The digital lives of refugees:

How displaced populations use mobile phones and what gets in the way

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The UN Refugee Agency (UNHCR) works to ensure that all fleeing violence and persecution have the right to seek asylum and find safe refuge. UNHCR is mandated to lead and co-ordinate international action to protect refugees, safeguarding their rights and those of other forcibly displaced persons.

UNHCR believes that displaced populations and hosting communities have the right, and the choice, to be included in a connected society, and have access to technology that enables them to build better futures for themselves, their families and the world.

For more information go to:
www.unhcr.org/innovation/connectivity-for-refugees/

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Contents

Acronyms

COW	Cell On Wheels
CSR	Corporate Social Responsibility
CVA	Cash and Voucher Assistance
DCA	DanChurch Aid
DRC	Democratic Republic of Congo
FGD	Focus Group Discussion
FDP	Forcibly Displaced Persons
ID	Identity Documentation
JOD	Jordanian Dinar
KYC	Know Your Customer
LPG	Liquid Petroleum Gas
LTE	Long-Term Evolution
MENA	Middle East and North Africa
MFS	Mobile Financial Services
MNO	Mobile Network Operator
M4H	Mobile for Humanitarian Innovation
NGO	Non-Governmental Organisation
PAYG	Pay-as-you-go
PWD	Persons with Disability
PWSN	Persons with Specific Needs
RWF	Rwandan Franc
SHS	Solar Home Systems
UGX	Ugandan Shilling
UNHCR	United Nations High Commissioner for Refugees
USD	United States Dollar
WASH	Water, Sanitation and Hygiene

Executive summary

There is growing recognition among donors and humanitarian organisations that mobile technology and mobile network operators (MNOs) have an important role to play in the delivery of dignified aid. This includes providing digital tools that help people affected by crisis become more self-sufficient, especially those in protracted humanitarian crises. However, more evidence is needed to understand the digital needs and preferences of people affected by crisis, how they are currently accessing and using mobile technology, and the barriers they encounter.

This GSMA research, conducted with support from UNHCR (United Nations High Commissioner for Refugees), aims to build this evidence base, providing humanitarian organisations and MNOs with unique insights and direction on how to work together to digitise humanitarian assistance and ensure the benefits of mobile technology are shared equally by all.

This report explores the ways in which **mobile technology** can improve access to **financial services, utilities (notably energy)** and **identity services**, as well as information to **improve food security**, with an overarching focus on **gender and inclusivity** in refugee contexts. The study aims to provide insight into these key thematic areas, drawing out emerging trends and cross-cutting themes across different contexts.

The two main objectives of the research are to:

1. Provide data and insights for **humanitarian organisations** seeking to design digital interventions that better serve refugee populations and ensure the most vulnerable are not left behind.
2. Generate robust evidence to inform the **private sector, particularly MNOs**, of the market opportunity of serving refugees and host communities.

The research adopted a mixed methods approach and was conducted in three humanitarian contexts: **Jordan (urban refugees), Rwanda (Kiziba refugee camp)** and **Uganda (Bidi Bidi refugee settlement)**. A range of methodological approaches were employed, including nearly **3,000 survey interviews and 55 focus group discussions**, as well as market observations and digital day snapshots[1] with refugees and host community members.

1. The digital day case study is a "day in the life" methodology that asks a participant to walk through their typical daily mobile phone usage to identify stories, experiences and unique use cases.

Key Findings

The analysis begins with an overview of **mobile technology access, use and barriers** (section 3) in each context. This digital snapshot of refugees provides a foundation for subsequent chapters on five thematic areas.

1. **Over two-thirds of refugees in all three research locations are active mobile phone users,**[2] with the highest proportion in Jordan.
2. **Refugees access mobile services in creative ways depending on their context:** sharing or borrowing handsets and owning multiple SIMs. For those who do not own handsets, borrowing is an important way of getting connected.
3. **The most commonly used mobile services among active users in all three research locations are making calls and using SMS services.** Mobile money is one of the top three mobile use cases in Kiziba and Bidi Bidi, where 59 per cent and 44 per cent of refugees use mobile money, respectively.
4. **Awareness of mobile internet is high, but only about a third of respondents in Bidi Bidi and Kiziba have used it.** The findings also indicate that refugees would like to use mobile internet more than they are currently able to.
5. **Affordability, literacy and digital skills, and charging are the main barriers** to mobile phone ownership and mobile internet use in all contexts.

Gender and inclusivity

Gender and inclusivity (section 4) quantifies the discrepancies in mobile access and use for vulnerable segments of the refugee population, including women and persons with disabilities (PWD). This theme also explores the ways in which mobile-enabled solutions can enhance access to information for vulnerable groups.

6. **There is a gender gap[3] in mobile phone ownership and use among refugees.** The gap is widest in Bidi Bidi where women are 47 per cent less likely than men to own a mobile. This gender gap is 13 per cent in Kiziba.
7. **The gender gap increases for more diverse mobile services and use cases** (e.g. advanced use cases like accessing educational services), especially in Bidi Bidi and Kiziba. However, in Jordan there is more parity between men and women in terms of usage of internet-enabled phones.
8. **Although the prevalence of disability among refugees is highest in Jordan, PWD appear to have greater challenges accessing mobile phones in Kiziba and Bidi Bidi than in Jordan.**
9. **In both Bidi Bidi and Kiziba, the use of SMS is significantly lower among refugees with disabilities.**
10. **A key barrier to mobile ownership and use is limited livelihood opportunities for refugee women and PWD**, which makes them disproportionately affected by the cost of connectivity.

2. An "active phone user" is defined as a customer who has used a mobile phone at least once in the last three months.
3. The gender gap in mobile phone ownership and mobile internet use is calculated using the same formula as in the GSMA Mobile Gender Gap analysis. It is presented as a percentage of how less likely a woman is to own/use a mobile phone or certain mobile features than a man.

Mobile financial services

Mobile financial services (MFS) (section 5) include a range of uses of mobile phones to access financial services and make transactions. Mobile money is the most commonly used financial services system by refugees and host communities in Bidi Bidi and Kiziba, and these refugee communities are the primary focus of this chapter.

11. **Mobile money use is high among refugees in Bidi Bidi (44 per cent) and Kiziba (59 per cent),** but is only used by one per cent of refugees surveyed in Jordan.
12. **There are notable gender differences in mobile money use.** Male refugees use mobile money more than female refugees, regardless of whether they own a phone or not.
13. **Refugees with disabilities are less likely to use mobile money** in both Bidi Bidi and Kiziba.
14. **Person-to-person (P2P) transfer, airtime top-up and international remittance** are the most commonly used mobile money services among refugees in Bidi Bidi and Kiziba. This somewhat reflects global trends, as P2P and airtime top-ups are the most commonly used mobile money services worldwide.
15. In Bidi Bidi and Kiziba, **identity-related issues**, such as not having the required documentation to register for a mobile money account, are major barriers to the reliable use of the service. **One's level of trust in the mobile money service also has an effect on usage.**

Mobile-enabled utilities

Mobile-enabled utilities (section 6) focuses on the ways in which mobile technology can be used to expand or improve access to energy, water and sanitation services in humanitarian contexts through mobile payments, machine-to-machine (M2M) connectivity[4] and by leveraging mobile infrastructure.

