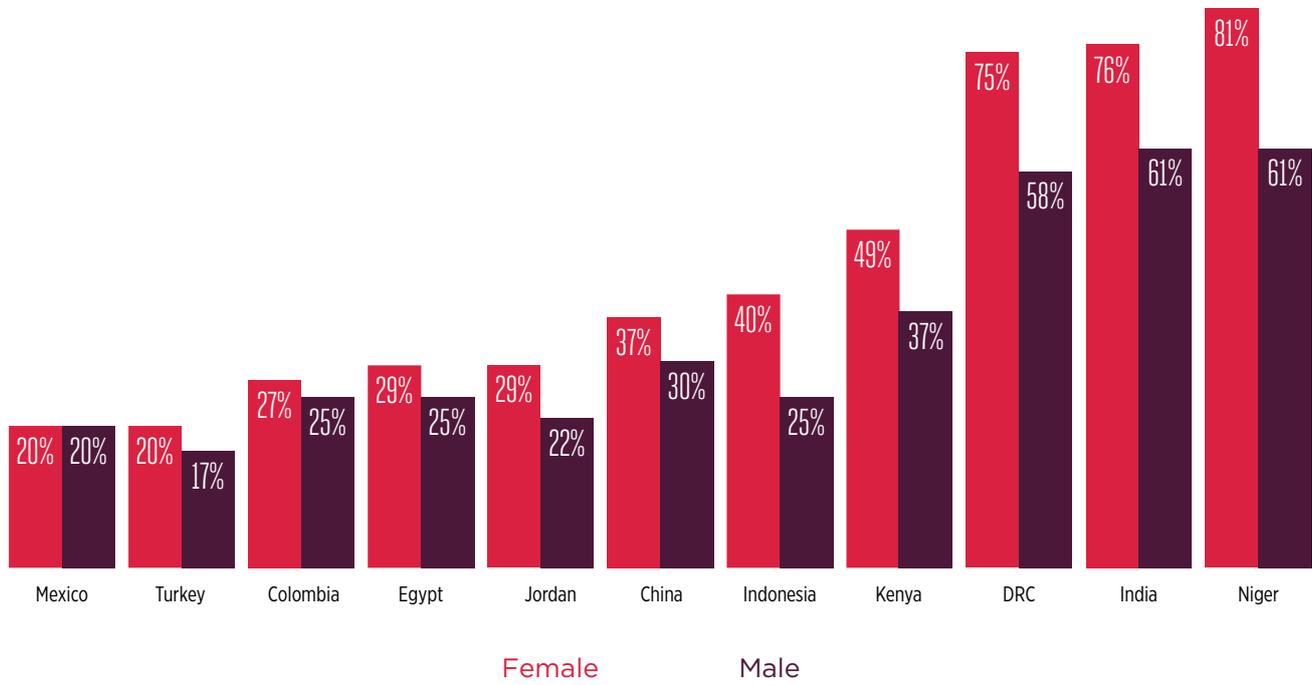
A significant proportion of women are unable to use mobile internet on their own. The GSMA study measured the percentage of male and female mobile phone owners who reported needing help with mobile internet (Figure 4). In 7 of the 11 countries, a higher

percentage of women than men said they needed help or would need help. The difference between men and women varies across countries, but is particularly great in Democratic Republic of Congo, India, Indonesia, Kenya, and Niger.¹⁵

14. GSMA Connected Women, 2015, "Bridging the Gender Gap: Mobile access and usage in low- and middle-income countries". The figure shows percentage of respondents who agree or strongly agree with Q.55: "Now we are going to talk about some possible reasons that might be preventing you from using a mobile phone or using a mobile phone more often or for more varied usages than you are today. Please tell me the extent to which you agree or disagree with the following statements?"; "I don't know how to use a mobile phone/how to use the more complex features of my mobile phone"; "I have trouble reading and/or understanding handsets and/or content language"; "I am worried that I would make a mistake with my mobile phone and lose money". For each barrier in each country, N = 756 to 863 for women and N = 192 to 312 for men.
 15. GSMA, 2015, "Bridging the Gender Gap: Mobile access and usage in low- and middle-income countries". The figure shows percentage of mobile phone owners who said they needed help to "Use the internet on a mobile phone". N ranges from 250 to 779 for females and 110 to 219 for males. Only a difference of +/-4% between male and female response rates is considered significant.

Figure 4

Percentage of male and female mobile phone owners who reported they need help using mobile internet¹⁶



It is difficult to estimate the precise number of women in developing countries who face mobile literacy and digital skills challenges when accessing mobile internet. First, there is no globally representative data on the use of mobile internet among women in developing countries. Second, few studies have sought to document the specific skills of women who access mobile internet. Further research on these issues will provide better insight into the actual scale and depth of the problem. However, the importance of mobile literacy and digital skills to women's mobile internet usage, and internet usage more broadly, is corroborated by data from various other sources:

- In a 2014 Google survey of 5,000 women in Asia Pacific, **30% who had not used the internet said it was because they “don't know how to do the things they'd want to do online”**. Another 35% said it was because they “doubt it would be of use to them” which, as we explore later, is an awareness barrier closely related to lack of skills.¹⁷
- Intel's 2012 Women and the Web report found that **37% of women who did not currently use the internet** said it was because they were **not comfortable/familiar with the technology**, or because there was **no one to teach them** about it.¹⁸
- A study by GSMA and Qualcomm on the usage of broadband phones by working women identified **“smartphone complexity” as one of the top three barriers** preventing women from acquiring internet-enabled phones.¹⁹
- A research study by the Grameen Foundation in India, found that **only 36% of women surveyed were able to use a mobile phone independently**.²⁰

16. GSMA, 2015, “Bridging the Gender Gap: Mobile access and usage in low- and middle-income countries”. The percentage of mobile phone owners who said they they needed help or would need help to “Use the internet on a mobile phone”: N = 250 to 779 for women and N = 110 to 219 for men.

17. Google, 2014, “Women Will: Closing Asia's Digital Gender Gap”.

18. Intel, 2012, “Women and the Web”.

19. GSMA mWomen, Qualcomm Wireless Reach, Vital Wave, 2012, “Transforming Women's Livelihood through Mobile Broadband”. For the purposes of the study, smartphones were defined as a device that can access the internet, while a feature phone cannot.

20. Grameen Foundation, 2012, “Women, Mobile Phones and Savings”. N = 64.

As more women connect to mobile internet, overcoming the barriers of low mobile literacy and digital skills will be critical to becoming independent users.

Whereas issues such as cost, connectivity, and women's access to mobile internet within households continue to be major barriers, the tide of technological advancement holds the promise of bringing many more unconnected women online in the coming years. First, smartphone prices are likely to continue to drop.²¹ Second, network connectivity will continue to improve.²² This is not to say that issues of access and affordability will cease to exist, or that the gender gap in mobile internet will close on its own. Indeed, for a large proportion of women, these will remain the primary barriers to coming online, and proactive efforts will be required to overcome them. Rather, the point is that mobile internet will bring many first-time women users online, and addressing the barriers of skills and understanding will be critical in enabling these new users to harness the power of the internet.

Although there have been extensive efforts to understand mobile phone usage in developing countries,²³ women's mobile literacy and digital skills in the context of mobile internet is still an emerging area of research. Therefore, this report aims to:

- **Understand mobile literacy and digital skills in the context of mobile internet usage**, including insights into the specific functions of mobile internet that require literacy and digital skills, and the challenges women face in performing these functions.
- **Identify the barriers and incentives** that affect women's ability to acquire the knowledge and skills they need to use mobile internet, especially in the context of learning pathways and channels for mobile internet.
- **Provide suggestions for key stakeholders in the mobile ecosystem to address these barriers**, including mobile network operators (MNOs), donors and non-governmental organisations (NGOs), governments, academic and research organisations, handset manufacturers and handset operating system (OS) developers, and internet application and service providers.

Our research is based on a series of in-depth human centered design (HCD) interviews and user tests with more than 80 women in three countries: Kenya, India, and Indonesia. These countries were selected because of their large populations and diversity in mobile phone ownership and mobile internet access. Across these three countries, we spoke to women of varying literacy levels (semi-literate to fully literate) and mobile internet usage levels (users and non-users). **To avoid conflating lack of access to mobile phones with a complete lack of awareness of the internet, we selected individuals who had access to a shared or owned mobile device, and had some basic awareness of mobile internet.**

Our research therefore did not cover the poorest women, who often lack access to mobile phones entirely, or are completely illiterate and lack numeracy skills. These women likely have unique mobile literacy and digital skills challenges, and should be a focus of future research. Our primary research was supported by a desk review of over 100 documents, as well as interviews with more than 30 experts in the sector.²⁴

21. According to the International Data Corporation's (IDC) Worldwide Mobile Phone Tracker, average worldwide smartphone prices fell by 9% each year from 2010 to 2014. Prices are expected to continue falling by 5% worldwide and 7% in emerging markets every year until 2018 (International Data Corporation, 2014, "Worldwide Smartphone Growth Forecast to Slow from a Boil to a Simmer as Prices Drop and Markets Mature, According to IDC"). In addition, according to GfK, prices in 2014 reached USD 30–50 in the top 10 emerging markets (Telegraph UK, 2014, "Emerging markets will lead smartphone growth next year").
 22. At the end of 2014, about 68% of the developing world population was covered by 3G and about 15% by 4G networks. GSMA Intelligence predicts that by 2020, these figures will be 84% and 58%, respectively (GSMA Intelligence, Q4 2014).
 23. iHub Research, 2012, "Mobile usage at the Kenyan base of pyramid"; YouGov, 2013, "Emerging markets mobile attitudes report"; 2013; LinerAsia, 2012, "Teleuse@BOP4: Preliminary findings", Research ICT Africa, 2012, "Internet Going Mobile: Internet access and usage in eleven African countries".
 24. See Appendix: Methodology for more details.

II

Understanding mobile literacy and digital skills in the context of mobile internet

DEFINING MOBILE LITERACY AND DIGITAL SKILLS FOR MOBILE INTERNET USE

One of the key objectives of this research was to identify the specific skills required for effective mobile internet usage, and to understand which skills were particularly challenging for the women we interviewed. But first we had to answer: What do mobile literacy and digital skills mean, especially in the context of mobile internet?

To assess the participants' overall ability to use mobile internet, we defined five functional and necessary skills: **Set-up, Search and Navigate, Consume and Evaluate, Create and Share, and Configure and Manage**. Mobile internet users require these skills to discover new services or applications on the internet (e.g., to access a browser or an application store), and to use specific services and applications (e.g., within Facebook). We then consulted the five stages of digital literacy

for mobile phone usage defined in the GSMA's 2014 Digital Inclusion report.²⁵ Although we tested aspects of both basic and technical literacy in our research, our functional skills classification focused on breaking down all aspects of 'mobile internet literacy', as well as some elements of 'advanced mobile internet literacy' into specific functions or skills that could be concretely tested with users and non-users of mobile internet (Figure 5).

25. GSMA, "Digital Inclusion", 2014.



1 Set-up: This includes acquiring and using a data plan, setting up internet access on a phone and downloading applications and services (e.g., Facebook), and signing up for these services and applications.

2 Search and Navigate: This refers to the ability to search and navigate within a mobile internet service or application. For example, this could involve searching for contacts on WhatsApp or Facebook. At a more advanced level, users would be able to apply the search and navigation skills learned in one service to other, unfamiliar services. For example, a user who can search for friends on Facebook should also be able to search for content on Google or YouTube.

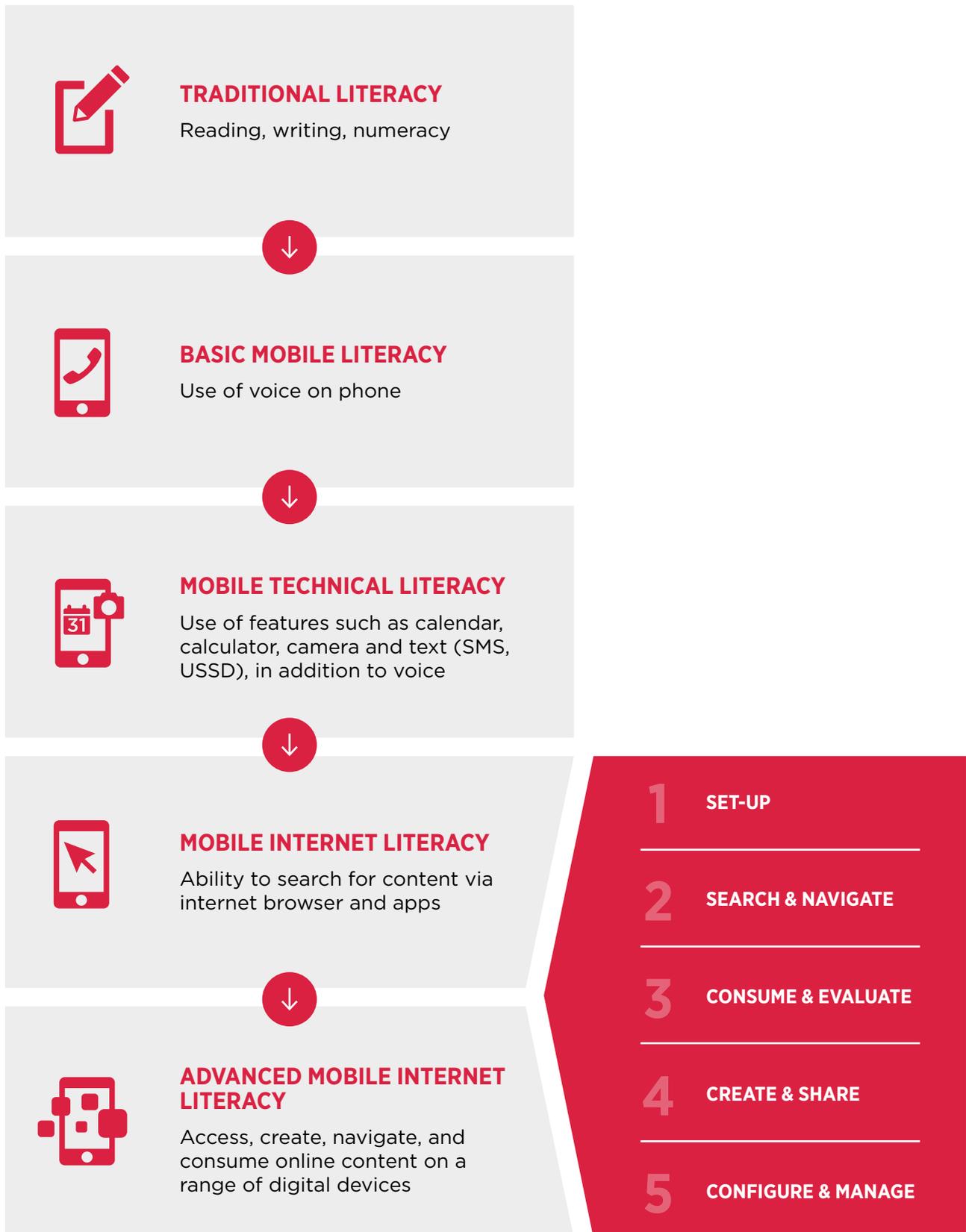
3 Consume and Evaluate: At a basic level, a user would understand there are different sources and types of content on the internet (e.g., understand the differences between advertisements, crowd-sourced comments, and news articles). At a more advanced level, the user would be able to discover new and useful services, applications, and information, and then determine the extent to which they can trust this content.

4 Create and Share: This refers to a user's ability to create tailored content for an online interaction and then share that content with a particular audience. For the purpose of this study, we adopted a broad definition of the term 'content creation' to include messaging, as well as posting on an online forum (e.g., posting status updates on Facebook or commenting on news items). At a more advanced level, a user would be able to create content for a broader audience, not just for one's own social network.

5 Configure and Manage: This skill includes the ability to update settings and preferences for one or more internet services (e.g., adjusting privacy settings on Facebook). At a more advanced level, it includes the ability to configure new services and applications independently. The ability to manage multiple digital identities and critical risk factors related to internet use, such as privacy and harassment, are also a part of this skill. However, given the skill levels of our target segment, we did not test these advanced skills extensively in our research.

Figure 5

Stages of digital literacy in using a mobile device





CURRENT SKILLS AND CHALLENGES IN MOBILE INTERNET USAGE

Non-users of mobile internet: Current skills

Overall, our sample was split evenly between women who used mobile internet (about 50%) and those who did not use it (about 50%). Levels of mobile usage and internet awareness among non-users in our sample differed across countries, particularly in terms of their level of comfort and ‘digital readiness’ to shift to mobile internet. The observations below are based on our findings from a limited number of interviews, and should not be generalised to all women in these three countries. However, they provide interesting insights into the usage patterns and skills of non-users.