16. **Lack of a power supply can affect the ability of refugees to keep their mobile phones charged and stay connected.** Only a third of refugees in Kiziba have a power source in their home compared to around half of refugees in Bidi Bidi. Conversely, virtually all urban refugees in Jordan have a power source in their home.
17. **Use of solar home systems (both mobile and non-mobile enabled) is highest in Bidi Bidi** where 13 per cent of those surveyed use one.
18. **Refugees report that their most pressing energy need is charging phones**, and the availability of charging and the associated cost have a significant influence on their mobile phone usage.

Digital identity

Digital identity (section 7) is essential for accessing basic services and supporting socio-economic development. Mobile technology is uniquely positioned to enable accessible and inclusive digital identity, which in turn opens access to essential services for people affected by crisis.

19. Refugees need proof of identity to access mobile (and increasingly humanitarian) services in their own name. Yet, **slow issuance of identity documentation is hampering the ability of refugees to register for mobile services in their own name**, especially in Bidi Bidi and Kiziba.
20. **Privacy concerns associated with digital identity are common** and acutely felt by community leaders in Bidi Bidi.
21. Refugees use their mobile phones to **store personal information** related to their identity.

Food security and climate change

Food security and climate change (section 8) focuses on mobile solutions for food security, adaptation and resilience to climate change. Climate change and food security can affect refugees in a multitude of ways, and are inextricably linked to conflict and forced displacement. This chapter focuses on Bidi Bidi given that most refugees there rely on subsistence crops. .

22. Among refugees in Bidi Bidi, **calling is the primary mobile channel used for agriculture**, but a small number of farmers are learning new agricultural practices online.
23. In Bidi Bidi there is **high demand to leverage mobile services to support agriculture and access information on pricing and weather.**
24. Refugees who engage in subsistence farming are **price sensitive**, and their low use of mobile for agricultural purposes is due primarily to the prohibitive cost.

The report concludes (section 9) with a summary of key themes and considerations for key stakeholders.

There is a shift underway towards mobile-enabled services for refugees, which requires an enabling ecosystem to mature. **The transition to mobile-based services offers significant protection dividends and other wide-ranging benefits for refugees** who are digitally literate, have the means to be digitally included (such as appropriate ID) and can access and engage with mobile services effectively.

This is an opportunity that humanitarian organisations should spend time and resources embracing, particularly since mobile ecosystems do not mature equitably on their own. This is evidenced by the significant mobile gender and disability gaps quantified in this research. Without concerted efforts to promote digital inclusion, existing inequalities in refugee populations may be exacerbated and deny the life-enhancing opportunities of mobile to the most vulnerable.

There is also an important role for MNOs in this transition in ensuring that products and services are tailored to the needs of different demographic groups. This is an opportunity to serve new customers who are currently unconnected and underserved. For instance, if the mobile ownership gap was closed in Bidi Bidi, an additional 15,500 women would own a phone.

1

Introduction

1.1 Context

There is growing recognition among donors and humanitarian organisations that mobile technology and mobile network operators (MNOs) have an important role to play in delivering dignified aid, while also providing a path to self-sufficiency for people affected by crisis, especially those facing protracted humanitarian crises.

The GSMA Mobile for Humanitarian Innovation (M4H) programme works to accelerate the delivery and impact of digital humanitarian assistance. The M4H programme envisions a digital humanitarian future in which mobile and digital solutions play an optimisation role in providing improved access to services, information and choice for people who could be or already are affected by crisis.

Mobile technology can improve access to mobile money, utility services and identity services, and help to strengthen resilience to climate change. To digitise humanitarian assistance, private-sector involvement, particularly from the mobile industry, will be essential.

1.2 Purpose of the study

The GSMA conducted research in three countries (Jordan, Rwanda and Uganda) hosting large refugee populations. Each context has distinct characteristics and prevailing political and regulatory environments, which helped to build evidence and a better understanding of how refugees are accessing and using mobile technology and the nuanced barriers they face. The research study had two main objectives:

1. **Provide data and insights for humanitarian organisations seeking to design digital interventions that can better serve refugee populations and ensure that the most vulnerable are not left behind; and**
2. **Generate robust evidence to inform the private sector, particularly MNOs, of the market opportunity of serving refugees and host communities.**

Specifically, the study aims to provide insight into two key areas where there are evidence gaps, and draw out emerging trends and cross-cutting themes across different contexts:

- **Mobile phone ownership, access, use and impact among refugees; and**
- **Barriers to mobile phone ownership, access and use of mobile-enabled services.**

The study is based on survey interviews (face to face and telephone) and focus group discussions (FGDs) with refugees in three refugee-hosting countries, with support and collaboration from the UN High Commissioner for Refugees (UNHCR). Including three distinct refugee communities (and host communities) in the research allows various stakeholders to consider which contexts may be most relevant to their work. Different aspects of the data and analysis are therefore more relevant to certain subsets of humanitarian and private-sector organisations, particularly MNOs. The intention is that the report will help these stakeholders focus their efforts and provide evidence to craft effective digital interventions. The holistic nature of the research will support multi-stakeholder platforms and partnerships in the humanitarian and mobile technology sectors.

1.3 Structure of the report

The report begins with a summary of the methodological approach employed in the research (section 1.4) followed by the limitations and challenges of the study (section 1.5). A contextual overview explaining the humanitarian situation, demographics and MNO-operating environment is then presented for Jordan (section 2.1), Rwanda (section 2.2) and Uganda (section 2.3), with comparisons made between them (section 2.4).

The main analysis is organised into six sections: Mobile technology in refugee contexts (section 3), Gender and inclusivity (section 4), Mobile financial services (section 5), Mobile-enabled utilities (section 6), Digital identity (section 7) and Food security and climate change (section 8).

The report concludes with a summary of the key themes (section 9.1) and recommendations for key stakeholders (section 9.2).

1.4
Summary of the methodology

The research study adopted a mixed methods approach and was conducted in three humanitarian contexts: **Jordan (urban refugees), Rwanda (Kiziba refugee camp)** and **Uganda (Bidi Bidi refugee settlement)**. Quantitative and qualitative data were collected between October 2018 and January 2019 in these three distinct refugee settings with three refugee populations. The mixed methods approach used a range of tools to gather data from different stakeholders, which helped to build a detailed understanding of refugees' experiences, perceptions and needs, and triangulated data from different sources. A full explanation of the methodology is provided in Annex 1. Table 1 outlines the types of data tools used and the number of participants reached.

All questions in the survey were optional and respondents sometimes chose not to answer. In these instances, data analysis was based on the total eligible sample rather than rebasing the analysis to only include those who provided a response. Item non-response was not high enough for any question to raise concerns about accurate representation.

Table 1

Overview of data tools employed

Tool	Jordan	Rwanda	Uganda	Total
Survey interviews with refugees	728	727	755	**2,210**
Survey interviews with host community members	258	213	273	**744**
Focus groups with refugees	11	19	19	**49**
Focus groups with host community members	3	1	2	**6**
Digital day snapshots with refugees	4	5	5	**14**
Key informant interviews (humanitarian and private-sector stakeholders)	3	4	2	**6**

Sampling approach

The sampling criteria for the face-to-face survey was calculated based on available population data for host communities and refugee populations provided by UNHCR.