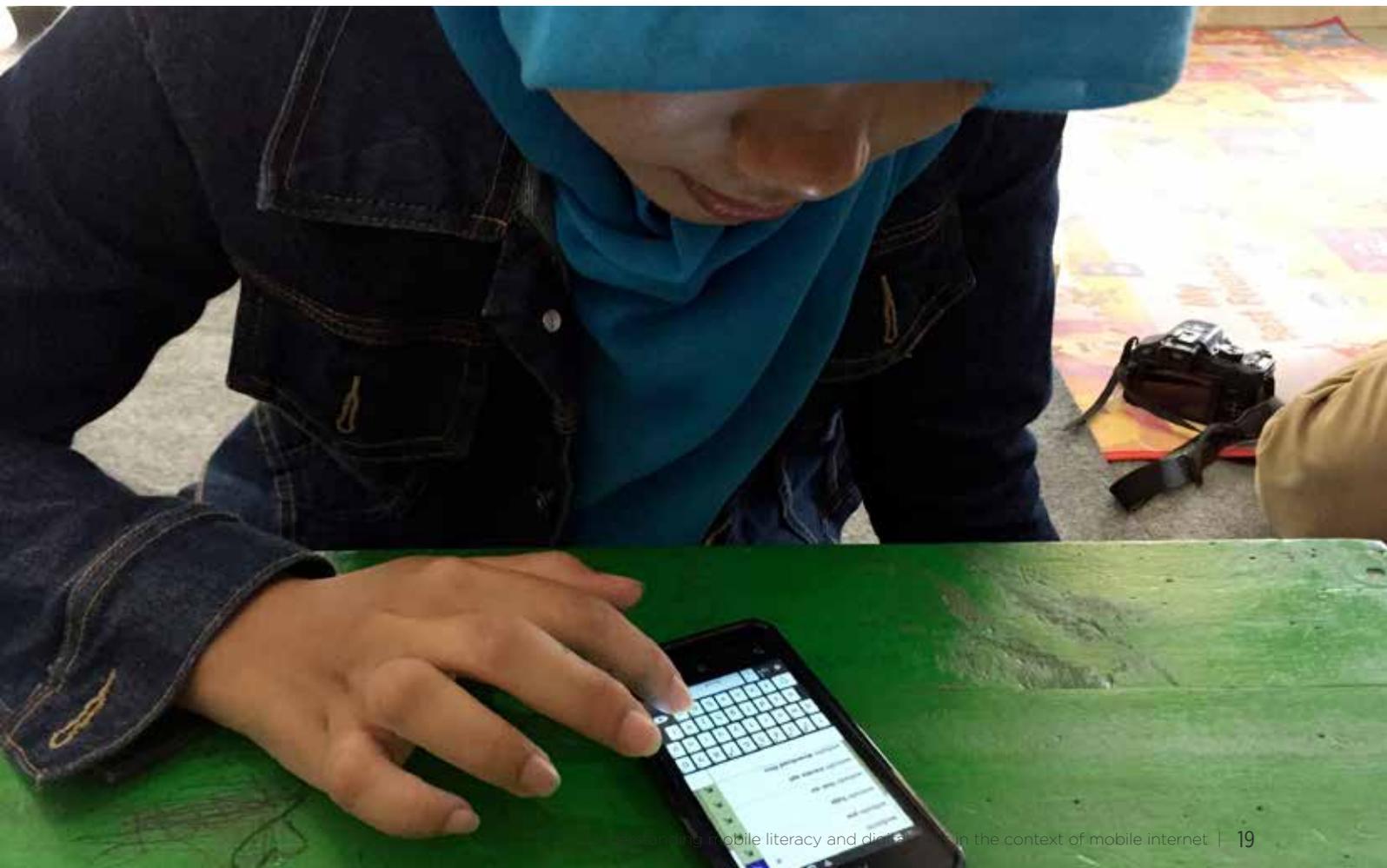
- In Kenya, the non-users in our sample used their phones mainly to make phone calls and access their contact lists, but were also comfortable with other features like SMS, radio, and the clock. Notably, the majority of non-users we interviewed were regular users of M-Pesa (a mobile phone-based money transfer and microfinancing service) and, in some cases, M-Shwari (a savings and loan product). Most urban non-users had seen other people using mobile internet, and a few had tried using mobile internet on someone else’s phone. Rural non-users usually did not have anyone around them who used mobile internet regularly, but a few had seen or tried it. In both groups, most women were aware of Facebook, Twitter, and WhatsApp, but little else.
- In India, the non-users we interviewed in both rural and urban areas used their mobile phones mainly to make and receive calls, access their contact list, and listen to music. In urban areas, awareness of internet services among non-users was fairly low, even though most of them knew of someone in their immediate social circle who used mobile internet. Awareness of mobile internet was even lower among rural women, who reported knowing very few people who used the internet at all.
- In Indonesia, non-users of mobile internet in both rural and urban areas used their mobile phones for phone calls, SMS, and other features such as the clock and radio. Awareness of internet services was high among both rural and urban non-users in our sample, who identified internet services like Google, Facebook, and BBM without being prompted. Many had seen their children, friends, or family members use the internet.

However, non-users of mobile internet in all three countries had otherwise limited knowledge of mobile internet. Many did not know whether their feature phones supported the internet and believed only smartphones could access the internet. During user tests in India and Kenya, many users scrolled over the ‘globe’ internet browser logo and still insisted that their phone did not support internet usage. Also, few non-users understood how data plans worked.

Users of mobile internet: Current skills

Among the users of mobile internet we interviewed, patterns of mobile internet usage also varied across the three countries. Again, these findings should not be generalised to all women in these countries.

- In Kenya, among both urban and rural users, awareness of internet usage was predominantly limited to Facebook, WhatsApp, and YouTube. A few users were also aware of Google, Gmail, and OLX. Predictably, Facebook was the dominant entry point to mobile internet for both urban and rural users. A few users had also tried WhatsApp and Google searches.
- In India, among urban users in our sample, Google search and WhatsApp were the most widely known services, but participants also mentioned social media (Facebook, Twitter), online shopping (Amazon, SnapDeal), browsers (Opera Mini, UC Mini), and entertainment (YouTube). WhatsApp was the most commonly used application, followed by Google search, which was used mainly for song downloads. Notably, only a few users in this group used Facebook. Among the rural users we interviewed, there was limited recall of internet brands, but participants mentioned online shopping, education, and entertainment as familiar uses. However, their usage was limited to an occasional Google search to find music or videos. Only a few of the users had used WhatsApp.
- In Indonesia, both rural and urban users had greater awareness of internet services than those in the other two countries. Users mentioned services like email (Google, Yahoo), social networking (Facebook, Instagram, Path, Google Plus, and Twitter), communication (WhatsApp, Line, Skype, Snapchat, and BBM), online forums (Kaskus), and entertainment (YouTube). In terms of usage, young users seemed to primarily use multiple social media and messaging platforms, with BBM being the most popular. Most users had also used Google search for schoolwork. Among the few older users we interviewed, usage was limited to Google searches for children's education and BBM for communication.



Key Findings

In each country, we tested users in each of the five functional skills described earlier. Our key findings are outlined in Figure 6, below.

Figure 6

Functional skill levels of mobile internet users in our sample: Key findings





1 SET-UP

In all three countries, we observed that the majority of mobile internet users struggled with the skills they needed to start using the internet on their phones.

- **Acquiring a data plan:** All but a couple of the mobile internet users we interviewed used data bundles or packs. However, in all three countries, virtually all users found it difficult to understand conventional data pricing models based on the volume of data they used (e.g., INR 150 for 500 MB of 3G data). This reduced women's overall comfort with mobile internet and discouraged experimentation because they did not understand the link between usage and spending, and were therefore afraid of losing money. We explore this issue in more detail in Section III.
- **Setting up internet access:** In all three countries, the majority of mobile internet users relied on 'helpers' to set up internet on their devices. In Kenya, this helper was often a local mobile services agent.

In India and Indonesia, it was often a relative or a friend. On feature phones, helpers often created shortcuts to the services the woman used most. On smartphones, they often downloaded a suite of popular applications and arranged the icons on the home screen.

- **Signing up for internet services:** In all three countries, this task was typically outsourced to helpers. In user tests, when asked to sign up for a new service on their own, we observed that participants from every country struggled to create usernames and passwords in the format the application required. We also came across quite a few users in every country who had forgotten or misplaced their IDs or passwords. None of them was able to recover the password, mainly because password recovery typically required having a functional email, which they did not use.



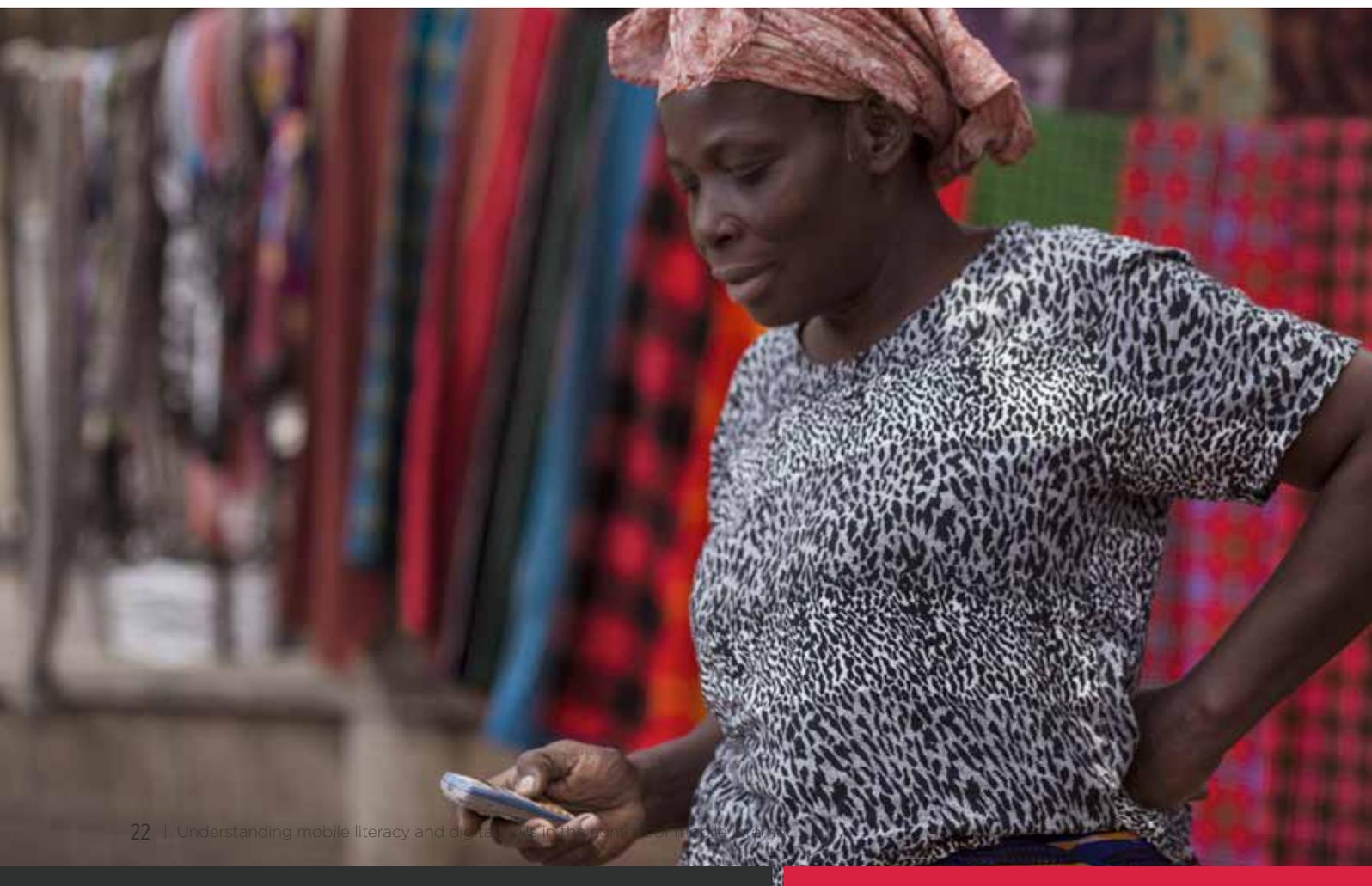
2 SEARCH AND NAVIGATE

Most mobile internet users we tested were able to initiate and navigate within the applications they were comfortable with, but often struggled to apply this skill to unfamiliar applications.

- Search and navigation within familiar services and applications:** In urban areas of India, and in urban and rural areas of Kenya and Indonesia, the mobile internet users we interviewed seemed quite comfortable querying and navigating the services they were familiar with (e.g., using the search tab to find friends, or moving from the profile page to the news feed on Facebook). However, applying these skills to unfamiliar applications was a challenge. For instance, one smartphone user in Kenya did not recognise the search icon (magnifying glass) in the Google Play Store, even though she knew how to search for friends on Facebook. Not being able to understand and apply common navigational tools appeared to be more common among users

who had only used one or two mobile internet applications or services on the mobile internet. In rural India, we observed that users had a limited skill set even within services they were familiar with, such as Google search.

- Using broader navigation concepts:** Navigation concepts like 'browsers', 'hyperlinks', 'URLs', 'websites' and 'applications' were unclear to most mobile internet-only users we interviewed. In all three countries, most users accessed services through pre-installed shortcuts in the browser, and applications through shortcuts in their feature phone menus or on their smartphone screens. For example, one user in Kenya who had only used Facebook before tried Google search in the user test, and was unable to understand the difference between the text in black (plain text) and in blue (hyperlinks).





3 CONSUME AND EVALUATE

Users in all three countries were generally able to evaluate the content they wanted to consume within familiar applications or services. However, they encountered various challenges in finding and assessing new and useful content on their own.

- **Ability to discover new services and applications:**

Few of the users we interviewed were aware of or used websites or applications beyond one or two popular applications like Facebook or Google. Most users said they relied on others' recommendations for new services or applications, and did not regularly use browsers, search engines, or application stores to find applications. In India and Kenya, the handful of users in our sample who used Google search used it primarily to download songs or find simple information, rather than searching for new services and websites. The use of application stores and browsers was not common. In Indonesia, smartphone users appeared to understand the difference between websites and applications, and were familiar with web browsers and application stores given their experience with using PCs. However, their use of mobile web browsers was limited mainly to Google search, and the use of application stores was limited. For example, one test user in Indonesia was interested in trying out a popular knowledge forum called 'Kaskus'. When asked to download it on the test phone, she said she would have to ask a friend first, but then reluctantly searched for 'definition of Kaskus' on Google. She

eventually gave up, admitting that she did not know whether it was a website or some other form of content.

- **Ability to find useful content:** In urban areas of India and in both urban and rural Indonesia, quite a few users had used Google search in the past, but still typically relied on the top links in the search results. This was sufficient if the purpose of the search was relatively simple, such as looking up the definition of a word. However, for more complex tasks, such as finding a job, the results could be disappointing. Even users who had used Google search before acknowledged that finding useful information was a challenge. For example, one test user in Indonesia used the search keywords 'job opening 2015' to look for a job on Google search, but was disappointed that all the results were outdated or did not fit her qualifications. Given the cost of data plans, trial and error searching was not appealing to users.
- **Ability to evaluate content:** The majority of users did not understand the same cues a PC internet user would use to determine whether or not to trust a particular search result or application. For example, most users we interviewed did not know that Google search results often included advertising links at the top. Likewise, none of the test users correctly guessed the meaning of star ratings of applications in the application store.



4 CREATE AND SHARE

We found that users' skill levels in content creation were determined primarily by the kinds of services or applications they were familiar with. Most users who used social media and messaging on applications such as Facebook, BBM and WhatsApp, were comfortable posting status updates and using chat. However, these users appeared to create and share content only within the context of social media.

- **Ability to create content within social media:** While most Facebook users we interviewed knew how to post status updates, some said that uploading photos was challenging due to the limitations of their mobile device. A significant number did not update their status very often, and instead focused on making more friends and reading other people's updates. In Kenya and India, where the users we interviewed used Facebook in English, those who did not have high levels of English literacy tended to post less. Users considered this type of content creation on social media to be quite similar to how they communicate with their phones. In Kenya, for

example, several Facebook users mentioned that Facebook was easy for them to understand since posting a status was like "sending text messages but to many people", and adding new friends was like "adding people in contacts". The main difference, they said, was that they could expand their list of friends or contacts beyond people they knew in person. In Indonesia, younger participants used their posts on social media as a form of communication, replacing text messaging or email.

- **Ability to create content for a broader audience:** The concept of posting content for unspecified viewers beyond their social network was unfamiliar to almost all users in the research. In Kenya, few users understood that individual users like themselves could upload YouTube videos. In Indonesia, none of the users was aware that their social media profiles could be found in Google search. In addition, none of the users in the research had a blog or online store. Email use was also rare.





5 CONFIGURE AND MANAGE (ADVANCED)

We observed that women's confidence and functional skills levels generally increased as they used more than one service or application. However, this confidence did not necessarily translate into comfort with configuring and managing services on an ongoing basis, since women's needs changed or they switched to new devices. Importantly, the women in our research had a limited ability to manage privacy and harassment issues on their own.

- **Limited understanding of how to manage privacy:**

Users in our research demonstrated different attitudes about privacy on the internet. In Kenya, all Facebook users in the research had public profiles and did not seem to be concerned about the possible misuse of personal data. They considered private profiles pointless because they wanted to use Facebook to find new friends. Several non-users mentioned they would be comfortable posting their personal details, including their national ID number, on Facebook to look for jobs. In contrast, in India, several women were reluctant to join Facebook as they were afraid of the possible misuse of their personal details, especially their photos. In Indonesia, some users believed that Facebook had too many 'undesirable' contacts and advertisements, but these users did not change their Facebook profile settings or remove unwanted contacts from their friends list.

- **Limited knowledge of managing multiple digital identities:**

In Indonesia, we interviewed several smartphone owners who had multiple social media accounts. However, they did not know how to distinguish between them across multiple platforms and coordinate their digital identities accordingly. For instance, some users wanted to create an online business on Facebook, but none considered creating a separate account to separate their private and business conversations. Similarly, none of the users

understood the notion of anonymous use of the internet. One test user in Indonesia who signed up to knowledge forum Kaskus asked, "How will anyone read my post if I do not have any friends on this?" When signing up to a service, most users used their real name and few understood what 'username' meant.

- **Inability to manage content concerns:** In all three countries, several users and non-users we interviewed felt anxious about not being able to filter undesirable content on the internet, either to protect their children or to honour their religious principles. However, none were aware of parental control and content filter options available through an internet search or in application stores.

Therefore, whereas mobile internet users in our sample had different comfort levels with these functional skills, our overall finding was that most appeared to be stuck on 'application islands'. They would begin their internet journey with one or two popular applications, become familiar and comfortable with them, but then learning and exploration would stop. The users we spoke with seemed to hit a mental wall when trying to apply their skills to new services and applications. Instead, they would find ways to have their needs met through the few applications they already knew. For example, users of Facebook or BBM used these services as their default search engines, posting questions to their social contacts, or as online marketplaces to post and sell goods. In effect, users did not actively seek out other applications unless prompted or encouraged by someone in their social circle. For example, users who looked for jobs on Google search did not know there were dedicated job websites.

Moreover, in our focus group discussions, we found that both users and non-users had a vague understanding that the internet could do a lot of things, but often had trouble identifying what these uses could be beyond what was commonly used around them, or what was advertised heavily in their markets. This limited view of the internet was reflected in their responses to the question, “What do you think the internet is?” For example, many Facebook users we spoke with in Kenya thought the internet was a place for people to communicate. In all three countries, participants lacked an understanding of both the different types of content available online (e.g., communication, entertainment, and education), as well as the sheer volume of information.

In other words, mobile-only users lacked an accurate ‘mental model’ of the internet. A ‘mental model’ is a user’s individual theory of how a system or phenomenon works, which forms and evolves over time through the user’s interaction with the system.²⁶ Every experience a user has with the internet, whether positive or negative, informs and deepens this mental model, allowing them to assemble a coherent picture of how mobile internet works, what it can be used for, and how they might manage their relationship with the internet on an ongoing basis.

In traditional internet use on PCs, our mental model is generally grounded in the concept of web browsers, search engines, URLs, web pages, and websites. These concepts provide us with a mental picture of the breadth, depth, and variety of the internet. In contrast, the mobile internet users we interviewed view the internet in terms of the specific mobile internet services and applications they use. Since their use is limited to only one or two applications, their mental model is limited as well. However, as they use more services and applications, their mental model of the internet expands and strengthens. (Figure 7)

Although we spoke with a number of women who understood these PC-based internet concepts—through exposure to a PC at an internet café, school, or neighbour’s house—for most women, these concepts were not relevant to how they used their mobile device. Web browsers did not integrate with the applications and services they use regularly. General web search results were not found to be very useful when they were not targeted to the needs of the user, and when the source of the information was not immediately identifiable, as it was in a social network or messaging platform like Facebook or BBM. Hyperlinking

were not used consistently within mobile internet applications and services. When resources were limited and data was an expensive commodity, many mobile internet users we interviewed saw little benefit in learning these concepts on mobile devices.

Given the differences between using the internet on a mobile and a PC, it is important that efforts to promote women’s mobile internet literacy and digital skills focus on mobile usage, not simply transferring knowledge of PC-based concepts. Instead, we should seek to build on familiar mobile concepts that have emerged through the heavy use of messaging and communication applications. It is not an overstatement to say that social media and messaging, whether Facebook, WhatsApp or BBM, have become the default entry point to the mobile internet. These social platforms often serve as web browsers or application stores, with people using these services to discover, create, and share new content.

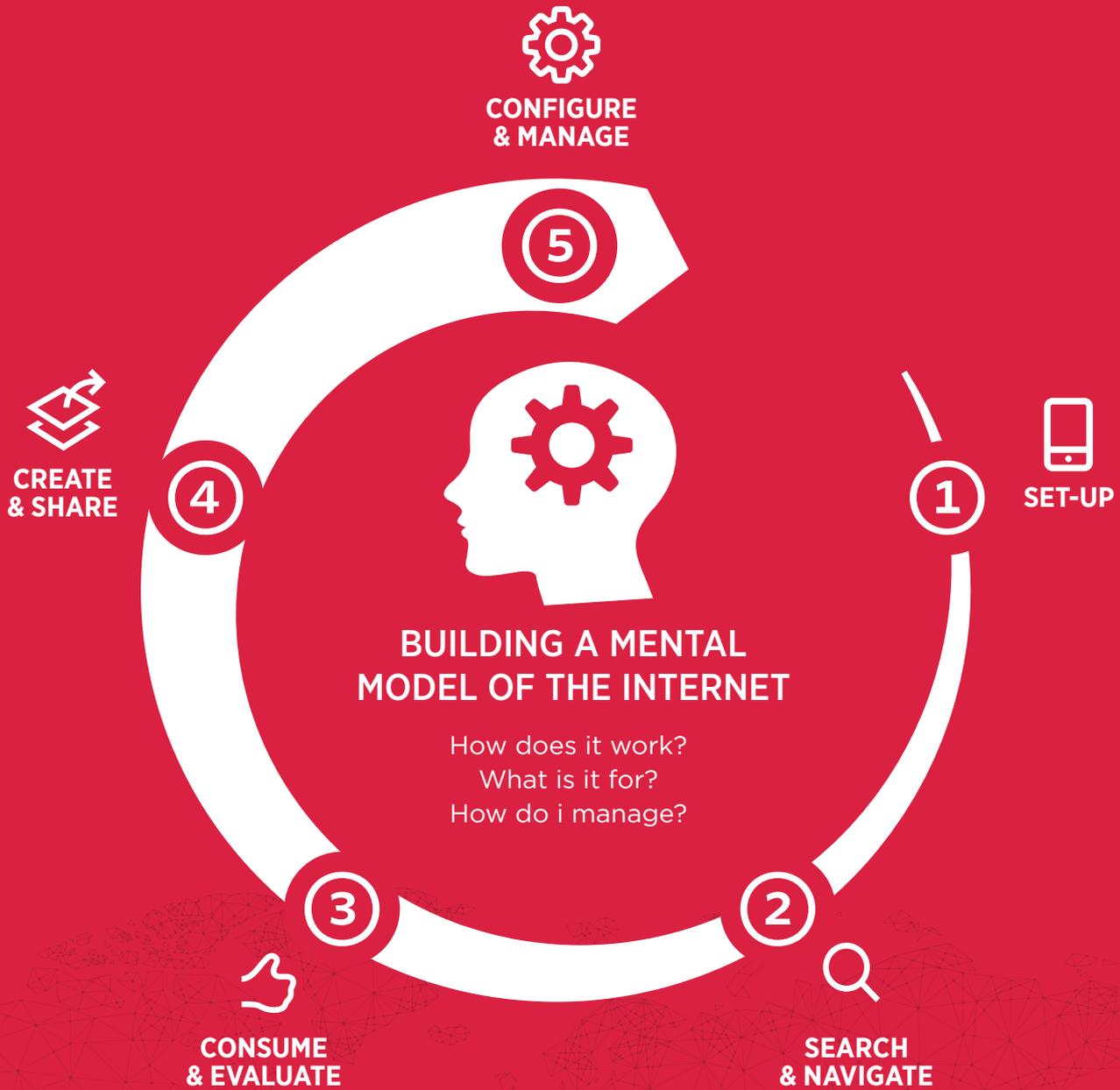
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26. Don Norman, 1983, “Some observations on mental models”, in Dedre Gentner and Albert L. Stevens, eds., *Mental Models* (Psychology Press).

Figure 7

Building a mental model of the internet through usage



III

Barriers to mobile literacy and digital skills for women

We observed four channels or pathways through which women acquired mobile literacy and digital skills. The first is independent learning, whereby a woman explores and teaches herself mobile phone functions and tools. The second is learning through her social circle, such as a husband, children, or trusted friends and family. As we explain below, both pathways are understandably very common—she does not need to pay, learn in a less familiar language, or even leave the house—but these channels do have shortcomings. The other channels are community resource persons, such as mobile agents or other service providers, and formal training and education channels, such as formal classes. Women frequently combine these channels, perhaps learning initially from their social circle and then learning other skills on their own.

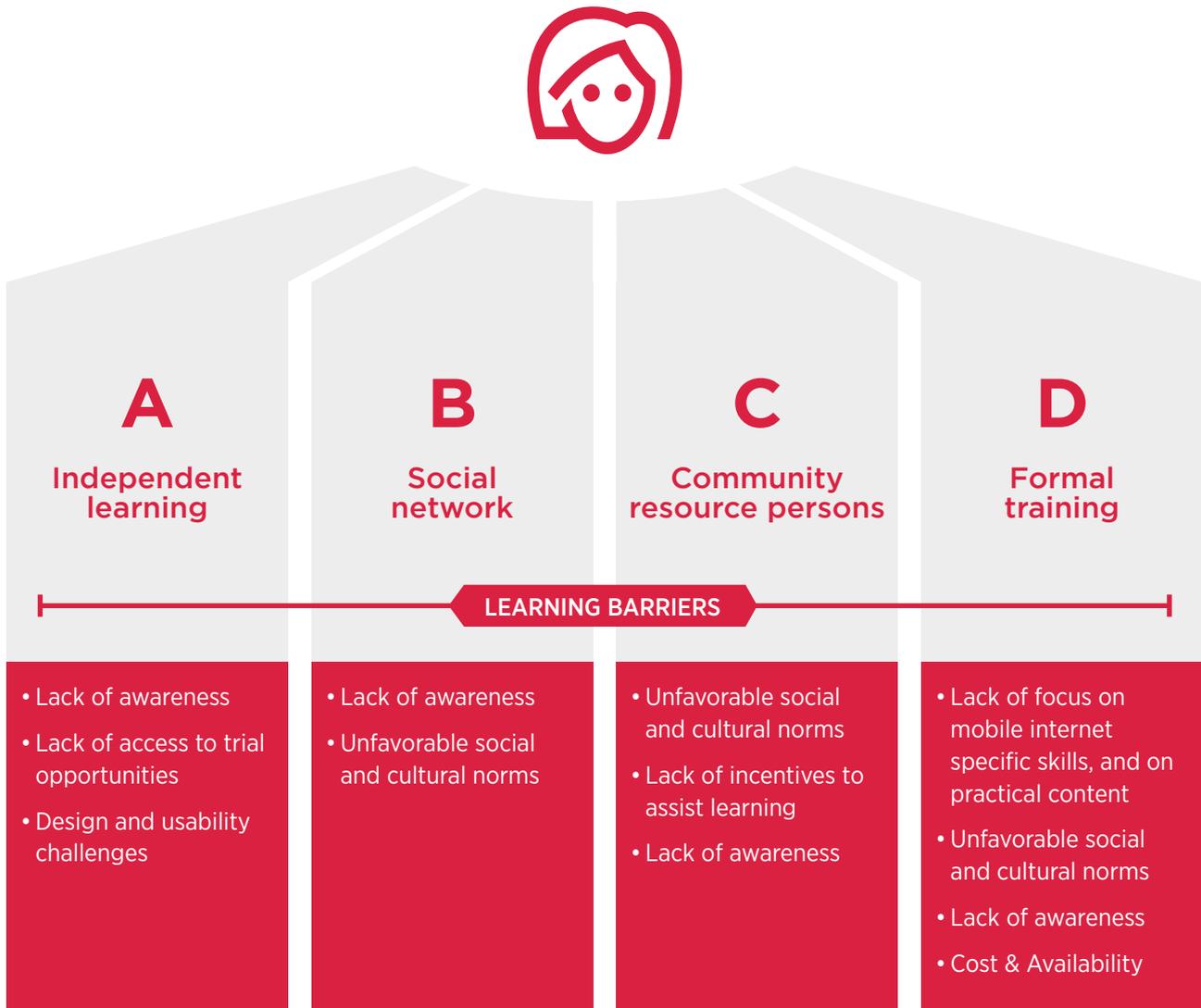
Each of these paths can be blocked by a number of barriers that keep non-users from learning the skills they need to begin using mobile internet, and women who already have some access to mobile internet from moving beyond basic skills and deepening their engagement. These barriers differ by learning channel and in two main ways:

1. Each barrier applies only to a subset of the learning channels. For example, interface design challenges are less relevant when a helper is doing the teaching.
2. Each barrier manifests in different channels in different ways. For example, cultural norms that inhibit a woman from learning from friends and family are very different than the norms that keep her from seeking out guidance from a male mobile agent.

In Figure 8 we map the primary barriers women face in trying to use a particular learning channel. In Figure 9, we provide examples of participant personas to illustrate various paths to adoption, and bring to life the barriers that impede their learning. In this section we discuss in detail how each barrier is manifested within each channel.

Figure 8

Mobile internet learning channels and associated barriers





Independent learning

It is hard to imagine picking up a new skill without spending some time learning on one's own. This is no different for the women in our research. While most women relied on mobile service agents or someone in their social circle for the initial set-up of mobile internet on their phones, a significant number said they would like to learn on their own, if possible. Some women had taught themselves to use many features on their phones by experimenting with various buttons and icons. For some women, independent learning was appealing because they could learn on their own schedule—many were extremely busy with their jobs and housework. Other women were embarrassed to ask questions. Young users in our sample demonstrated the most willingness to learn independently. The exception was older, non-users of mobile internet in rural and urban India, who preferred learning from their children and family members instead.

Beyond experimenting on their own, this learning channel could also include using educational tools on the phone, such as a self-guided mobile internet tour. However, we were not able to identify users in our study countries who had tried such a tool, and did not find such a training tool in wide use.

It is important to emphasise that even though women may prefer independent learning, this does not mean it happens easily or on its own. In fact, our interviews revealed that women still faced a number of barriers to experimenting with mobile internet and acquiring new digital skills on their own. It is also important to note that our sample did not include illiterate women, who are likely to face formidable barriers to learning by themselves, and may not share the preferences of women in this research. Below, we describe some of the barriers that impede women's ability to learn independently.

Lack of awareness

User tests in our sample countries validated the findings of prior research: that women who are not already using the internet are, in general, unaware of the benefits. Many of the non-users we interviewed, who were usually older and married, were either completely unaware of the utility of the internet, or were unconvinced of the value of learning how to use it. Without these incentives, they were unlikely to invest in learning about the internet on their own.