In **Kiziba camp (Rwanda)**, population data by quarter was not available so an even number was sampled across the camp's 10 quarters. All quarters were covered and enumerators sampled every fifth house. Due to safety concerns, enumerators stayed close to the roads, but were still able to travel deep into each quarter. For the host community, the majority of the data was collected from communities living further away from the camp, given Kiziba is relatively isolated. Additional permissions for data gathering were required for this activity, delaying the data collection and requiring a second visit to capture their voices. Given the distance from the camp, the closest three villages were chosen as 'host communities'. In each of the villages, the enumerators moved on foot, following the roads and sampling every fifth house until the required sample number was reached. Due to the dispersed nature of the villages, the enumerator team sometimes struggled to reach households far from roads and had to adapt the sampling strategy in such situations.

In **Bidi Bidi (Uganda)**, refugee population data was available from UNHCR's recent verification exercise. Using data on the number of adults (18+, male and female) in each zone, the sample was stratified to capture a proportional number of men and women in each zone. The host community sample was calculated from population data provided by the local government. The breakdown of host community districts was broadly matched with zones in the settlement and sampled in the same way. The enumerators sampled from different villages in each zone and sampled every fifth house. Due to the rural and dispersed nature of the settlement, the enumerator team sometimes struggled to reach households far from roads and had to adapt the sampling strategy.

In **Jordan**, the survey sample was generated by the UNHCR survey sampling team in a manner consistent with their other data collection work in Jordan, with the parameters set to choose a random representative sample of the urban population of refugees from Syria. Refugees with other countries of origin (who make up eight per cent of the refugee population[5] in Jordan) were not included in the initial sample from UNHCR, and the research team decided to continue with this sample because it was consistent with the samples in other research sites where refugees from only one country of origin were sampled. Refugees of other nationalities were included in the qualitative sample. The host community sample of Jordanian nationals was chosen to mirror the distribution of age, gender and location in the refugee sample.

1.5
Research limitations and challenges

In a study of this nature, methodological challenges are inevitable. The overarching challenges are outlined below and country-specific challenges and limitations are presented in Annex 2. These challenges are included for the benefit of others conducting similar work, as well as to provide the context for the findings.

- In Uganda and Rwanda, the survey interviews were conducted in multiple languages due to the variety of languages spoken in the refugee and host communities.[6] Ensuring the quality of enumerator translations during data collection was a challenge, and additional enumerator training was conducted to mitigate this. In the few instances where no common language was shared or a translator was not present, interviews could not be conducted.
- It was not always possible to accurately ascertain the age groups of focus group participants and to ensure all groups matched the sampling criteria. Also, participants were selected by partner organisations and not all had the anticipated phone type (basic or internet-enabled).

1.6
A note on terminology

It is important that the research findings are not interpreted as representative of the country as a whole, or of any other refugee population in the country. In Rwanda, research was conducted with refugees resident in Kiziba camp, with findings related to refugees labelled as "Kiziba". Similarly, in Uganda, research was conducted with refugees living in Bidi Bidi settlement and findings are labelled as "Bidi Bidi". In Jordan, where survey interviews were conducted with refugees across the country and the qualitative research focused on refugees living in urban settings in Amman, Irbid and Zarqa, findings are labelled as "Jordan". Findings related to the host communities refer to populations living in close proximity to refugee settings.

5. Refugees from other countries of origin, including Iraq, Somalia, Sudan and Yemen, were included in the focus groups as chosen by UNHCR.
6. For example, in Bidi Bidi, over 20 languages are spoken.

2 Research contexts

This section details the nature of each research setting, or context, for urban-integrated refugee populations of Syrians in Jordan, encamped refugees from the Democratic Republic of Congo (DRC) in Rwanda and refugees from South Sudan in Uganda. The findings cannot be generalised to the whole country as they are based on data collected from specific research sites in each country.

2.1 Jordan

Jordan has been significantly affected by the Syrian crisis. The country hosts the second highest share of refugees compared to its population in the world, with 89 refugees per 1,000 inhabitants, not including nationalised Palestinians. As of April 2019, there are 756,551 persons of concern living in Jordan, 16 per cent of whom are living in camps: Zaatari (77,033), Azraq (39,706) and Emirati Jordanian Camp (6,595). The other 84 per cent of refugees registered in Jordan live in urban areas. In total, there are 665,498 Syrian refugees, as well as refugees from Iraq, Yemen, Sudan and Somalia.[7] This research study was conducted with Jordan's urban Syrian refugee population, who are concentrated in the cities of Amman, Mafraq, Irbid and Zarqa. As of 2017, the capital Amman hosts 32 per cent of refugees in Jordan[8] and has a total population of approximately four million.

Refugees in Jordan have differing access to services depending on whether they reside in camps or urban settings. This research focuses on the 82 per cent of refugees in Jordan living in urban areas.[9] In January 2018, the government revoked eligibility for subsidised healthcare for people living outside refugee camps.[10] Many urban refugees do not have verified refugee status in Jordan and live in urban areas without permits. In 2017, an estimated 86 per cent of urban refugees were living below the poverty line in Jordan.[11] In March 2018, the Government of Jordan sought to offer these refugees greater protection by regularising their status, which reduces their risk of arrest for illegally residing outside refugee camps and increases their access to jobs, aid and education. This decision affected 30,000 to 50,000 Syrian refugees. Previously, refugees had to meet stringent conditions to gain permission to live outside the camps, and those without permission were unable to get identification cards for work permits or receive cash and voucher assistance (CVA) from the United Nations.[12] As of October 2018, more than 50,000 Syrian refugees have received active work permits as part of a government effort to open formal employment opportunities for Syrians.[13]

UNHCR coordinates the refugee response in collaboration with the Government of Jordan and humanitarian partners. UNHCR Jordan was the first UNHCR operation to use iris-scanning biometrics for refugee registration. As of February 2018, 93 per cent of registered Syrian refugees were registered using biometric technology. UNHCR has used iris scans since 2017 to distribute monthly cash assistance to vulnerable refugees through bank ATMs and, more recently, through mobile money providers.[14] Amman hosts the largest urban registration centre in the Middle East and North Africa (MENA) region, UNHCR's Anmar Hmoud Registration Centre, which can process up to 4,000 refugees daily.

Mobile phone use is high in Jordan. The total number of phone subscriptions is higher than the number of inhabitants. Anecdotal estimates suggest that approximately 25 per cent of urban Syrian refugees have access to smartphones.[15] However, prior GSMA research shows a significant gender divide in mobile phone ownership in the general population: women in Jordan are 21 per cent less likely than men to own a phone. Further, some 74 per cent of women SIM owners do not have their SIM registered in their own name compared to 40 per cent of men.[16] This suggests women are less likely to have access to mobile technology and mobile internet services.

The mobile gender gap among refugees has not been quantified, but Syrian female refugees report cost of handsets, SIMs and credit as major barriers to phone usage, as well as fear of fraud and harassment and digital illiteracy. Complex gender norms influence how women refugees in Jordan interact with digital technology.[17] UNHCR surveys in 2016 found that refugee families in Jordan were spending an average of eight per cent[18] of their cash assistance on mobile connectivity. This is significant given the high levels of poverty among urban refugees.