- In urban India, the group of non-users we sampled consisted of busy working mothers with tight budgets, who did not see the value of investing time and effort to learn how to use mobile internet. Many of the participants were semi-literate, and there was a strong perception that the internet was meant to be used by more educated people and school children (see, for example, the profile of Kaushalya, the “Internet Hopeful” in the Appendix: User Personas).
- In urban Kenya, as in urban India, our participants were mainly working mothers. These women were aware of social media services and applications, but did not find them enticing. Instead, they were interested in learning how they could become more educated and grow their businesses.
- In both urban and rural Indonesia, the women we interviewed saw the internet as a tool for looking up information related to their children's education, but they were often not aware of other uses that could motivate them to be independent users. Both urban and rural groups were interested in improving their ability to use the internet to help with their children's schoolwork (see, for example, Amah, the “Comfortable Delegator”, in the Appendix: User Personas).
- In rural India, non-users had the lowest awareness of the internet among all groups we interviewed. Many admitted they were not completely sure what the internet was, or what it could be used for. When asked how they would learn, they exhorted, “First someone needs to tell us what the internet is.” In rural Kenya, women did not have a clear idea of what the internet could do for them. Many participants said we had considerably broadened their perception of the internet in our focus group discussions.



Lack of access to trial opportunities

The women we interviewed in all three countries had limited opportunities to try mobile internet and explore different services and applications on their own due to:

- **Fear of losing money when experimenting:** Data costs discouraged women from exploring the internet on their phones. Quite a few participants said they had a bad experience when they used internet for the first time on their phones and consumed all their data without knowing how. Current users also appeared to be wary of trying new things out of fear of using up their data bundles. This fear was compounded by a lack of understanding of how volume-based data bundles were tied to usage. Women did not have access to WiFi in any of the three countries, and could not explore the internet on their phones without fear of losing money.
- **Limited access to trial before purchase:** Participants we interviewed in all three countries did not usually have access to large-scale mobile phone stores with trial models. The small-scale mobile phone stores women frequented do not allow customers to try the phone before purchasing it. The mobile phone box is opened only after a purchasing decision is made, to check for defects.
- **Lack of ownership and economic independence:** In some cases, particularly in rural India, the young users we met often shared their phones with other members of the household. When asked why they thought the men around them had better mobile skills than women, these users replied it was because men had access to the device all day, while they barely had any time with the device. Moreover, both young and older women in the rural India groups relied on men to recharge their phones, which further inhibited them from freely spending money on learning.²⁷ In Indonesia and Kenya, many women mentioned they did not like to use the internet on other people's mobile phones because their budgets were also tight.

27. This observation is corroborated with findings from the GSMA study on gender gap in mobile access and usage. Of the 11 countries surveyed by the GSMA report on gender gap in mobile access and usage, India had the highest proportion of borrowers. 29% of surveyed female respondents in India borrowed their phone, as compared to 7% in Kenya and 10% in Indonesia (GSMA Connected Women, 2015, "Bridging the gender gap: Mobile access and usage in low- and middle-income countries").

Design and usability challenges

In our user tests, we observed a number of design and usability challenges that hampered women's ability to learn how to use the internet on their own, such as unintuitive interfaces and processes. Beyond the immediate hindrances, these challenges also undermined women's overall confidence and comfort with the technology. Specific examples of design and usability challenges include:

- **Service sign-up process:** We observed the sign-up process for common applications, such as Facebook, Skype, and email services, with our test users in all three countries. All encountered difficulties they could not solve on their own. The most common problem was coming up with a username and password in a format the application would accept. The explanation of 'acceptable' was often not provided in advance, and typically the error appeared as a small icon, which was difficult to interpret. Terms like 'symbols' and 'characters' were also unfamiliar to participants. There were other comprehension challenges, too. For example, in Kenya, when one user tried to sign up for Facebook with a mobile phone number, the application asked for 'country code', which the participant did not understand because she had never called internationally before.
- **Password recovery:** Among rural and urban users of mobile internet in Indonesia and Kenya, we observed several participants who had forgotten their account password, or were not provided with their passwords by their 'helpers' in the first place. Password recovery was often tied to email, which most women did not use regularly. For example, when we tried to help Sophie, the "Stranded Smartphone Owner" (see Appendix: User Personas), recover her Google account password, we observed that it was not

possible to initiate the password reset process from the Play Store or in the Gmail application. The only way she could have reset her password was to access Gmail in the browser, which she did not know how to use.

- **Standard language or icons for internet:** The terminology and iconography used to describe the internet browser was inconsistent across phones. In feature phones, browsers were typically not branded, but named as 'Services', 'Internet', or 'Browse', depending on the manufacturer and operator. In smartphones, browsers are typically branded as 'Chrome', 'Firefox', or 'Baidu browser'. Some smartphones had a search icon as a direct link to the Google homepage within a default browser, or a Google search toolbar on the homepage. As mentioned earlier, few participants even understood what the word 'browser' meant, and were therefore confused by all the ways to access the internet when they tried to access internet for the first time or on a new device.
- **English interfaces and choice of terminology:** In India, participants mentioned that since so much content on the internet was in English, they did not use it. However, as one expert observed, users in India, even those who are not comfortable with English, did not change the default language on their phones. In some cases they did not know how (a sign of a design challenge), but the vast majority of users preferred the simpler English terminology to the sophisticated Hindi terms, which they found difficult to decipher. Choice of wording was also problematic. Our tests in all three countries found that users, particularly those who were less literate, struggled to read troubleshooting messages because they found the words too technical to understand.

Exhibit 1: A note on smartphones and learning

In all three countries, the majority of users we studied picked the smartphone for testing. For some it was an aspirational purchase and a symbol of progress. Others recognised it as being a more 'complete device', with more functions, a larger, easy-to-read screen, and faster internet speed. However, there were still some older users in urban and rural India who preferred the 'button phones', and perceived smartphones as having a steep learning curve.

Importantly, we observed that even participants who did not use smartphones regularly became quite confident and comfortable using the device after they had used it for 20 to 30 minutes. While not conclusive, these are encouraging signs that the combination of greater usability and better performance of smartphones could boost a user's ability to experiment and learn.





Social circle, including family and friends

Across the three countries, women learned to use mobile technology and mobile internet primarily through guidance from friends and family. These ‘helpers’ were the most accessible learning channel to the women we interviewed, and at no cost. However, this channel has drawbacks.

Lack of awareness

Many of those we interviewed who did not use mobile internet were not aware of its benefits, and did not have sufficient incentive to seek help to learn, including from friends and family. Even current users in our sample were often stuck on ‘application islands’ and did not know of many applications and services beyond one or two popular ones. Through our conversations with women and their family and friends, we found that users faced the same limitations in awareness and knowledge as non-users. Another problem was that helpers often left out critical information when instructing the woman user. For example, in all three countries, we commonly observed cases in which someone’s email or Facebook account was set up by a friend or family member who did not provide the user with login details or did not teach them how to use it.

- Earlier in the report, we noted that young users in the sample countries primarily used mobile internet for social media and messaging. Education and employment were also commonly cited as desirable services, but users did not know of popular service brands through which they could access this content. Instead, they relied on their social circle, which did not know either.
- In rural India and Kenya, women’s friends and families also lacked mobile internet skills and knowledge. Within these groups, few women interacted with a mobile internet user on a regular basis.

Social and cultural barriers

A variety of social and cultural barriers prevented peer networks from being effective learning channels. First, friends and family members often refrained from teaching women how to use the internet because this activity was looked upon unfavourably. Also, since internet usage can be quite personal, many women were hesitant to approach even their husbands and relatives for fear of revealing their financial or other intimate details. This was especially true in Kenya, where M-Pesa is ubiquitous.

- Quite a few women in rural India mentioned that when they enquired about the internet, they were told there was no point in them learning it because “a woman’s place was in the household”. In urban parts of India, social media such as Facebook and WhatsApp were regarded with suspicion, and women were discouraged by their families from using these applications out of fear they may inadvertently put them into contact with strange men. They were also afraid their photos would be leaked and used inappropriately.
- In rural and urban Kenya, non-users feared the internet might make them ‘devil worshippers’ because of the availability of pornographic material online. Several participants mentioned that they decided to stay away from the internet for this reason.
- In Indonesia, a few rural non-users mentioned that their children refused to teach them about the internet because they heard stories about housewives abandoning housework when they became ‘addicted to the internet’.



Community resource persons

Tapping the expertise of other resource persons in the community, such as mobile phone retailers, MNO agents, top-up retailers or internet café agents, for guidance on using mobile internet was relatively uncommon in all three sample countries, except at the time of set-up. However, these learning channels tended to be more knowledgeable than the women's social circle and were more easily accessible than formal training and education, except in rural Indonesia, where shops were often located too far away to visit regularly. Social and cultural barriers also stood in the way of women accessing these community resource persons, and took away incentives for agents to help women learn to use mobile internet.

Social and cultural barriers

In urban India, the women we spoke with seldom approached mobile phone shops directly. In rural India, the women we met, both young and old, were not allowed by their families to go to the local phone shop, which was located outside the village and run by men. These women relied completely on their male relatives for credit recharges and for solving technical issues.

Lack of awareness

As with learning through other channels, lack of awareness about the internet and its uses was another reason why non-users in our sample did not approach local service providers for help.

Lack of incentives to help with learning

In Kenya, women in both rural and urban areas approached mobile phone shops and operator agents to set up their phones. However, customers were often charged for this help. One semi-literate woman in urban Kenya mentioned that one of the main reasons she learned to use M-Pesa on her own was that she was charged a hefty fee by the local mobile phone agent each time she asked for help. More importantly, these mobile phone agents appeared to have little incentive to teach their customers. We came across several mobile internet users in rural and urban Kenya whose Facebook account had been set up by an agent who had either not bothered to provide them with the login details and password, or had not educated them about these concepts. So, when it came to signing up for new services or recovering the login details and passwords for existing services, a lot of mobile users were at sea.



Formal training and education

Most women we interviewed, both users and non-users, had not taken classes in internet education. In fact, formal training in mobile internet was unheard of. In Kenya and India, the few young women who had taken a course mentioned that the internet was not covered extensively. The exception was Indonesia, where basic internet education was introduced to junior and senior high school curriculums in 2006. All younger participants had taken this course and most had hands-on experience through assignments they had completed at internet cafés. Older participants were also aware of the internet, especially Google and email, through their children's assignments. Inclusion of internet education in school curriculum had also made internet cafés a national phenomenon—many young women mentioned that internet cafes were the place to “hang out with friends” when they were in school. In our research, women who had learned about the internet tended to be more knowledgeable and have a comprehensive understanding of the technology. However, this learning channel also has its own set of challenges:

Lack of focus on mobile internet specific skills

In Indonesia, where young women had learned about high-level concepts like URLs, websites, and applications in school, their mobile internet usage was, in most cases, still restricted to social media. As we discussed in Section II, these PC-based internet concepts do not apply to regular mobile usage. Also, their hands-on training did not go beyond email and simple web searches.

Lack of focus on practical applications and the benefit of the internet

Formal internet education and training are often taught in abstract terms, not in terms of how women actually use their mobile. In Indonesia, participants described being taught stand-alone tasks like ‘conducting a search’, or ‘sending an email’, without being told how these skills were used in the real world. This training also failed to communicate the true potential of the internet, and therefore did not expand women’s ‘mental model’ of the internet. Experts we spoke with, who were involved in providing training programmes on mobile and mobile internet usage, emphasised the importance of clearly communicating the benefits of the internet to training participants, and directly linking the training to use cases and entry points that women consider important.

Social and cultural barriers

Women’s access to education in the rural Indian community we visited was limited; most women had dropped out of school by the tenth grade. While attitudes towards women’s education were changing (e.g., many women were insistent that their daughters would be educated), access to formal education channels for most women will be limited for the near future.

Lack of awareness

Many non-users mentioned they had not explored internet training at all since they were not aware of the benefits of the internet or its potential.

Availability and cost of training

Among the women we spoke with, many mentioned that the financial cost of formal training programmes was a deterrent. In rural India, there were no training programmes in nearby areas. Many of the older women in all three countries said they were quite busy and would not be able to take time off during the day to attend training courses.



Figure 9

Personas of users and non-users in our sample

	LOW ABILITY <i>(Non-users)</i>	MEDIUM ABILITY <i>(User)</i>	HIGH ABILITY <i>(User)</i>
HIGH MOTIVATION	<p>PERSONA 1 Internet Admirer <i>45, rural, Indonesia</i></p> <p>Nunung runs a bridal make-up business. She learned about the internet from her friend who owns a smartphone. However, she and her husband never tried using mobile internet themselves because they did not know they could access the internet on feature phones, and assumed that smartphones would be too expensive. Also, she had no one to educate her on the uses of the internet. After trying YouTube for bridal make-up videos in the user test session, she said she was excited to learn how to use the internet herself.</p>	<p>PERSONA 2 Family Google-er <i>28, rural, Indonesia</i></p> <p>Ida is a mother of two who raises poultry and teaches children to read Koran at home. She and her husband saved up to buy a family tablet after her son's teacher told them to use Google to help with his homework. Until recently, Ida thought that Google was only useful for educational purposes. She relies on her brother to help her use internet on her tablet, but she does see him often. She is eager to learn more about the internet, but does not have anyone to ask in her neighbourhood.</p>	<p>PERSONA 3 Social Media Migrant <i>21, urban, Indonesia</i></p> <p>Ana is a clerk at a shoe store and wants to open a business of her own with her mother. She has signed up to multiple social networks to stay in touch with her various groups of friends. She uses Google for simple information searches, but has not found it useful for her job search, which is what she wants to use it for most. She does not know how to do anything beyond social media on the internet; she is the most advanced internet user in her family and all her friends only use social media.</p>
MEDIUM MOTIVATION	<p>PERSONA 4 Internet Hopeful <i>42, urban, India</i></p> <p>Kaushalya is a tailor with three children. Her husband, also a tailor, does not use mobile internet either. Only her eldest child uses mobile internet for schoolwork. She never considered learning about the internet from her children because she thought it was only for children and more educated people. After the focus group, she wanted to learn to use the internet herself to look up tailoring designs and music.</p>	<p>PERSONA 5 Facebook Islander <i>32, urban, Kenya</i></p> <p>Caroline is a vegetable seller and single mother to three children. She uses Facebook on her feature phone browser because she believes using Facebook improves people's perception of her. When she needs information, she posts her question on Facebook. She does not know what else she could use on mobile internet other than Facebook. She learned to use the internet from her brother and her friends, who only use Facebook as well.</p>	<p>PERSONA 6 Stranded Smartphone Owner <i>24, rural, Kenya</i></p> <p>Sophie is a hairdresser living with her two elder sisters. She was the first in the family to own smartphone. She is on Facebook and WhatsApp, and uses Google search to download music. However, the agent who set up her phone did not tell her the password for her Google account so she has not been able to download new applications for the last two years. She does not know how to recover her lost password or get a new account.</p>
LOW MOTIVATION	<p>PERSONA 7 Comfortable Delegator <i>40, urban, Indonesia</i></p> <p>Amah is a mother of three children, and is aware of the internet since she takes her children to internet cafés for their homework. However, she occasionally asks her husband and children to look up information for her on Google. She has never felt the need to learn to use the internet independently, because she thinks it is mostly for children.</p>	<p>PERSONA 8 Walled Internet User <i>20, rural, India</i></p> <p>Shobha left her job at the local school when she married into a conservative family that discourages women from working. She was given her husband's used smartphone and her brother set up WhatsApp on her phone. Despite being literate and educated, she has not tried any other internet services yet because she is afraid of losing money (given that her husband recharges her phone). She is also concerned about the misuse of her personal information online. She relies on her brother to suggest new applications to her, but he lives in another part of the state.</p>	

IV

Recommendations for key stakeholders

In the previous section we described the barriers women face as they try to improve their mobile literacy and learn new digital skills. Below is a set of recommendations for stakeholders to address these barriers.

- **Support women to learn on their own:** Across the board, stakeholders can provide women with more avenues to explore the internet by themselves.
 - **Leverage women's social circles as a learning channel:** Given the importance of the social circle in a woman's learning journey, stakeholders can draw key 'influencers' from women's families and communities into training and awareness efforts.
 - **Expand learning through community resource persons:** The women we spoke with did not rely much on mobile services agents in their communities. Stakeholders can help to create and promote incentives for these agents to help women learn how to use mobile internet, and bring more women on board as agents/experts to overcome cultural barriers.
 - **Emphasise mobile internet in school curriculum and ICT (information and communications technology) training:** Government and donors should continue their efforts to make mobile internet a core part of school curriculum and formal ICT training. They should also focus on developing content tailored specifically to mobile internet and the services and applications most likely to appeal to women.
- Below are recommendations to address the more general barriers that impact women's learning across multiple channels, and some suggestions for further research.
- **Improve design and usability:** Addressing design and usability challenges is important to helping novice users become independent. There are many stakeholders who affect a woman's user experience on mobile internet—notably operating system developers and internet service and application developers, but also operators, who in some markets provide their own internet applications such as browsers and application stores. Standardising and simplifying tools and processes across mobile devices can give a valuable push to women's learning. Keeping language simple and easy to understand is also critical, especially for semi-literate users.
 - **Address learning incentives:** To help women see the value of learning to use mobile internet, and to improve the effectiveness of learning initiatives that connect them to relevant content, we need to raise awareness of the broader uses of the internet, as well as tailor training content to what women are interested in and how they use their mobiles.
 - **Deepen understanding of women's mobile internet learning experience:** As more and more women connect to mobile internet, there needs to be a concerted effort to better understand their needs, aspirations and experience, across geographical areas and demographics. Specifically, additional research needs to be conducted on both the current level of mobile internet usage among women in developing countries, the precise skills these women possess, and their learning preferences.

No single stakeholder group can address the range and diversity of these barriers. Below, we identify six stakeholder groups that could tackle these challenges, and provide specific recommendations for each.

- Mobile network operators (MNOs)
- Donors and NGOs
- Governments
- Handset manufacturers and handset operating system (OS) developers
- Internet application and service providers
- Academic and research organisations

MOBILE NETWORK OPERATORS (MNOS)

1. Support women to learn on their own

- Provide access to mobile internet tutorials or instructional videos and audio to teach users about mobile internet. For example, Idea Cellular's 'Har Mobile pe Internet' (Internet on Every Mobile) programme provides IVR-based internet lessons to users.²⁸
- Reduce the cost of independent learning by offering offline modes or demo videos of internet applications and services in operator application stores and internet folders. Operators could also offer a low-cost or free internet starter data package to first-time mobile internet users to sign up and explore the internet.

2. Leverage women's social circles as a learning channel

- Leverage existing women's social groups (e.g., church meetings and self-help groups in Kenya, self-help groups in India, or religious gatherings and village meetings in Indonesia) and community leaders to train women to use mobile internet. Bringing these influential women on board and training them first can also reduce the social and cultural barriers to women using mobile internet.

- Create incentives and train members of women's social circles to serve as local sales agents and support channels. For example, Telkomsel's 'Internet Genggam' (Internet in Every Hand) initiative gives an incentive to current mobile internet users to become Telkomsel agents and help non-users get online.²⁹
- Use marketing campaigns to encourage families, especially male relatives, to support women in their households to learn to use mobile internet. This can also help to overcome negative perceptions they may have of women using the internet.

3. Expand access to community resource persons

- Provide women with access to female agents for sales and support, who can help make women feel more comfortable, and to overcome the cultural barriers that currently prevent them from accessing mainstream retail channels for learning support. Operators can partner with non-profits and community organisations, as well as with government programmes that have community-level reach. For example, Uninor's Project Sampark in India uses a network of influential women in the community, many of them ASHA and Anganwadi workers (community health workers), to market mobile phones to women in rural areas and provide initial training and ongoing learning support.³⁰

28. GSMA, 2014, "Digital Inclusion".

29. Telkomsel, 2015, "Genggam Internet"; Sindo News, 2014, "Telkomsel to Offer Program for Handheld Internet" (Original in Bahasa: Telkomsel Tawarkan Program Bundling Genggam Internet).

30. Uninor, 2014, "Uninor announces 'Project Sampark'".

- Launch campaigns where MNO retailers and recharging agents are given an incentive to conduct simple training in their shops on a regular basis. For example, as part of its 'Each One Teach One' digital literacy campaign, Airtel India encourages its network of 1.4 million retailers and 20,000 in-the-field executives to become 'internet ambassadors' in their communities.³¹ An interesting challenge for MNOs is creating incentives for agents who are not within an operator's exclusive network (e.g., grocery shops that also do mobile top-ups/recharges). MNOs could provide an incentive for these agents to direct customers to mobile-based text, video, or IVR tutorials (e.g., by providing a code that customers could enter before they access these tutorials, which would then trigger a commission for the agents), or direct them to nearby awareness-raising events and classes hosted by their exclusive agents. This is by no means an easy task, of course, particularly given the widespread lack of awareness about mobile internet and the social and cultural barriers to women's mobile usage.
- Give women opportunities for hands-on trial through on-the-ground marketing campaigns. For example, Airtel Nigeria's 'Boost ICT usage in Rural Areas' programme provides first-hand experience with internet-related services to underserved and rural consumers. The company runs demonstrations of internet services on smartphones and tablets onboard the 'Airtel ICT Train', which travels across the country.³²

4. Improve design and usability

- Simplify the design of operator applications on feature and mobile phones (e.g., operator application stores and internet folders). Use simple and widely understood language, and avoid technical terms. Test and adapt language and terminology in different areas.
- Make data plans easier for users to understand, so women can learn by trial without fear of losing money. Because users often find it difficult to relate MB or GB to usage, operators could instead introduce data packages that offer users unlimited data access for certain periods of time. In India, for example, Uninor has moved from volume-based internet offerings to service-based ones with their 'Sabse Sasta Facebook' and 'Sabse Sasta WhatsApp' plans (INR 0.5 for an hour of FB, INR 1 for a day of WhatsApp).³³

5. Address learning incentives

- Showcase the broader applicability and practical benefits of the internet, and emphasise topics most important to women. Use local role models to encourage women and create incentives for them to learn. For example, Idea Cellular's IIN (Idea Internet Network) campaign promotes the use of mobile internet for education. The advertisements prominently feature urban and rural women taking on non-traditional and empowering roles. For example, one of their advertisements features women from rural India using mobile internet to complete their higher education at home, since it is not socially acceptable for women to leave their house alone.³⁴
- Publicise applications relevant to women through retail and traditional mass media channels, so they have an incentive to invest in learning. For example, operators could host local events to promote new apps and services and provide support for download and set-up. Within operator application stores, or internet folders on smartphones, operators can include a dedicated category for new applications and services in the local language and that would appeal to women. On feature phones, operators can regularly introduce users to new and locally relevant applications within operator-installed browsers or internet folders.
- At a more advanced level, operators can analyse user data to understand user needs and preferences and suggest applications that are relevant to women, which may give them an incentive to invest in learning.

31. Telcom Lead, 2014, "Airtel to boost mobile Internet biz with Each One Teach One day".

32. Nigeria Communications Week, 2014, "Airtel Launches 'Boost ICT Usage in Rural Areas' Initiative". IT News Africa, 2014, "Nigeria: Airtel to promote ICT in rural areas".

33. Uninor, 2014, "Uninor changes its Internet strategy - moves from 'Rs. per MB' to Sabse Sasta Facebook and Sabse Sasta Whatsapp".

34. India Infonline, 2014, "Idea's IIN seeks to empower youth with power of mobile technology"; Telekom Talk, 2014, "Idea Cellular introduces new brand campaign showcasing the importance of mobile internet in India".

DONORS AND NON-PROFITS

1. Support women to learn on their own

- Support mobile operators, handset manufacturers, and other stakeholders in developing training content for IVR, text or mobile internet-based tutorials, contextual help menus, and other independent learning channels.
- Support efforts to improve design and usability. Coordinate efforts to standardise internet-related tools and processes with consistent terminology and iconography. Provide technical support to application developers to help them simplify applications for new and novice users.

2. Leverage women's social circles as a learning channel

- Leverage existing social groups (e.g., church meetings and self-help groups in Kenya, self-help groups in India, religious gatherings and village meetings in Indonesia) and community leaders to train women to use mobile internet. For example, Grameen Foundation and Cashpor have used this approach in India to encourage uptake of their mobile money application. Cashpor began by convincing key influencers in the community to use the application—older and more affluent women, as well as younger, more technologically savvy women. These women then helped to convince and train other women to use it (see Appendix: Case Studies).
- Develop training programmes that include key influencers such as women's husbands and family members, who are important learning channels for women, as a way to reduce negative perceptions of women using the internet. Grameen Foundation opened their mobile banking training to husbands and children for precisely that reason (see Appendix: Case Studies).

3. Emphasise mobile internet in school curriculum and ICT training

- Support governments and formal education stakeholders in developing mobile internet modules for school curriculum, taking into account the differences between learning and using the internet on a PC versus a mobile phone.
- Continue to create opportunities for formal training that provide safe spaces for women to learn. For example, the Telecentre Foundation has created a network of 100,000 telecentres that promote peer learning and involve women in curriculum development and centre management. The telecentres are now being used to provide training to women on mobile phones (see Appendix: Case Studies).
- Teach mobile internet skills that are practical and relevant to local women, using popular applications in the training to spark interest. In the Appendix, we profile the experiences of Google, Telecentre Foundation and ITU, and Intel, all of which run large-scale mobile and internet training programmes for women. Each of the three programmes places an emphasis on adapting training to the local context. In the case of Telecentre Foundation and ITU, training content is developed by the telecentres themselves, based on the needs and demands of local women. Meanwhile, Google and Intel have each partnered with local grassroots organisations to adapt their content to the local context (see Appendix: Case Studies).
- Address myths and misconceptions about the internet in the training content, as well as concerns about safety and security. For example, ICT Watch, an Indonesian non-profit, has created a how-to module aimed specifically at mothers on how to monitor children's internet use and protect them from inappropriate content.³⁵
- Document and disseminate case studies of women who have overcome socio-economic barriers to become independent mobile internet users, in order to motivate other women to invest in learning to use mobile internet.

35. Ashoka.org, 2014, "Social entrepreneurs changing lives through ICT", ICTWatch website, 2015, <http://ictwatch.id/>.

GOVERNMENTS

1. Expand access to local community agents and experts

Leverage existing investments in ICT infrastructure to support mobile internet learning at the local level. For example, in Kenya, the government could use their ‘Huduma’ public service kiosks as a learning resource.³⁶ In India, Common Services Centers (CSCs) could play a similar role.³⁷

2. Leverage women’s social circles as a learning channel

Leverage women’s groups and organisations created by existing government programmes (e.g., self-help groups and Anganwadis (community crèches) in India) to train women to use mobile internet.

3. Emphasise mobile internet in school curriculum and ICT training

- Include internet education in primary school curriculum, including both PC-based and mobile internet topics.
- Incorporate practical mobile internet skills and use cases tailored to women’s needs, interests, and local context.
- Explicitly address myths and misconceptions about the internet in the training content, as well as concerns about safety and security.

HANDSET MANUFACTURERS AND HANDSET OPERATING SYSTEM (OS) DEVELOPERS

1. Support women to learn on their own

- Pre-load mobile phones with contextual help menus, introductory tutorial applications, or instructional videos to help non-users and novice users learn by themselves.
- Reduce the cost of trial by pre-loading offline trial models or demo videos of internet applications and services.

2. Improve design and usability

- Keep operating system (OS) interfaces simple, for example, by restricting the number of actions that users can take on each screen.
- Standardise complicated tasks like sign-up and password recovery to enable more women to perform these actions on their own. For example, OS developers could standardise the username and password formats across various applications on their platforms, or allow users to sign in and sign out of multiple applications at once or on shared devices.

- Use simple and widely understood terms, and avoid technical terms and difficult language. In India in particular, OS developers should pay attention to the mixed use of English and Hindi in everyday language, and note the variations in local dialects.
- Test and adapt application language and terminology in different geographical areas.

3. Address the lack of learning incentives and awareness of relevant content

- On smartphones, use application stores to include a dedicated category for locally relevant or local language applications and services. On feature phones, install an automated folder that continually introduces users to new local applications and services.
- At an advanced level, use data analytics to understand user needs and preferences and suggest relevant applications.

4. Conduct more user testing and prototyping of handset features and built-in applications to make them more suitable for women users.

³⁶ Victoria Kioko, Capital FM News, “Huduma centres to be rolled out nationwide, says Waiguru”, 9 April 2014.
³⁷ www.csc.gov.in

INTERNET APPLICATION AND SERVICE PROVIDERS

1. Support women to learn on their own

- Provide offline modes for trial or demo videos of applications to help women explore the service without the burden of purchasing data and complex sign-up procedures.
- Embed contextual help menus and tips within the application to allow users to help themselves. Explore the use of voice-based support for less literate users.
- Place women users at the centre of the design process, incorporating their needs and preferences in the design, execution, and ongoing improvement of applications. In the Appendix, we profile the experience of SEWA, a trade union for poor, self-employed women in India, which included its members, many of them semi-literate with limited mobile skills, in the development of a mobile application to manage sales and inventory.

2. Improve design and usability

- Work with handset manufacturers and OS developers to standardise complicated tasks like sign-up and password recovery.
- Allow users to sign up, log in, manage their service accounts, and recover passwords using their mobile numbers rather than email.
- Keep application user interfaces simple, for example, by restricting the number of actions users can take on each screen.
- Use simple and widely understood terms, and avoid technical terms and difficult language.
- Test and adapt application language and terminology in different geographical areas. For example, BBC Media Action, which provides mobile health education applications for women in rural India, continually tests and adapts their user prompts to ensure they are understood in different local contexts.³⁸
- Address the security and privacy concerns of women and their families with mechanisms that make internet services secure and easy to use. For example, allow special sign-in and sign-out procedures on shared devices, since women often share mobile devices with their families.

ACADEMIC AND RESEARCH ORGANISATIONS

1. Deepen understanding of women's mobile internet learning experience

- Conduct representative surveys on women's current levels of mobile internet usage in developing countries.
- Conduct larger-scale studies on the specific skills women mobile internet users possess and, conversely, those they find challenging.
- Continue to study the needs, aspirations, and behaviours of women as they access mobile internet, especially in the context of their learning experiences (e.g., training programmes and platforms), across different countries, regions, and demographics.
- Support governments and other stakeholders in education to develop mobile internet modules for school curriculum and formal ICT training, recognising the differences between learning and using the internet on a PC versus a mobile phone.

³⁸. BBC Media Action, 2015, "Mobile Kunji".

Appendix

I. CASE STUDIES

Here, we capture the experiences of selected organisations involved in improving the mobile literacy and/or digital skills of women in developing countries. Although detailed examples of literacy-focused mobile internet initiatives are limited, we have showcased other initiatives that focus more generally on mobile literacy, or internet literacy. We believe these initiatives offer valuable lessons in both training content and training approaches.

1 Google: Helping Women Get Online

Background and opportunity

Of the estimated internet users in India, only about a third are women.³⁹ Recognising the internet's role in empowering women, the value it can add to their lives and on a macro level, the uplift in GDP of the country, Google launched Helping Women Get Online (HWGO) in November 2013.

The programme includes an awareness module, coupled with hands-on training modules aimed at teaching women how to use the internet, including on mobile phones. It is targeted at both urban and rural women across age groups, primarily in low and middle income districts.

The key programme partners are Hindustan Unilever (HUL), Axis Bank and Intel. For dissemination and trainings, Google has partnerships with grassroots non-profits such as the Digital Empowerment Foundation (DEF) and Women Weavers, as well as partnerships with specific State Governments.

Approach

Google started with a pilot in the Bhilwada district of Rajasthan, where it trained around 100,000 women on the basics of the internet. Based on information gathered from the pilot and independent research, Google found three key barriers that prevent women from coming online – knowledge, awareness and access. To tackle these, Google came up with a three-pronged strategy – **Inspire, Engage, Enable.**

INSPIRE:

Real Life Stories: Google documented real-life stories of women from different backgrounds who benefitted from using the internet. The videos that were created show the internet is not a complicated place and is meant for everyone.

HWGO Content: www.hwgo.com was created where numerous videos show different aspects of using the internet. This includes step-by-step videos of how to use different internet features, with a dedicated section on mobile internet skills. Topics include “Internet usage charges on your phone”, “Sending emails from your phone”, “How to watch and share videos on YouTube”, “How to search for information online” etc. Google

has created different levels of modules (basic, middle, and advanced), incorporating learnings from their own research and field testing, and feedback from on-the-ground partners. These modules are usually delivered by trainers in the communities, trained by the non-profit partners. The content is currently available in five languages, and Google may add more.

Helpline: Google has set up a toll free number where women can call and clarify any doubts they have about the Internet. The centre resources act as guides, giving step by step assistance on Internet related issues. The call centre also supports 5 languages.