The telecommunications infrastructure is well developed in Jordan, with three MNOs holding approximately the same market share: Zain, Umniah and Orange. 4G Long-Term Evolution (LTE) services are available in Jordan. Mobile financial services (MFS) are expanding through support from the Central Bank of Jordan.[19] Although Jordan's regulatory environment is encouraging the growth of mobile money, linked to the Jordan Mobile Payment (JoMoPay) platform,[20] mobile money is still nascent with approximately one per cent of the adult population having a mobile money account in 2017.[21]

Despite the limited implementation to date, mobile money providers and humanitarian organisations are optimistic about the role mobile money will play in the distribution of CVA in coming years. In February 2018, the Central Bank of Jordan, supported by the Gates Foundation, launched the Mobile Money for Resilience (MM4R) initiative to provide MFS to refugees and host communities. In addition, GIZ has assisted the Central Bank since 2011 with microfinance and financial inclusion interventions, and supported the inclusion of refugees in the development of the JoMoPay platform. GIZ has also been running a collaborative financial literacy campaign, working with 20 partners to increase awareness and use of mobile money accounts.[22]There is a high level of interconnectivity between mobile services and the financial ecosystem, according to a 2017 report by CGAP. There is, however, a strong cultural norm of cash payments, which is a barrier to the uptake of mobile money.[23]

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2.2 Rwanda

As of November 2018, 150,448 refugees are being hosted in Rwanda. Some 52 per cent of refugees in Rwanda are from the DRC and hosted in five camps: Gihembe, Kiziba, Nyabiheke, Kigeme and Mugombwa. Some 47 per cent of refugees are from Burundi and are largely hosted in Mahama Camp and urban areas. This research study was conducted in Kiziba camp, which is the oldest refugee camp in Rwanda, located in the Karongi District of the Western Province. Established in 1996 to cope with the influx of refugees fleeing civil war in the DRC,[24] Kiziba hosted 17,385 refugees at the end of 2018.[25]

The Rwandan government has granted refugees the right to work and be integrated in national health and education systems.[26] In August 2018, the Government of Rwanda, the National Identification Agency, the Rwanda Directorate General of Immigration and Emigration and UNHCR launched an initiative to provide verified refugees living in Rwanda with national refugee identification cards. An ongoing joint verification exercise verifies the registration of refugees and asylum seekers to prepare the identity cards and collect biometric data. The goal of the refugee ID cards is to facilitate access to public and private services, employment and increase freedom of movement of refugees inside Rwanda.[27] In Kiziba, the verification exercise was 93 per cent complete at the end of 2018.[28] There are limited employment opportunities for refugees living in Kiziba, but in a 2017 UNHCR participatory assessment, refugees there expressed a preference for working inside the camp because they are subject to taxation and healthcare costs when they work outside the camp.[29]

There are two major MNOs in Rwanda: MTN and Airtel-Tigo. MTN Rwanda has the widest network coverage in the country and states that its network is widely available in remote areas and refugee camps.[30] MNOs are working to rapidly expand services across the country. A partnership between Korean Telecom Rwanda Networks and the Government of Rwanda was announced in 2018 to bring 4G LTE network coverage to 95 per cent of the Rwandan population.[31] MTN also announced in 2018 a USD 20 million investment to upgrade its 3G coverage.[32] Currently, MTN Rwanda's network is largely 2G in rural areas.[33]

Mobile money is widely used in Rwanda, with 31 per cent of the population reporting using a mobile money account.[34] There are four live mobile money services in the country: MTN Mobile Money, Airtel Tigo, Dau Pesa and MCash. Since the Airtel-Tigo merger, the MNOs have integrated their MFS platforms[35] and announced in 2018 that customers will receive a quarterly dividend of interest on funds deposited in their mobile money accounts.[36] MTN Rwanda is working to expand the services provided through its mobile money platform. Through a partnership with KCB Bank, MTN mobile money users can access loans and savings products, and other partnerships have provided access to e-health and e-learning platforms. MNOs are currently working on securing regulatory approval to implement cross-network services, following similar progress in Kenya and Tanzania. Mobile money interoperability will bring lower transaction costs and convenience to users, and this effort is being encouraged by the Government of Rwanda to expand financial inclusion.[37]

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2.3 Uganda

There are 1.2 million refugees in Uganda, over a million of whom have arrived in Uganda since 2016. The main country of origin is South Sudan followed by the DRC.[38] Currently, 66 per cent of refugees in Uganda are from South Sudan.[39] Refugees are located across 13 districts, with the highest populations in Yumbe (223,253), Adjumani (202,479), Arua (155,107) and Moyo (118,936).[40] Refugees who arrive in the northwestern Yumbe district are settled in Bidi Bidi refugee settlement, which has a population of 223,253.[41] Bidi Bidi is the largest refugee settlement in Uganda and the second largest in the world, covering 250 square kilometres.

The vast majority of refugees in Bidi Bidi have arrived since 2016 and this influx has put significant pressure on natural resources for the 585,000 people living in host communities.[42] The Government of Uganda has one of the most progressive refugee policies in the world, granting refugees freedom of movement, the right to work, access to social services and provision of land. However, refugees face challenges using digital financial services due to the taxes imposed by the government in mid-2018. For example, there is a ban on selling airtime scratch cards and the government has imposed a 200 Ugandan Shilling (UGX) tax per day for social media.[43]

Nationally, there is widespread use of mobile phones to access financial services. Mobile money penetration exceeds 50 per cent of the adult population and is among the most mature mobile money markets in the world. Research conducted by UNCDF and DanChurch Aid (DCA) in Bidi Bidi in 2018 estimated that 73 per cent of men in Bidi Bidi own a phone, compared to 44 per cent of women, and 80 per cent of the population lives within one kilometre of a mobile money agent. Some 33 per cent of businesses in Bidi Bidi use mobile money services and 60 per cent of mobile money agents report an average monthly commission of between UGX 100,000 and 300,000 (USD 27–81). In Bidi Bidi, the most common uses of mobile phones are voice calls, mobile money and sending text messages. The main financial transactions by phone are cash-in and cash-out transactions.[44] Some 59 per cent of customers in Bidi Bidi rely on assistance from a relative or a mobile money agent to conduct financial transactions on their mobile phone, largely due to low literacy and digital literacy levels.[45]

Bidi Bidi is spread over five zones and mobile coverage (for voice and internet) varies depending on where one lives in the settlement. As recently as November 2016, there was very limited 2G mobile connectivity. Recognising an opportunity to serve refugees, Airtel, MTN and Africell began investing in Bidi Bidi, initially with Cell on Wheels (COW) temporary sites. These were upgraded to more permanent structures (2G and 3G) with a commitment to expand coverage to newly established settlements.[46] MNOs in the Yumbe district face challenges due to the remote location, including high operational costs and limited revenue, at least in the short term.