39. NDTV, 2013, “Google India launches ‘Helping Women Get Online’ campaign”.

ENGAGE:

Regional activations: The programme delivers formal training to women in partnership with their on-the-ground partners. Partnering with on-the-ground organisations helped Google build support and interest among local women. For example, while partnering with the Madhya Pradesh Government, the programme was also able to attract influential community members like local health care workers and police women, who in turn, can help bring other women on board. Google, through its partners, has conducted such training camps in more than ten states.

Strong emphasis on linking content to local priorities:

The training focuses on raising awareness among women about the possibilities of the internet, and also on making these possibilities relevant to women's lives. This is essential to ensuring that women are motivated to learn about, and use the internet. For example, in one rural area, women were used to taking a bus to the nearby town to get information on government schemes, and then making a few more trips to complete the necessary paperwork and apply for the relevant scheme. The entire process could cost them -INR 150 - 200 in travel costs. Women were therefore very excited to learn how they could access the same information on mobile internet from the comfort of their homes, at a fraction of the cost. The partnerships with local organisations are critical in helping tailor content to make it more locally relevant. Finally, the HWGO website also contains links to relevant websites for women, such as those related to health, education and livelihoods.

Digital Campaigns: Google launched ReachForTheSky in partnership with Farhan Akhtar, UN Women Goodwill Ambassador for South Asia, and his initiative MARD Foundation, to create awareness of the online gender disparity that exists in India through a music video called 'Chulein Aasman'. Another digital campaign called TogetherOnline is targeted at current internet users, urging them to bring a woman in their circle of influence who is not using the internet, online.

ENABLE:

NGO Tie ups: To ensure sustainable support, Google works with NGOs that are well entrenched in local communities. The NGOs provide information on the on-ground realities that affect the lives of women as well as support for the programme in the form of trainers. Tie ups with state government departments have also helped mobilise large numbers of women for training camps.

Internet Carts: Many villages do not have good connectivity, let alone training centres equipped with computers. So Google had to think of new ways to bring the internet to rural India. This is how the Internet Cart was born. Built on the back of a bicycle, the Internet Cart is modelled on India's traditional distribution system, which is used to move everything from people to ice cream to industrial supplies. Instead of seats or crates, though, Google equipped these carts with an internet-enabled device, information on using the web and an operator keen to explain. Google plans to roll out these carts in large numbers across India to provide continued access and trainings to women in rural India.

Challenges faced and lessons learned

Throughout its initial research and pilot programme, the HWGO team faced a number of challenges:

Sustaining women's interest in learning: Initially, when the team conducted training independently, they found that many women would leave within 10 to 15 minutes of the training, either because they did not find the content meaningful to learn, or because they had pressing household chores to attend to. To counter this lack of interest, Google focused on building relationships with local organisations, and re-focusing their training on linking skills directly to tangible uses that women would value.

Lack of understanding of how data plans work: Most rural women still do not understand how to use data, and can end up spending a lot of money, very quickly. Given their budget for mobile usage are already limited, this can be a powerful deterrent to mobile internet learning and usage. To address this issue, the team included a separate module on "Internet usage charges on the phone".

Outcomes and next steps

Since the launch of the initiative in 2013, Google has directly trained over 1.5 million women on the basics of the Internet, while reaching another 40 million through television and digital campaigns. Going forward, Google will continue similar outreach efforts.

② Telecentre Foundation and ITU

Background and opportunity

Telecentre Foundation (TCF) is an international organisation that supports the establishment and sustainable growth of telecentres, public libraries, community information and training centres and many more internet access units, that provide digital literacy resources and promote personal and social development by offering crucial services, skills and opportunities to millions of people and communities around the world. The global network of local telecentres are run and maintained by more than 2600 TCF partner organisations, mainly non-profits and local entrepreneurs in 102 countries. Earlier focused on just PCs, modern day telecentres are also equipped with tablets, mobile device charging points, and a variety of specially tailored mobile services.

“Mobile phones are often the driving force in these trainings.”

Executive Director, Telecentre Foundation

Recognising the unique challenges for women users, mainly opportunities for women to learn about and understand the internet and its potential, the Telecentre Women (TCW) programme provides tailored learning solutions for women through the global network of telecentres, including for mobile phone usage.

TCF, in partnership with the International Telecommunications Union (ITU), has developed a unique package of training and activities including the Telecentre Women’s Digital Literacy Campaign and the ICT and Entrepreneurship training to empower the most disadvantaged and underserved communities of women and girls around the world. This specially tailored ICT content, plus technologies, digital services, new knowledge and opportunities, is essential to forging new, basic, and advanced entrepreneurial skills to help women achieve better economic outcomes and improve their productivity and household income.

Approach

The key components of the programme are:

Content for women, by women: The organisation undertakes user surveys to understand the demand for training content among local women and tailors the training modules accordingly. TCF works closely with each local Telecentre partner organisation to adapt training content to the needs of women in their communities. Local telecentres are encouraged to develop the content on their own, with the foundation providing overall feedback and often, access to learning and materials from other telecentres around the world. This ensures that the content is tailored to the needs of the women. For example, in one of the trainings in Ghana, more than 100 women who run local market stalls in Accra and the Eastern, Central and Western Regions were given a three-day capacity building workshop on ways to use their mobile phones to improve their businesses. TCF and local partners gather relevant information on a variety of subjects with special value for women and girls. Training content

includes basic and advanced understanding of mobile device features and capabilities, special mobile services available in the area/region, apps, and social media amongst other topics. Most common applications focus on developing support communities for health, agriculture, education and women’s rights issues.

Peer learning networks: Telecentres encourage women learners to form small groups and work together, either online or face-to-face. This increases motivation among women, and also increases the effectiveness of the learning process. A common practice among women and girl learners is the establishment of online or text message exchange groups, which is a simple and effective way to expand the exchange of knowledge and collaboration at the local level. When possible, these groups grow to international levels to connect women and girls with similar backgrounds but from different countries through active discussions and new levels of peer-to-peer collaboration.

Provide women leaders: TCF tries to involve women as much as possible in the running and management of telecentres. These women not only benefit personally from the training, but are also instrumental in spreading awareness in the larger community, and ensuring

that more women enroll in and benefit from the training. The Foundation also ties up with women's organisations to understand how to best meet local women's ICT training needs.

“The most active telecentres are ones with women facilitators or women managers. They are the ones pushing the trainings and ensuring that they are beneficial for women.”

Executive Director, *Telecentre Foundation*

Challenges faced and lessons learned

Most online content is directed at men and designed by men. This means that women have to adapt their skills to use the internet. To deal with this challenge, they design their curriculum based on what women say they want to learn about mobile phones and the internet. This feedback is gathered through surveys, local workshops and by collecting regular data for women telecentre users in selected countries.

Women often lack time, since they are also busy with their other duties and chores. To deal with this, training modules must be kept short and crisp. Each module is 1 to 4 hours. Since the needs and skill levels of women participants vary a lot, modules are non-linear and participants can skip sessions if they need to.

There are often social and local challenges. TCF feels that the best way is to help involve other women in the communities, to ensure participation and help women feel safe and comfortable.

Results and next steps

The TCW programme leverages its network of more than 350,000 telecentres to create a strong learning environment for women on the ground and has so far trained more than a million women in 79 countries.

The programme continues to evolve and expand, constantly searching for new content and opportunities to engage more women and girls in effective learning experiences based on ICT resources. New modules of ICT and Entrepreneurship training are being delivered in more than 12 countries, and TCF plans to enrich the TCW curriculum with new resources from Intel and several local partners, particularly in Africa and the Middle East, adding new languages that will expand the potential reach of these resources.

Finally, TCF is currently working in collaboration with the Mozilla Foundation on a new initiative that aims to offer advanced levels of technical training to women and girls in web and mobile app development, and establish regional communities of women developers to build and improve the web.

3 The SEWA RUDI Sandesha Vyavhar (RSV)

Background and opportunity

The Self-Employed Women's Association of India (SEWA) is a trade union for poor, self-employed women workers in India, with about 2 million women members. In 2004, SEWA established the "Rural Distribution Network (RUDI)" programme, through which agricultural products are purchased from local farmers, processed and packaged at a central processing facility, and then sold directly to rural end consumers through a network of local sales women called 'RUDI bens'. The RUDI programme had been facing challenges in maintaining real-time information flow on sales and inventory between its sales agents and its centralised procurement and processing centres, resulting in stock-outs and order fulfillment challenges. Also at RUDI ben level they faced challenges sending their orders to processing centres, registering their sales, and maintaining inventories and customer records. RUDI bens were spending a huge amount of time, effort and transportation cost to personally visit processing centres to register and pick up their orders which could have been spent increasing sales, expanding their customer base and exploring new geographies. To address these challenges, RUDI set out to develop the RUDI Sandesha Vyavhar (RSV), a mobile-based management information system (MIS) for RUDI bens, both those who managed sales in the field, and those who worked at the central procurement and processing facility.

However, the key challenge was that most of the 3000 RUDI bens were semi-literate. Moreover, they had a limited mobile skillset. Many users were only aware of the green 'call accept' and red 'call end' buttons.

Approach

To address these mobile literacy challenges and design the most basic yet powerful application, SEWA invested in creating a product that was tailored to the needs of the RUDI bens, using the following approach.

Embedding the user in the design: RUDI placed the end user, the RUDI ben, at the centre of the tool development process. The team started with an initial workshop to understand the RUDI bens' current practices and needs. Then, they created initial prototypes of the application on paper, and incorporated more user feedback, before developing the mobile platform itself. Once the mobile application was created, it was tested again with a small group of RUDI bens.

Mitigating the literacy burden: Based on their application development process, the RUDI team developed an SMS-based mobile application that was in the local dialect, and was optimised for display on the feature phones commonly used and afforded by the RUDI bens. Importantly, it was optimized for the RUDI bens' literacy levels – it did not require them to type letters, instead using drop-down menus and numbers, which almost all of them were comfortable with.

Leveraging women's social circle: The team selected a few RUDI bens who had more experience with mobile phones and trained them as master trainers at SEWA's central office. These master trainers in turn trained other bens at the district and village level. These bens also provided ongoing support for questions or challenges in their villages. Not only did this help bring more women on board, but also served as a safe learning channel.

Supporting self-learning: Apart from the formal training, RUDI bens were also provided with short, easy to carry, visual information manuals written in a mix of English and their local dialect (Gujarati).

“Previously I’d never even seen a mobile phone. Now I have my own mobile with the RUDI Sandesha Vyavhar technology. Thanks to the training I can use it to place orders and record sales and other transactions.”

RUDI ben

(Source: Vodafone Foundation, Connected Women: How Mobile Can Support Women’s Economic and Social Empowerment)

Challenges faced and lessons learned

Women had the fear of making mistakes. Since most women were semi-literate and not comfortable with many mobile phone features, they were worried about pressing the wrong button and losing money. To counter this, the trainings had to include broader concepts on mobile phone usage (e.g., how to manage credit), beyond the core application itself. In addition, RUDI provided participants with multiple opportunities to attend trainings at the district and village levels to strengthen their learning.

Women also tended to lose interest. To maintain women’s interest in learning, the RUDI training team had to ensure that the training clearly explained the utility of the application for the women’s business and its impact on their livelihoods.

Results and next steps

The pilot trained 2,500 RUDI bens. Based on the initial trainings, 97% of the interviewed RUDI bens saw a growth in customers (most of them saw a 10% - 20% growth). 97% of Rudi bens said they would recommend RSV to others.

In 2014, the solution was rolled out to more districts within Gujarat, with the aim of recruiting and training 2,500 new RUDI bens. RUDI plans to expand the programme to four additional Indian states going forward. In December 2013, it was awarded a GSMA Connected Women Innovation Fund grant, to support the integration of other useful applications, such as mobile money, in its existing tool.

4 Intel – She Will Connect

Background and opportunity

In 2012, Intel published the Women and the Web report which highlighted the gender gap in internet access in developing countries. Through the research, which covered 2,200 women across four countries, the team realised that the lack of awareness of the benefits of internet use, combined with the lack of comfort with the technology, were important barriers preventing women from accessing the internet.

In 2014, Intel launched the Intel® She Will Connect programme, with the goal to reduce the gender gap in internet use around the world by addressing women’s lack of awareness and skills. The programme began in Sub-Saharan Africa where the gender internet gap is the greatest as outlined in the Women and the Web report, and is currently running pilots in Kenya, Nigeria, and South Africa. The goal is to reach five million young women in the region by 2020.

Approach

While the programme is currently focused on internet access in general, rather than mobile internet specifically, it provides valuable learnings in terms of training content and approach.

Focusing on tailored content, combining broader conceptual understanding with practical skills:

Intel adapted their modular Intel® Learn Easy Steps curriculum to begin digital literacy training in the communities they were targeting. The programme focuses on having participants “learn by doing,” i.e. learn practical skills like browsing and email, and Intel is working with partners to integrate additional gender-relevant content and access to an online peer network into the course. Intel is also in the process of developing a new interactive online learning platform working with the Center for Games and Impact at Arizona State University. The design of the platform is informed by inputs from surveys conducted among women across South Africa, Nigeria and Kenya, and from consultations with Intel NGO partners on the ground. The new platform will focus on helping women understand what is possible with the Internet. Rather than just teaching basic computer skills, the platform tackles broader questions, like “What does it mean to be online?” and “What are online communities?” At the same time, the platform also imparts vital technology skills such as online safety and security. The platform will also provide access to content and resources provided by the programme partners and its partner organisations (including education resources, financial and health information, and employability and entrepreneurship skills resources).

Leverage local grassroots level organisations:

Intel addressed the lack of local learning channels for women by partnering with local organisations to provide training in their communities and integrate digital literacy training into existing training and empowerment programmes. These partners were trained centrally through a “Train the Trainer” approach. The programme has identified three initial partners each in Kenya and Nigeria, and four in South Africa. For example, in Kenya, they have partnered with Kenya ICT Authority, Safari Connect and The Youth Banner – a Pasha Business Development Consultant for the ICT Authority.

Encouraging peer learning and networks:

Intel has collaborated with World Pulse, an online community for women in 190 countries, to encourage access to online peer networks, and help programme participants stay connected and continue learning from each other in safe spaces. The online forums and networks also help women to discover relevant and popular services and content.

Challenges faced and lessons learned

Women often are not aware of the value or relevance of the internet. One of the findings in the report, which has also surfaced in follow-up surveys and focus groups, is that many people do not understand what resources are available online and how they would be relevant to their daily lives. As a result, Intel has invested in creating additional new content to help women see how they can use the internet to achieve their personal goals. Intel's focus on including gender relevant content in the curriculum is also targeted at this issue.

Women often lack confidence in using technology. This comes from not having the relevant skills or having had time to use technology devices. Intel's partnership with local organisations that women trust, as well as their investment in peer to peer learning, and curriculum that provides them hands-on training are focused on addressing this challenge.

Even women who are online today are not fully taking advantage of the benefits technology affords. As the programme has rolled out training and conducted additional research, it became clear that even women who are accessing the internet today, are often only using in limited ways. As one woman said in a focus group, "We know how to use the internet, but we don't know how to use it to benefit our lives." Research also found that the women who have been trained are increasingly looking for additional ways to access technology and connectivity to put into practice what they have learned and use the internet for further empowerment opportunities.

Results and next steps

The programme was launched in 2014, and had trained more than 500 trainers and 13,000 women across the three countries as of December 2014. During 2014, the programme partner ecosystem was developed, including global and local NGOs and governments to support implementation and scaling. This included the launch of the Women and the Web Alliance which brings together Intel, USAID, NetHope, World Pulse, World Vision, UN Women, and Women in Technology in Nigeria to accelerate activities to close the gender internet gap in Kenya and Nigeria.

In 2015, the programme will continue to scale its in-person classroom training as well as expand training to mobile platforms, provide information and content to women regarding the benefits of getting connected, and conduct additional research into the impact and effectiveness of the programme approach. Intel is also in the process of enabling ecosystems through which women will be able to access affordable devices.

5 Grameen Foundation, Cashpor and Eko: Using Mobile Money

Background and opportunity

Grameen Foundation builds innovative solutions that enable the poor to gain access to essential financial services and information, with a special focus on mobile phone-based applications. In 2011, Grameen Foundation collaborated with Cashpor MicroCredit, Ltd. (an Indian microfinance company), ICICI Bank (a national bank) and Eko (a technology company), to provide access to mobile based savings services to Cashpor's women members.

In the early stages of testing, the organisation found that women were quite wary of the mobile application, and did not trust that the application was safe to use. They also lacked confidence, and were afraid of making mistakes. For example, women were afraid they would lose their savings if their phone was lost or if they pressed the wrong buttons. One of the project's key challenges was to overcome these mental barriers to mobile money usage.

Approach

To address these challenges, Grameen Foundation, Cashpor and Eko took the following approach to delivering a tailored training programme.

Leveraging women's social circles for learning: Cashpor began by convincing key influencers in the community – both older, more affluent women, and younger, more technologically savvy women. These women then helped to convince and train other women. In addition, Cashpor's own loan officers were quite effective in getting women to overcome their mistrust of the new technology, since they had built trust with the women through their banking interactions.

Cashpor has since trained and leveraged community health workers to educate their clients on financial services including savings services using the mobile phone. This has proved effective, primarily because these health workers are drawn from the same communities as Cashpor's clients, and are perceived as trusted and credible sources of information. The health workers use the mobile savings platform themselves, and clients therefore are able to learn from real-life experiences, rather than theory alone.

Spending time addressing fears and misconceptions:

A large section of the training, says Grameen Foundation, was focused on overcoming women's fears about using mobile phones for financial transactions. The training utilized picture boards to tell stories about the utility of the product, and address concerns and questions directly.

Providing opportunities for hands-on trial: An essential part of the training was providing women the chance for hands-on trial on mobiles. During the training, trainers encouraged women to try out various buttons, in an attempt to overcome their fear of making mistakes.

Challenges faced and lessons learned

Women often lack the confidence to learn to use a mobile phone independently. According to Grameen Foundation, many women did not see the difference between doing it themselves or through an agent. While Grameen Foundation's focus was on getting more women to access the application, either by themselves, or through an agent, they tried to emphasise the benefits and convenience of independent use in their training content and delivery.

Poor design of user interfaces on phones is another key barrier for women. Women often use basic or feature phones which have small, difficult to read screens. They also find the complicated multi-step processes confusing. Grameen Foundation tried to address these in their step-by-step training. The programme also conducted detailed user research for broader dissemination, to inform future development efforts.

Results and next steps

The mobile application allowed clients to access a services (formal savings at a bank) that they did not have easy access to. While clients were excited about the savings opportunity, their access to mobile and comfort (or lack of it) with the technology were key barriers in their adoption of the services. Use of a trusted intermediary like the loan officer greatly facilitated adoption. Cashpor continues to push the boundaries on this and is looking to mobile enable a larger set of financial services.. Leveraging the mobile channel also allowed Cashpor to expand significantly their outreach among unbanked women in rural areas more economically and efficiently. As of end of March 2015, approximately 300,000 poor women had opened savings accounts with Cashpor.

II. PERSONAS OF MOBILE INTERNET USERS AND NON-USERS

We interviewed a wide variety of women across the three countries, with varying levels of mobile usage and awareness. This research informed a set of user personas, which brings these women's diverse experiences and behaviours to life. These personas are organised based on our observations of the women's different skill levels, as well as the incentives women have to learn about mobile internet. In the following charts, "Potential incentive to use internet further" is based on a focus group exercise in which we introduced various internet services to participants and queried their interest in using these various services.



Persona 1

INTERNET ADMIRER

(Rural: Susukan Village, Indonesia) Nunung, 45, runs a bridal make-up business

“The internet café has too many kids and is not convenient, but now that I know what I want to do, I will go to the internet café and learn about the internet till I can afford the smartphone.”

Literacy	Literate in Bahasa
Current device	Owns a basic feature phone (local brand)
Current mobile internet use	No internet use
Adoption path	Nunung has one friend who owns a smartphone, who showed her that various information could be found on the ‘internet’.
Knowledge and comfort level	<ul style="list-style-type: none"> Nunung is a heavy voice user, spending about IDR 100–200k (\$7–\$14) per month. She is aware that the internet could be useful for her business, especially in terms of helping her find ideas for bridal make-up. She compares it to investing in taking make-up courses, which are costly. She is not aware that her feature phone can access mobile internet, since she has never seen anyone using feature phones to use mobile internet. She thinks that only smartphones can access the internet. She assumes that a smartphone would be very expensive, but has never had the chance to check out the real price at a mobile phone store because there isn’t one near her village. In the user test, she guessed that the test smartphone cost almost twice as much as it really did. She is unfamiliar with data cost concepts. For example, she assumes BBM is free since she has heard people say, “You can still send messages over BBM even if you don’t have enough credit to send a text message.”
Social environment	Neither her neighbours nor her partner use mobile internet. Her partner has used internet on his boss’s children’s smartphone to look up interior decoration designs. There is an internet café in the village, but Nunung doesn’t want to go there because she thinks it is full of kids playing online games.
Access to learning channels	She does not have any family members to teach her, but has a friend who uses a smartphone. She does not want to burden her friend too much, so she thinks she will try to learn about the internet at the local internet café with the help of the café agent until she has enough money saved up to buy her own smartphone.
Potential incentive to use internet further	<ul style="list-style-type: none"> She would like to learn to use YouTube and Google image search to look up videos of different styles of bridal make-up. She also wants to use BBM to maintain client contacts.

Persona 2

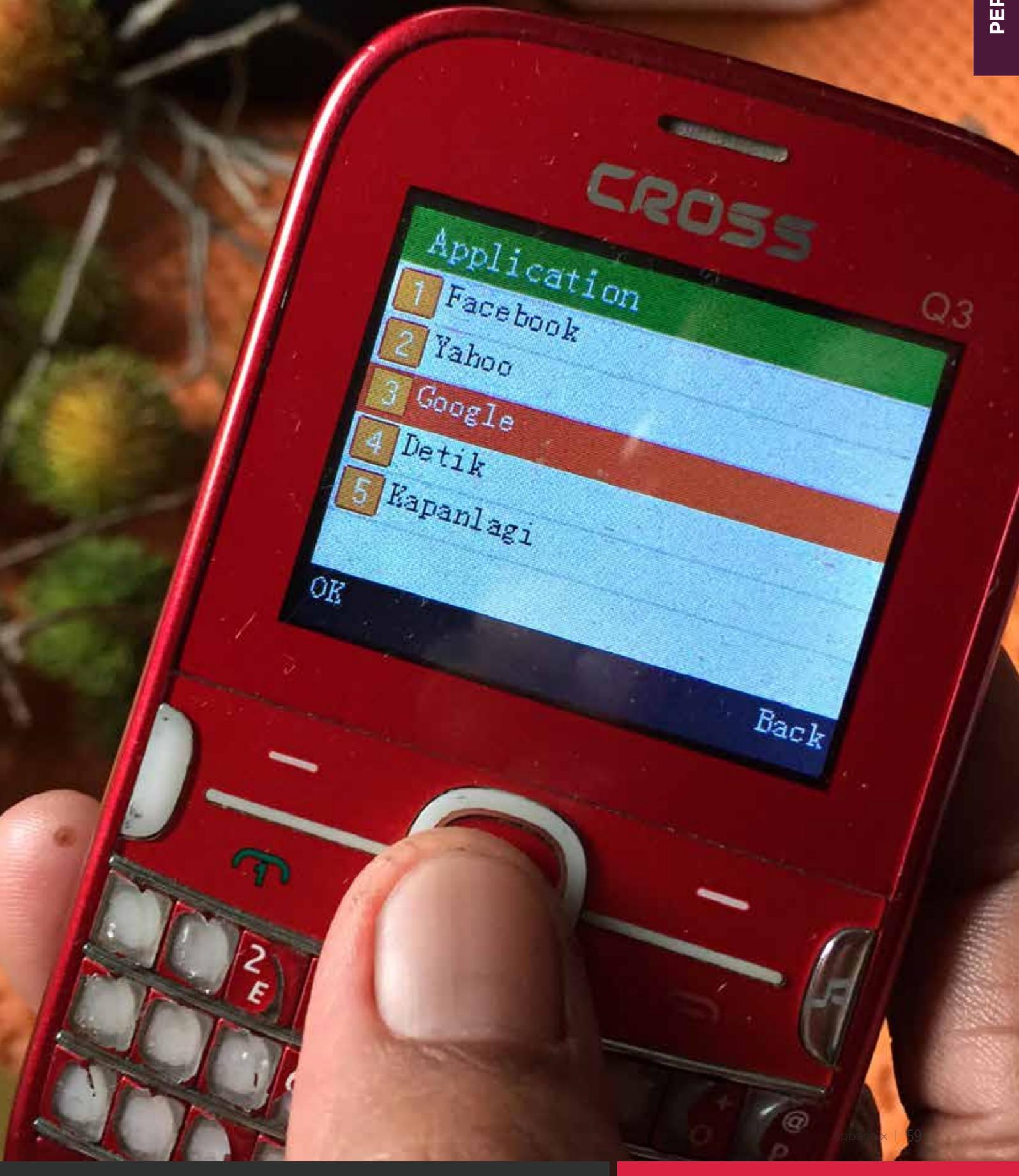
FAMILY GOOGLE-ER

(Rural: Susukan village, Indonesia) Ida, 28, housewife, living with husband and two children, raising poultry at home, teaching village children to read Koran, and selling airtime from home

“I never thought Google could be used for purposes other than education, till I tried to search for ‘how to treat fever in 2 year old’ out of curiosity.”

“I always wanted to learn about internet myself. People around me don’t know either, and there is a limit to how much you can rely on information from others in the village: we all know more or less the same thing.”

Literacy	Literate in Bahasa
Current device	She owns a QWERTY feature phone (local brand) and uses an entry-level, low-cost tablet that she shares with her family.
Current mobile internet use	She uses Facebook and Google search on the family tablet.
Adoption path	Her family purchased a tablet six months ago for about US \$70, when her 10-year-old son’s schoolteacher said they needed to use Google search to help with his homework. Her younger brother set up the tablet and her Facebook account.
Knowledge and comfort level	<ul style="list-style-type: none"> • She uses Google search on the family tablet, mainly to help her son with his homework. • For the first five months, she thought Google search could only be used for educational purposes. Then, she tried searching for other items and found that it could be used for anything. But she thinks that she does not know how to use Google effectively, so does not use it much. • She got signed off from Facebook on the tablet and she could not sign in again because she did not know the account details. Her brother, who signed her up for Facebook, lives far away. She could not recover her password and could not create a new account by herself.
Social environment	Her husband does not know much about the internet since he only uses BBM. Her younger brother is the only one in her entire family who uses a smartphone. Her neighbours do not use internet. Her 10-year-old son is learning to use the internet, but he does not yet know complicated tasks like creating a Facebook account.
Access to learning channels	Her main learning channel is her younger brother, who lives in her hometown and cannot visit her often. She has not tried yet, but is planning to approach people in the community school for help.
Potential incentive to use internet further	<ul style="list-style-type: none"> • She wants to use Skype to connect with her family in her hometown. • She would also like to advertise her husband’s business online, and search for where to buy and sell ducks online, and to expand her poultry business. • She would like to deepen her knowledge of Koran, to teach children better. By accessing classes on Koran online, she could save time, because attending religious gatherings in person is very time consuming.



Persona 3

SOCIAL MEDIA MIGRANT

(Urban: Depok, Indonesia) Ana, 21, living with her mother, a clerk at a shoe shop in a department store

“Internet is helpful as we can explore on our own and promote ourselves.”

“I searched for jobs online but I didn’t get enough information. For such purposes, it’s better to rely on people you know.”

“Facebook is outdated now and there are too many weird people there. Youth are now on Path and Instagram. I keep different social media accounts because there are different sets of friends in each.”

Literacy	Literate in Bahasa
Current device	She owns a mid-range smartphone (local brand).
Current mobile internet use	She mainly uses BBM, WhatsApp, and Path. She also uses Line, Twitter, Facebook, Instagram, and occasionally Google search.
Adoption path	She had an assignment in junior high school to use internet search and create an email address. The internet café was her ‘hangout place’ with friends during high school, where they signed up for Friendster, and later for Facebook, together. She has been adopting new social media through her friends’ recommendations. She began using mobile internet when she purchased a smartphone.
Knowledge and comfort level	<ul style="list-style-type: none"> • She sold her first smartphone, a Samsung Galaxy and bought a local brand of smartphone, as she did not find there was a difference in the Android operating system. • She has multiple social media accounts with friends from different stages of her life. Her first social media account was Facebook, created with friends at the local internet café. Facebook is considered outdated in her current social circle, but she still keeps her account because her oldest school friends are on it. • She understands how to use the web browser (Chrome) and how to download applications from the Google Play Store. • She has never used a website other than Google search and other websites reached via Google search results. • She uses Google search, but has not found it useful for anything beyond looking up simple information. She has tried multiple times to find jobs through Google, but found the information to be either out of date or irrelevant for her skills or location. In her user test, she used ‘job vacancies 2015’ as the first search keywords, then in an attempt to refine the results, she changed the keyword to be ‘job vacancies 2015 accurate’. Because of such failed attempts, she believes the internet is not useful for practical information such as job info, or tips on how to open a business.

<p>Knowledge and comfort level</p>	<ul style="list-style-type: none"> • She typically relies on others to sign up for a new service and suggest new applications and services, although recently she signed up for Line by herself. In the user test, she was asked to look up a website called Kaskus, an internet knowledge forum. She mentioned that she would normally ask a friend about it before trying it herself. On her own, she went to Google search and entered the keywords 'definition of Kaskus', and tried to find the description online instead of visiting the website directly. • She relies on others to recommend a new website or application to try. • She purchases data packages in units of GB, which she uses until it runs out. She does not keep track of her data spending. • She believes that all internet services require a 'friend list' in order for her own questions to be viewed by others.
<p>Social environment</p>	<p>She is the most advanced mobile internet user in her family. Her mother and relatives rely on her to obtain information from Google. All her friends use smartphones and are on multiple social networks, but none of them use any internet services other than social media.</p>
<p>Access to learning channels</p>	<p>Her friends share their knowledge, and are all using mobile internet, but for similar purposes as she does. Therefore, it is not apparent to her how she can advance her skills to use the internet for more than social media.</p>
<p>Potential incentive to use internet further</p>	<ul style="list-style-type: none"> • She would like to search for jobs using specialised websites or applications, rather than a generic Google search. • She also wants to learn how to open her own business using popular internet knowledge forum site 'Kaskus'. • She wants to know how to set up an online store to sell shoes. Currently, she thinks she will sell shoes through BBM, as she has seen others do this.

Persona 4

INTERNET HOPEFUL

(Urban: North Delhi slum, India) Kaushalya, 42, tailor, living with husband and three children

“I want my kids to study and to get a good job. I also want to save up money to buy a new tailoring machine for special types of ‘peeku’ stitches.”

“My six-year-old son knows more about the mobile phone than I do! I don’t think I have even really tried to learn, or thought it necessary.”

Literacy	Semi-literate in Hindi, can read English alphabet
Current device	Owns a basic feature phone (local brand: Micromax)
Current mobile internet use	No internet use
Adoption path	Never felt the need to use internet
Knowledge and comfort level	<ul style="list-style-type: none"> • Kaushalya uses her mobile phone mainly for making and receiving calls. She does not use SMS partly because she doesn’t think it is useful, and partly due to difficulties with text input. • Apart from calling, she loves listening to songs that her children have downloaded onto her phone via Bluetooth. • She is also aware of games on mobile phones, since her children play them on her phone. • She is convinced that her phone does not have internet. In user tests, she scrolled over the ‘internet’ icon on her phone without recognition. • She believes the internet does not have much use for her because it is meant for children and more educated women. Therefore, she has never bothered to learn at all. Besides, she is extremely busy running her shop and taking care of her children.
Social environment	Her husband is also a tailor and owns a feature phone. He does not use internet because he doesn’t see the need for it either. Her children, nieces, and nephews know and actively use mobile internet for schoolwork and for social media.
Access to learning channels	Her children would be her main learning channel, and she believes they could teach her anything that could be useful for her.
Potential incentive to use internet further	<ul style="list-style-type: none"> • She would like to look up tailoring designs and music online.

Persona 5

FACEBOOK ISLANDER

(Urban: Kibera slum, Nairobi, Kenya) Caroline, 32, vegetable seller, widow living with three children

“Internet allows you to meet new friends. I can learn a lot from them.”

“People think more highly of you if you are on Facebook.”