Several mobile-based interventions are being implemented in Bidi Bidi settlement. DCA provides unconditional cash grants and e-vouchers for fresh food through mobile money and has distributed basic phones to persons with specific needs (PWSNs).[47] Mercy Corps is implementing an AgriFin Mobile Program to deliver farm and crop management tools and financial services on digital channels.[48] MTN Uganda is providing services to refugees and has several partners, including Ayo Insurance, Readypay-Fenix and Rising Capital, deploying mobile-enabled services in Bidi Bidi settlement. In June 2017, MTN pledged UGX one billion (USD 282,000) to support the refugee policies of the government.[49] This pledge was fulfilled in January 2018 and MTN announced that activities will be implemented in partnership with the government over two years.[50]

38. UNHCR (March 2018), Uganda Launches Major Refugee Verification Operation.
39. Office of the Prime Minister and UNHCR (December 2018). https://ugandarefugees.org/en/country/uga
40. Office of the Prime Minister and UNHCR (31 January 2019).
41. UNHCR (31 January 2019).
42. Smart Communities Coalition (2018).
43. Mercy Corps (2018), Mobile Applications and Policy Impact on Agriculture: Uganda.
44. DanChurchAid (May 2018).
45. Ibid.
46. GSMA (2017), Mobile is a Lifeline: Research from Nyarugusu Refugee Camp, Tanzania.
47. DanChurchAid (2017), A Learning Event Report: Multipurpose Cash and Protection for South Sudanese Refugees in Bidibidi Refugee Settlement.
48. Mercy Corps (2018).
49. MTN (2018), Media Release: MTN Fulfils Ugx1bn pledge to support refugees.
50. MTN (2018), Supporting the Uganda Government Deal with the Refugee Crisis.

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2.4
Comparisons between refugee contexts

The intention of the three-country study is that the lessons can be broadly applied across other refugee contexts. As Table 2 and the subsequent analysis show, each country has a unique operating context and there is significant diversity within the various populations in each country. The table provides an initial comparison of the three countries in terms of the nature of the refugee context and the mobile environment.

Table 2

Refugee context and mobile environment in the three study countries
(at time of data collection)

	Jordan	Rwanda	Uganda
Research Location	Urban areas of Jordan	Kiziba Camp	Bidi Bidi Settlement
Overall refugee context	Urban Refugees	Refugee Camp	Refugee Settlement
Refugee population	765,551[51]	150,448[52]	1,200,000[53]
Nature of crisis[54]	Multiple	Protracted crisis	Emergency
Refugees' main country of origin	Syria[55]	Democratic Republic of Congo (DRC)[56]	South Sudan[57]
Time spent as refugees	8 Up to 8 years[58]	22 Up to 22 years[59]	3.5 Up to 3.5 years[60]
Main MNOs	Orange Umniah Zain	Airtel-Tigo MTN	MTN Airtel Africell
Organisations working with refugee populations[61]	UNHCR, ICRC, IRC, NRC WFP	UNHCR, MIDIMAR, Plan International, American Refugee Council, Humanity & Inclusion	UNHCR, Office of the Prime Minister (OPM) DanChurch Aid Mercy Corps
Mobile phone penetration[62]	104%	72%	43%
Connectivity in country	Index score: 60[63] 99% 3G Coverage[64]	Index score: 40 94% 3G Coverage	Index score: 36.5 45% 3G Coverage
Mobile money prevalence in country (% of adult population with account)	1%[65]	31%[66]	50%[67]

51. UNHCR (April 2019), Registered Persons of Concern: Refugees and Asylum Seekers in Jordan.
52. UNHCR. Where We Work: UNHCR's Presence in Rwanda.
53. UNHCR (March 2018), Uganda Launches Major Refugee Verification Operation.
54. For more information on different types of crisis see: GSMA (December 2018), Landscaping the digital humanitarian ecosystem.
55. UNHCR (October 2018), Jordan Factsheet.
56. UNHCR. Where We Work: UNHCR's Presence in Rwanda.
57. UNHCR (March 2018), Uganda Launches Major Refugee Verification Operation.
58. UNHCR (October 2018), Jordan Factsheet.
59. UNHCR. Where We Work: UNHCR's Presence in Rwanda.
60. UNHCR (March 2018), Uganda Launches Major Refugee Verification Operation.
61. This is not an exhaustive list of all actors working in these contexts.
62. The World Bank (2016), Mobile cellular subscriptions (per 100 people).
63. The GSMA Mobile Connectivity Index measures the performance of 163 countries against four key enablers of mobile internet connectivity: infrastructure, affordability, consumer readiness and content and services. It has been built to support the efforts of the mobile industry and the wider international community to deliver on the ambition of universal internet access. The Index is built up through 39 specific indicators feeding into 13 dimensions that are aggregated to give a score for each of the four enablers. Scores fall within a range of 0–100. https://www.mobileconnectivityindex.com/#year=2017
64. Percentage of population covered by 3G. GSMA Mobile Connectivity Index: https://www.mobileconnectivityindex.com/?search=uganda#year=2017&zonelsocode=JOR
65. World Bank Findex (2017).
66. Global Findex Database (2018).
67. DanChurchAid (May 2018).

3 Mobile technology in refugee contexts

3.1 Introduction

This section summarises the cross-cutting findings on mobile technology in refugee contexts, capturing a digital snapshot of refugees in the three focus countries and highlighting the similarities and differences between the five themes that will be laid out in subsequent chapters.

Key findings

1. **Over two-thirds of refugees in all three research locations are active mobile phone users**[68], with the highest proportion of mobile users in Jordan.
2. **Refugees access mobile services in creative ways depending on their context**, either sharing or borrowing handsets or owning multiple SIMs. For those who do not own handsets, borrowing is an important way to get connected.
3. **The most commonly used mobile services among active users in all three research locations are calls and SMS**. Mobile money is one of the top three mobile use cases in Kiziba and Bidi Bidi, with 59 per cent and 44 per cent of refugees using mobile money, respectively.
4. **Awareness of mobile internet is high, but only about a third of respondents in Bidi Bidi and Kiziba have used it.** The findings also indicate that refugees would like to use mobile internet more than they are currently able to.
5. **Affordability, literacy and digital skills, and charging are the key barriers** to mobile phone ownership and mobile internet use in all contexts.