Literacy	Literate in Kiswahili; can read sentences in English
Current device	She owns a basic feature phone (local brand with a 1.8" screen)
Current mobile internet use	Her current use is restricted to Facebook.
Adoption path	An agent in her neighbourhood, who sells downloaded music for mobile phones, set up her Facebook account, and showed her how to access Facebook on her mobile phone.
Knowledge and comfort level	<ul style="list-style-type: none"> • Caroline uses a pre-installed link in her web browser to access the Facebook mobile website. There is no dedicated Facebook application on her phone. • She is proud that she is Facebook friends with American celebrities like Nicki Minaj (she has ‘liked’ her page and receives updates from her), and she copies their hairstyles and fashion. • She does not know what ‘web browser’, ‘website’, ‘web address’, and ‘URL’ mean. • She is aware of Google but thinks her phone “does not accept Google” because there is no pre-installed link in her browser called Google. • When she needs information from the internet, she posts a question on Facebook, hoping her Facebook friends will answer through comments on her post. • She has tried a smartphone very briefly through a friend, but was not allowed to do much. She aspires to own one herself, and is sure she could become comfortable using it with the help of her friend and by experimenting on her own. • She purchases a data bundle only when she gets some extra free cash.
Social environment	Her brother also owns a feature phone and does not use internet beyond Facebook, but he goes to the nearby internet café and has more friends who use smartphones. Her children are still too young to use internet.
Access to learning channels	She can ask for help from the local mobile music seller and her friend who uses a smartphone, but she does not try mobile internet on other people’s phones since everyone has a tight budget for data. She is aware that the internet café in Kibera sometimes hosts classes, but she does not have the time to attend. She wants to have a smartphone of her own to explore and learn how to use mobile internet more.
Potential incentive to use internet further	<ul style="list-style-type: none"> • She would like to use WhatsApp because many people ask her if she is on WhatsApp and she has heard there are videos, music, and news items that she is missing out on. However, she believes that her current phone does not support the application. • She would also like to learn about managing money. • She wants to learn to use OLX to sell her unwanted stuff, as she saw the advertisement on TV. • She wants to train herself to become a salonist (hairstylist), to earn more money than her current work as a vegetable seller.

Persona 6 STRANDED SMARTPHONE OWNER

(Rural: Kitui, Kenya) Sophie, 24, hairdresser, living with two sisters

“Everyone has a phone now. Anyone who does not have an internet phone – it’s their loss.”
 “I learned to use my smartphone by learning about computers first. I think there is no way anyone can learn how to use touchphone without knowing the computer first.”

Literacy	Literate in Kiswahili and English (but cannot speak English)
Current device	She owns an entry-level smartphone—her first smartphone
Current mobile internet use	She mainly uses Facebook and WhatsApp. She also searches for songs to download.
Adoption path	When she purchased her phone two years ago, her Safaricom agent downloaded applications and set up her accounts (Google and Facebook). Except for the initial set-up, she says she acquired her skills by trying on her own after getting the smartphone.
Knowledge and comfort level	<ul style="list-style-type: none"> • She has taken six computer classes and learned about operating systems and Microsoft Office, but not about the internet. • She uses internet search through a shortcut labelled ‘search’ on her mobile phone’s home screen to download music, but does not know she is using Google search, or a web browser. She has not used her browser icon. • She is unfamiliar with terms such as ‘URL’ and ‘website’. She typically uses the name of the musician or the song as search keywords. Downloading music is always ‘hit-and-miss’ because she only opens a few top links in the search results, and a lot of them just give her advertisements without the actual download links. • Her agent set up an email address for her, but she has never used it, and doesn’t know what it is. She doesn’t know how to find it on her phone.

<p>Knowledge and comfort level</p>	<ul style="list-style-type: none"> • She lost her Google account password two years ago. She says the mobile phone agent who set up her account did not tell her the password, and when she went back to the shop to ask for it, he said he had forgotten it. She did not know what to do, so she has not downloaded any applications from the Google Play Store since then. She did not want to go back to the agent, as she was embarrassed and did not want to pay him more. • She knows how to search for people in Facebook, but she does not know how to perform a search in other contexts, such as on the Google Play Store. • She is comfortable operating other Android smartphones. • She purchases a data bundle at a discounted price through someone she knows, whenever she can afford it.
<p>Social environment</p>	<p>She was the first one in her family to get a smartphone, and now her two older sisters also use smartphones. They don't like to share their devices with each other, but do discuss new applications and services.</p>
<p>Access to learning channels</p>	<p>Her elder sisters have a similar level of knowledge, so she relies on her Safaricom agent in the Kitui town centre for learning.</p>
<p>Potential incentive to use internet further</p>	<ul style="list-style-type: none"> • She wants to use Twitter and Skype since she has seen many people use these applications. • She also wants to learn how to use internet search more efficiently to look for songs to download.

Persona 7

COMFORTABLE DELEGATOR

(Urban: Depok, Indonesia) Amah, 40, housewife, living with husband and three children

“My kids ask to use YouTube but I ask my husband to show it to them. I am afraid inappropriate pictures may come up if I look up something in the wrong way.”

“I don’t have much time to learn. But now [after the focus group] I feel I need to learn to use the internet on my own.”

Literacy	Literate in Bahasa
Current device	Owns a basic feature phone (local brand)
Current mobile internet use	Does not use mobile internet herself, but asks her husband and kids to use Google search for her occasionally.
Adoption path	First used the internet when she took her children to an internet café to complete a school assignment.
Knowledge and comfort level	<ul style="list-style-type: none"> • Amah has not been interested in the internet, especially not social media. Google search is the only service she understands and for which she finds some occasional use. • Amah thinks of Google search as a handy reference tool; an alternative to reading books or consulting doctors. She is also aware of YouTube as her kids watch videos on it. • Her children now have smartphones, but she never considered them useful for herself, so she has never tried to learn to use them. Her children call her “old fashioned”. • She “cannot be bothered” to learn to use the internet by herself since she can simply ask her children to help her whenever she needs to find information, and her husband to help and supervise her children’s use of internet.
Social environment	Her family has a PC at home but it is broken. Her husband and her older children all use the internet on a mobile phone and at an internet café.
Access to learning channels	Her older children and husband are all eager to teach her if she is interested.
Potential incentive to use internet further	<ul style="list-style-type: none"> • She would like to follow religious figures on social media. • She wants to access interesting news on the internet, which is not found on TV. • She would like to find housebuilding materials at a cheaper price on the internet.

Persona 8

WALLED INTERNET USER

(Rural: Sirohi, India) Shobha, 20, newly married housewife

“I want to be a beautician and contribute to the household, not just stay at home with the family.”

“My brother downloaded WhatsApp for me. I listen to songs, but don’t know how to download them. Either my brother helps me download them, or other people send me songs on WhatsApp.”

Literacy	Literate in Hindi; can read English and speak a few phrases
Current device	She owns a secondhand smartphone (local brand: Micromaxx Galaxy)
Current mobile internet use	She uses WhatsApp extensively for communication and file transfer. She uses a mix of English and transliterated Hindi words in the English alphabet.
Adoption path	Her husband gave her his used smartphone recently. Her brother helped her configure the data plan and downloaded WhatsApp and music on her phone.
Knowledge and comfort level	<ul style="list-style-type: none"> • Shobha has used her smartphone for only 10 days, but is quite adept with the basics of the phone. • In user tests, she comfortably found key features on the unfamiliar smartphone, including camera, gallery, and downloaded files. • Her mobile internet use is restricted to WhatsApp, as it was the only application her brother set up for her. • She does not know how to download songs by herself from the internet. She receives songs from friends or her brother via WhatsApp. • She has heard of Google and Google Play Store, but has never used them. • She relies on her husband to top-up the phone for data and calls. She does not know how it is done or how much she spends. • She is aware of Facebook, but is not interested in joining as her brother has told her about the potential misuse of images and personal information.
Social environment	She married into a very traditional family. For the time being, she is accompanied by an older female relative when she has to go anywhere outside her home (including to the focus group). She dreams of being a beautician, and has trained for it, but her new conservative family discourages women from working.
Access to learning channels	She believes her brother and her husband are her main learning channels. Her interactions outside the family are quite restricted, so she would need to rely on family members for support. In particular, she is not allowed to go to local mobile shops, since they are located outside the main village, across the highway.
Potential incentive to use internet further	<ul style="list-style-type: none"> • She is interested in learning more about becoming a beautician and running a salon.

III. METHODOLOGY

Our research is based on a combination of desk review of available research, interviews with experts in the sector, and in-depth interviews and user tests with women in Kenya, India, and Indonesia. We conducted more than 25 in-depth reviews with experts in the mobile field, including mobile network operators, handheld device manufacturers, mobile and mobile internet application developers (particularly those that develop and implement mobile-based applications for low-income and rural populations), as well as donors and non-profits that focus on digital and/or mobile literacy issues for low-income or rural populations. In addition, we conducted a thorough review of over 100 reports and documents on the topic.

However, given the dearth of secondary data, the core of our research was a series of human centered design (HCD) research activities in three countries: Kenya, India, and Indonesia. These countries were selected because of their large populations, as well as their diversity in mobile phone ownership and mobile internet access.

- Kenya, a low-income country⁴⁰, has relatively high levels of female mobile phone ownership and moderate levels of mobile internet usage among women.
- Indonesia, a middle-income country, has high levels of female mobile ownership and high levels of mobile internet use.
- India, a middle-income country, has low levels of female mobile phone ownership and low levels of mobile internet use.

Figure 10

Overview of demographics, gender parity, and mobile internet usage in Kenya, India, and Indonesia

	METRIC	KENYA	INDIA	INDONESIA
Demographics and economics	Population ⁴¹	44 million	1,252 million	250 million
	% of population: female	50%	48%	50%
	% of population: rural	75%	68%	48%
	GDP per capita ⁴²	\$2,795	\$5,412	\$9,561
Gender parity	Literacy rate: male vs female ⁴³	<ul style="list-style-type: none"> • Female: 66% • Male: 78% 	<ul style="list-style-type: none"> • Female: 59% • Male: 79% 	<ul style="list-style-type: none"> • Female: 90% • Male: 96%
	Global gender ranking ⁴⁴	37/142	114/142	97/142
	Estimated unique subscriber penetration: male vs female ⁴⁵	<ul style="list-style-type: none"> • Female: 41% • Male: 44% 	<ul style="list-style-type: none"> • Female: 28% • Male: 43% 	<ul style="list-style-type: none"> • Female: 38% • Male: 43%
Mobile internet	% connections 3G ⁴⁶	14%	11%	33%

40. World Bank, 2014

41. World Bank, 2013

42. World Bank, 2013. In USD adjusted for PPP; based on current prices.

43. World Bank, 2011 (Indonesia); Ministry of Statistics and Program Implementation, 2011 (India); World Bank, 2007 (Kenya)

44. World Economic Forum, 2014, "Overall Global Gender Gap Ranking". A higher ranking indicates a higher level of inequality. The Index benchmarks national gender gaps using economic, political, education, and health criteria.

45. GSMA, 2015, "Bridging the Gender Gap: Mobile access and usage in low- and middle-income countries" [Original footnote: Graph shows proportion of the population who are unique subscribers. GSMA Intelligence defines 'unique subscribers' as "Total unique users who have subscribed to mobile services at the end of the period, excluding M2M." Male-female split of unique subscribers was estimated from primary research on reported SIM ownership. Population data source is the World Bank Health Nutrition and Population Statistics: Population Estimates and Projections, 2014.]

46. Q4 2014; defined as 3G connections, expressed as a percentage of total connections. Source: GSMA Intelligence.

In each country, our primary research consisted of the following activities:

- 1. Focus group discussions:** In each country, we conducted two focus groups in an urban location and two groups in a rural location. Each group had five to eight women. Focus groups explored participants' current awareness of mobile internet, their usage and adoption path, as well as their motivations and interest levels.
- 2. User tests:** We selected two participants from each focus group for a hands-on trial and walk-through of their mobile internet usage. We observed and tested their current skill level and ability on their own device and on a preferred test device, usually a smartphone. We gave users the choice of three types of phones: a basic feature phone with internet access, a QWERTY-

based phone with internet access, and an Android-based entry-level smartphone.

- 3. Home interview:** An additional participant from the focus group was selected for a home visit. Here we conducted a hands-on trial of mobile internet, as well as interviews with family members or friends with a focus on understanding the user's 'influencing environment'.
- 4. Informal intercept interview:** We also conducted 8–10 intercept interviews to get additional perspectives from men, as well as from key influencers, such as mobile shop agents or internet café owners.

In total, we interviewed 85 women across these three countries, and more than 30 other influencers in their communities.

Participant profiles

Given the variability in women's access, motivations, and skills across the three countries, as well as across regions and socio-economic segments within the three countries, we defined two distinct sets of groups in each urban and rural location. The goal was to hear distinct viewpoints from both current users and current non-users of mobile internet. **To avoid conflating lack of access to mobile phones with a complete lack of awareness of the internet, we picked individuals who had access to a shared or owned mobile device, and had basic awareness of mobile internet.** To generate rich discussions, we also tried to recruit women who were outspoken and demonstrated strong motivation to make progress. Therefore, our research did not cover the poorest women, who often lack access to mobile phones entirely, or are completely illiterate and lack numeracy skills.

Whereas we did not put a specific limit on income or education level, we aimed to recruit women with limited education and financial constraints of varying degrees. We also assessed the ability of participants to use mobile internet beforehand, to ensure we did not recruit women with advanced skill levels. Due to the differences in literacy levels and the characteristics of the research locations in each country, participant profiles varied slightly:

Kenya: All participants owned their mobile phone. Most participants were literate in Kiswahili, except a few semi-literate participants in the older urban group. English literacy was low, except in one rural group of young women. Except for the few semi-literate participants, all women were able to use Safaricom's M-Pesa and/or M-Shwari service on their own. One of the four focus groups was comprised of entry-level smartphone users. Current users of mobile internet accounted for about half of all participants, who either used smartphones or feature phones.

India: About half of all participants owned mobile phones, but the rest shared phones with family members. About half the participants were literate in Hindi. English literacy was very low; the majority of participants recognised the alphabet, but none was fully literate in English. Less than half of participants were current users of mobile internet.

Indonesia: All participants owned their mobile phones and were literate in Bahasa. Several participants also had a PC or tablet at home, even though they were typically for shared use. Slightly more than half of participants were current mobile internet users. All users had experience using the internet on a PC, either on their own or with a helper, prior to using mobile internet. Younger women participants all had internet education in junior high school and went to an internet café to do homework or hang out with friends. There were more married participants due to the culture of women marrying at an early age.

Figure 11

Participant profiles in three countries

	Kenya	India	Indonesia
URBAN	<ul style="list-style-type: none"> • Young (18–25), single, working women • Semi-literate in Kiswahili and English • Mix of basic and smartphone owners • Basic but not advanced mobile internet users 	<ul style="list-style-type: none"> • Young women (18–26), mix of housewives, students, and working women • Literate in Hindi and semi-literate in English • Majority smartphone owners • Basic but not advanced mobile internet users 	<ul style="list-style-type: none"> • Young (18–25), single, students or working women • Literate in Bahasa and, in some cases, English • Majority smartphone owners • Basic but not advanced mobile internet users
	<ul style="list-style-type: none"> • Older (27–36), married women with children, running small businesses • Semi-literate in Kiswahili, recognise words in English • Own basic phones • Some or no internet experience 	<ul style="list-style-type: none"> • Older (35–45), married women, worked as house-holds and cooks • Semi-literate in Hindi, recognise English alphabet • Own basic phones • No internet experience 	<ul style="list-style-type: none"> • Older (33–46), married housewives with children • Literate in Bahasa • Basic phone owners • Some or no internet experience
RURAL	<ul style="list-style-type: none"> • Young (20–28), single, working women • All fully literate in Kiswahili and English • Largely smartphone owners • Basic but not advanced internet users 	<ul style="list-style-type: none"> • Young (16–25), mix of married and single, students or working women • Most literate in Hindi, and semi-literate in English • Majority share or borrow phones, mix of smartphone and feature phones • Occasional use of the internet 	<ul style="list-style-type: none"> • Young (19–27), students or working women • Mix of QWERTY and touchphone owners • Regular but not advanced mobile internet users
	<ul style="list-style-type: none"> • Older (34–45), married women with children, small business owners • Fully literate in Kiswahili, semi-literate in English • Own basic phones • No mobile internet experience 	<ul style="list-style-type: none"> • Older (28–40), married women with children, mainly housewives • Some were literate in Hindi, most recognised English alphabet • Mix of owners and borrowers, most had feature phones • No internet experience 	<ul style="list-style-type: none"> • Older (27–43), married women with children, mix of housewives and self-employed • Literate in Bahasa • Basic phone owners • No internet experience



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