68. An "active phone user" is defined as a customer who has used a mobile phone at least once in the last three months.

3.2 Trends in mobile phone access and use

Over two-thirds of refugees in all three contexts are active phone users

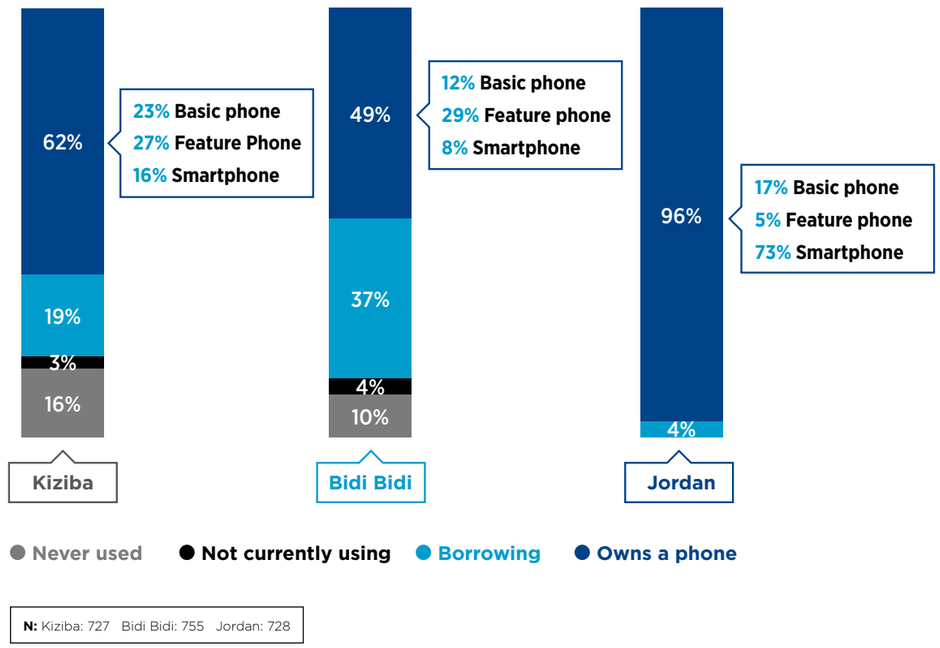
Mobile phone use varies across the three countries and is highest in Jordan. However, most respondents are active phone users: over two-thirds in Bidi Bidi (Uganda) (69 per cent) and Kiziba (Rwanda) (77 per cent) and almost all respondents in Jordan (99 per cent). **In Kiziba, 16 per cent of refugee respondents have never used a phone compared to 10 per cent in Bidi Bidi** (see Figure 1).

Refugees access mobile services in creative ways depending on their context: sharing or borrowing handsets and owning multiple SIMs

Almost all refugee respondents in Jordan **own a phone** (96 per cent), compared with 62 per cent in Kiziba and slightly less than half of respondents in Bidi Bidi (49 per cent). Similarly, **ownership of an internet-enabled phone** (either feature phone or smartphone)[69] is highest in Jordan at 78 per cent compared to 43 per cent of refugees in Kiziba and 37 per cent in Bidi Bidi.

Figure 1

Types of mobile access for refugees in the three-country survey



69. Basic phone: no internet access, small screen, basic keypad with several letters per button. Feature phone: internet access, tends to have small screen and basic keypad with several letters per button, can come with some apps already on phone, unable to download apps from online app stores. Smartphone: internet access, large touchscreen display, comes with some apps already on phone, able to download additional apps from online app stores, advanced operating systems such as Android or Apple iOS.

Personal ownership of a SIM card is also high among refugees in all three countries: 90 per cent in Jordan, 71 per cent in Kiziba and 59 per cent in Bidi Bidi. Interestingly, in Jordan, more refugees own a mobile phone than a SIM card, but the trend is the opposite in Kiziba and Bidi Bidi where more people own a SIM card than a mobile.

For those who do not own handsets, borrowing is an important way of getting connected. This trend is strongest in Bidi Bidi (37 per cent) followed by 19 per cent in Kiziba and four per cent in Jordan. The study's qualitative findings confirm there are different modes of mobile access for refugees. For instance, in Kiziba and Bidi Bidi, it is common for several people to share one handset with each using their own SIM card to make calls.

This trend indicates that owning a handset is not a prerequisite for accessing mobile-enabled services. Sharing a handset can be one of the first steps in a refugee's journey to becoming connected and ultimately owning their own handset and a SIM card registered in their own name. This, in turn, opens access to more advanced services, such as the internet, on a regular basis. However, relying on borrowed handsets can put refugees, particularly women, at a disadvantage. While those who own a mobile phone can access information and communication at all times (airtime and charging allowing), those who borrow must wait until the mobile is available.[70] These nuanced behaviours across different refugee contexts are useful for humanitarian actors and MNOs to understand when digitising humanitarian assistance.

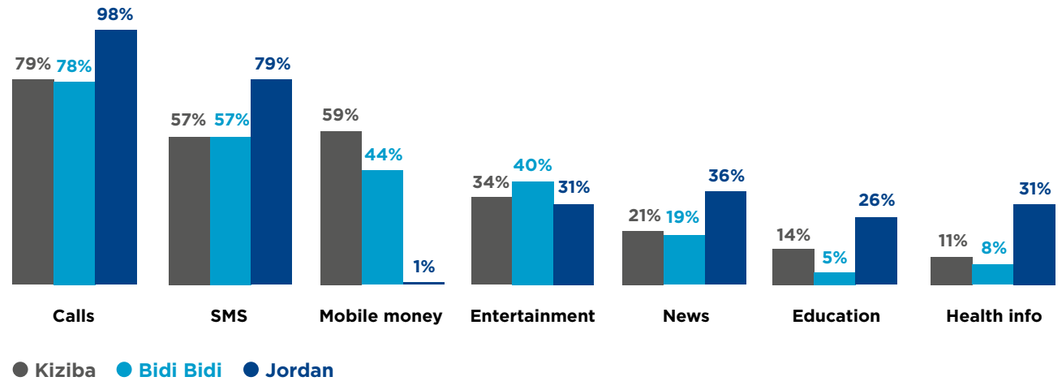
There are also many refugees who report owning multiple handsets. For example, in Jordan, over two-thirds of focus group respondents explained that they use one basic phone (often to use the UNHCR-provided SIM card) and one internet-enabled phone. Focus groups in all contexts also reported that participants commonly own multiple SIM cards to take advantage of different promotions and cost-saving bundles and offers. Focus group participants in Bidi Bidi explained that poor coverage is an important reason for owning multiple SIM cards, as it maximises the chances of connecting to a mobile network.

70. GSMA (March 2019), Bridging the mobile gender gap for refugees: A case study of women's use of mobile phones in Bidi Bidi Refugee Settlement and Kiziba Refugee Camp.

Calls and SMS are the most commonly used mobile services in all three contexts

Figure 2

Mobile phone services used by refugees (regardless of mobile phone access) in each refugee context



N: Kiziba: 727 Bidi Bidi: 755 Jordan: 728 **Base** = all refugees

Calls are the most commonly used mobile service in all three contexts:

- Of the active users who make calls, most do so on a daily basis: 85 per cent in Jordan, 54 per cent in Bidi Bidi and 44 per cent in Kiziba. Mobile phone users in Uganda are most likely to have used their phone to make an international call (78 per cent), while refugees in Jordan are most likely to make daily international calls (15 per cent).
- It is noteworthy that refugees in Jordan are much more likely to call UNHCR or NGOs than refugees in Kiziba and Bidi Bidi: 76 per cent compared to nine per cent in Kiziba and 16 per cent in Bidi Bidi. This is most likely due to the higher prevalence of call centres and mobile phone support opportunities in Jordan. The UNHCR Helpline (064008000) is a call service that refugees can use to ask questions or file complaints related to being a refugee in Jordan. It provides information on all UNHCR activities and recent updates or changes in procedures. Refugees of all nationalities can call the UNHCR Helpline, which is offered in two languages: Arabic and English. A UNHCR call centre was established very recently in Uganda (opening at the same time as the research was being conducted), but there is no formal call centre in Rwanda.

The second most commonly used mobile service is SMS. Just over a third of refugees who are active phone users in Jordan send/receive SMS messages daily (35 per cent). Qualitative findings in all contexts suggest that the cost of using SMS messaging is one of the biggest barriers for refugees using this service, as well as the need for basic literacy.

Mobile money is the third most common use of mobile phones in both Kiziba (59 per cent) and Bidi Bidi (44 per cent), but only one per cent in Jordan as mobile money is still nascent in the country (for more analysis see section 5).[71]

To be as inclusive as possible, stakeholders implementing digital interventions should leverage the most commonly used mobile services in the context where they are operating.

71. In 2017, the World Bank Findex Survey reported that only one per cent of adults (aged 15 or older) had a mobile money account in Jordan.

Awareness of mobile internet is high, but only about a third of respondents in Bidi Bidi and Kiziba have used it

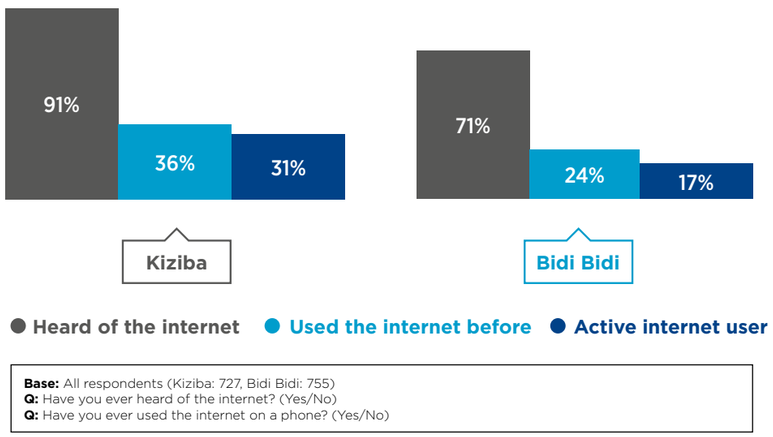
Mobile internet use among refugees is much higher in Jordan than in Kiziba and Bidi Bidi. Most refugees in Jordan have used mobile internet (82 per cent) and 99 per cent of those are active users. **In Kiziba and Bidi Bidi, there is a wide gap between the percentage of refugees who have heard of mobile internet and the percentage who have used it, which is about a third of surveyed refugees (Figure 3).**

Although most refugees are aware of mobile internet, **one in 10 refugees in Kiziba and three in 10 in Bidi Bidi have never heard of it.** It is important not to leave this segment behind as those who are digitally excluded will be unable to benefit from the potential opportunities of mobile internet. Both qualitative and quantitative findings suggest that digital access and literacy are key building blocks to accessing various mobile-enabled services, such as mobile internet. This is discussed in more detail in subsequent sections.

The research data also indicates that refugees would like to use mobile internet more than they are currently able to. Of active mobile internet users in Jordan, 34 per cent reported they would like to use mobile internet more, compared to 45 per cent in Kiziba and 20 per cent in Bidi Bidi.

Figure 3

Percentage of refugees in Bidi Bidi and Kiziba who have heard of and used mobile internet



Base: All respondents (Kiziba: 727, Bidi Bidi: 755)
Q: Have you ever heard of the internet? (Yes/No)
Q: Have you ever used the internet on a phone? (Yes/No)

Online messaging is the most common use of mobile internet in all contexts

There are a variety of use cases for mobile internet users, with some variation across the three research contexts. **The main use case in all contexts is one-to-one (person-to-person) online communication,**[72] which is used by the majority of active internet users in all contexts. **Online group communication**[73] **is the second most common use case** (Figure 5).

Facebook Messenger and WhatsApp were the most frequently mentioned online communication services by focus group participants in all three research contexts. Online communication was closely linked to the use of social media by focus group participants, who cited ease of communication as one of the reasons they use social media:

72. GSMA (May 2018), A toolkit for researching women's internet access and use (using instant messaging / chatting, sending / receiving emails, making videos / voice calls).
73. Social / communicating with lots of people at once (e.g. sending a group a message via WhatsApp or Viber, sharing photos / videos / music on the internet, accessing social networks like Facebook).

> *"I use WhatsApp because it is easier. I have a relative who went to America. It is cheaper to call on WhatsApp and it is easy [to arrange] when they want to send me money."*
> (Female, Refugee, Rwanda)

Communicating online is considered cheaper and more cost efficient than calling, especially when communicating with people abroad. Communication (voice and messaging) over social media is considered particularly important for bringing a sense of connectedness and togetherness to refugees who are separated from friends and family:

> *"We are all refugees, far from families, and we use the [mobile] internet to communicate with each other. Me and my brothers live in six countries and it would be difficult if there was no internet at all. If we use SIM to make phone calls abroad, it is very expensive, so we use the [mobile] internet instead."*
> (Male, Refugee, Jordan)

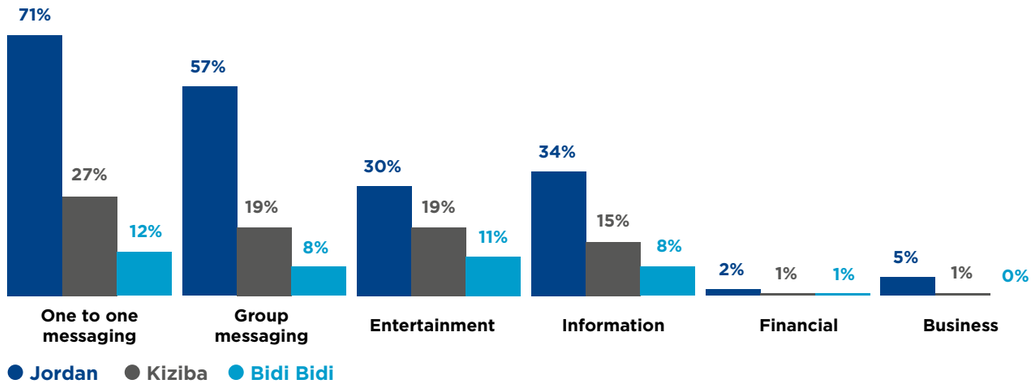
The third most common use case is entertainment.[74] This is highest in Bidi Bidi where 65 per cent of active mobile internet users use mobile internet for entertainment, compared to 60 per cent in Kiziba and 38 per cent in Jordan. Focus group participants reported that games and downloading music are the main forms of entertainment on phones. Some focus group participants in Kiziba and Bidi Bidi also reported downloading videos to watch on their phones and a majority of focus group participants in Jordan use their phones to watch videos online.

The fourth most common use case is news and information,[75] which is used by around half of active mobile internet users in all contexts. Focus group participants in Bidi Bidi emphasised the importance of using their mobile phone to access news and information in South Sudan and Uganda, and helped them feel closer to their home country:

> *"Me personally, since I started getting the [mobile] internet, I can know what is happening outside of Uganda — my internet is to monitor my country and how far they have gone in the peace issue. It is like my country is right next to me."* (Male, Refugee, Uganda)

Figure 4

Mobile internet use cases by <u>all refugees</u> in the three contexts

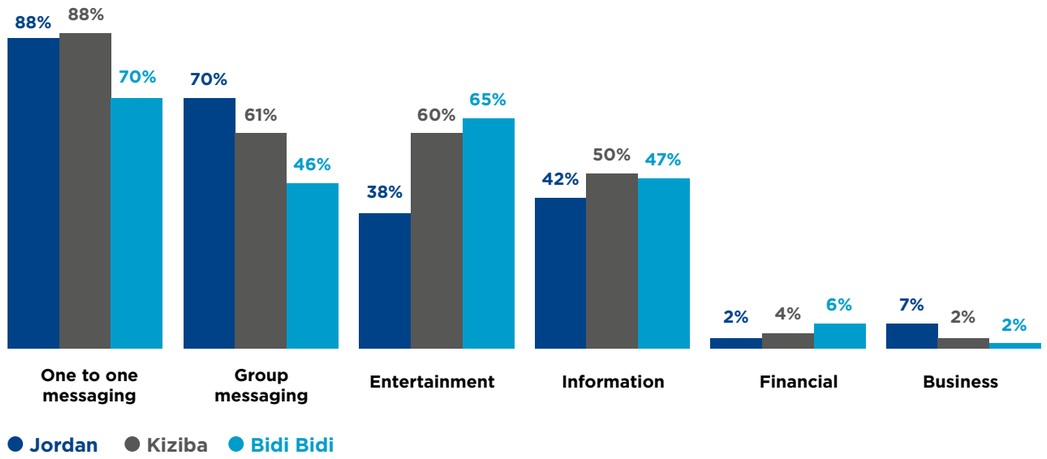


Base: All respondents (Jordan: 728) Kiziba: 727, Bidi Bidi: 755)
Q: What do you use mobile internet for?
(one-to-one communication / group communication / entertainment / information / financial services / business / other)

74. Entertainment (e.g. playing games online, listening to radio or watching videos / TV / movies / music)
75. Information seeking (browsing the internet, reading the news or weather, reading sports updates and articles, research and finding information for personal use)

Figure 5

Mobile internet use cases by active mobile internet users in each refugee context



Base: Active internet users (Jordan: 589, Kiziba: 224, Bidi Bidi: 127)
Q: What do you use mobile internet for?
(one-to-one communication / group communication / entertainment / information / financial services / business / other)

Mobile internet coverage is widespread in Jordan, but unreliable in Kiziba and Bidi Bidi

Most mobile internet users can access mobile internet at home: approximately 66 per cent of active mobile internet users in Kiziba and 70 per cent in Bidi Bidi. The high rate of mobile coverage in Jordan meant that 86 per cent of active internet users could access mobile internet in their homes and a further 10 per cent could access it within a five-minute walk. However, cost is a limiting factor.

For refugees in Kiziba without mobile internet coverage at home, **four in 10 (40 per cent) walk less than five minutes to find coverage** and two-thirds up to 10 minutes. In Bidi Bidi, **34 per cent walk less than five minutes** and 58 per cent up to 10 minutes to find coverage. (See section 3.3 for more information on mobile internet barriers).

The qualitative data shows that in Jordan, WiFi is largely available in people's homes and was cited by most participants as the main internet connection they use, often in combination with data. Participants view WiFi as stronger, cheaper and more reliable than the mobile network. As noted by one participant:

> ***"We can connect anywhere, but mostly everyone has WiFi at home, and that is cheaper, especially to watch videos or make downloads."***
> **(Female, Refugee, Jordan)**

Focus group participants in Kiziba and Bidi Bidi reported that mobile internet connectivity is unreliable. In Kiziba, many people go to Kepler University to access free WiFi which is available almost every day (between 6am and 9pm) for students. The WiFi is used to download music and films or make calls over the internet.

> ***"We use the Kepler WiFi because it is free and faster than bundles, the coverage is good, we can call outside and enjoy fully, without it cutting all the time."***
> **(Female, Refugee, Rwanda)**

Other focus group participants in Kiziba reported that the WiFi at Kepler University is not always reliable, especially when too many devices are connected to the free WiFi. The alternative is to use data bundles with a 2G or 3G connection, but the connection is not strong enough to reliably download music or movies.

Similarly, focus group participants in Bidi Bidi reported that connecting to the internet over a 2G or 3G connection is unreliable, often with interrupted service time. Focus group participants attributed poor network coverage to a range of factors, mainly the time of day (connections are less reliable at busier times of the day) and weather conditions.

Mobile phones enable refugees to feel connected to loved ones and the world

Refugees' prolific use of phones for basic communication underscores the value of mobile for meeting a vital social need: connectedness. Refugees use their mobile to maintain contact with friends and family in their country of origin, or who are displaced elsewhere or resettled in third countries.

Communication is the most valued mobile use case in each of the countries studied: 95 per cent of phone users surveyed in Kiziba said it was very important, as did 88 per cent in Bidi Bidi and 55 per cent in Jordan. In all three countries, refugees consistently described the ability to communicate as a significant empowering and connecting factor:

> *"I think I have more sense of self-worth, more confidence, because I am not just thinking to myself, on my own. I can communicate with people everywhere."* **(Female, Refugee, Jordan)**

> *"We are scattered like seeds, for us we communicate and link up, then we are together."*
> **(Female, Refugee, Uganda)**

Using mobile internet for communication via social media is often cheaper and easier than more basic functionalities like SMS. Social media as a means of communication can make refugees feel even more connected to those they have been separated from, as they can see photos and watch videos of them. This was described by a focus group participant in Bidi Bidi:

> *"According to me, before I am accessing internet, I am in darkness and I don't see what is outside. But now I can see the world and I feel like a member. I feel more connected to the people — especially using social media to chat to friends."* **(Female, Refugee, Uganda)**

Refugees reported how they leveraged the communication features of mobile phones to enhance professional, educational or livelihood opportunities. The successful appropriation of social platforms and mobile features to address everyday problems demonstrates the creativity of refugee communities, which is examined in more detail in the following sections.

A DIGITAL DAY IN THE LIFE

Faida

Running a small business

Faida*, 27, has spent most of her life in Kiziba camp, arriving aged four with her family from the DRC. Today, Faida is a businesswoman running a small brewery and airtime resale business out of her home. Faida says her phone is vital. ***"I can't allow my phone to go off because I can lose business."***

When Faida wakes up in the morning, she checks for missed calls or messages from customers and calls them back if necessary. Throughout the morning, she is busy with the airtime resale business. Faida buys airtime in large quantities such as RWF 10,000 (USD 11.10) or 12,000 (USD 13.20) and then resells it using Me2U (a service that enables MTN subscribers to transfer airtime to other MTN subscribers) in smaller amounts. Faida uses mobile money to buy the airtime, but for transactions with customers Faida uses cash only as the mobile money charges are too high.

At lunchtime, Faida takes some time out of her busy workday to call her friends and family. Three times a week she tops up with RWF 100 (USD 0.11) of airtime using mobile money or a local agent. In the afternoon, the beer business picks up as people come by to relax with a drink. Sometimes the brewery is so popular that people end up sitting in her mother's garden next door as there is no space! Often, customers will buy airtime when they come for the beer. Faida uses her phone to help run the brewery business. She orders ingredients from Mubugwa and organises the delivery to Kiziba camp over the phone. Customers call her to check when the beer is freshly made, which helps to secure her customers.

Faida is also part of a savings group called an "ichilimba" with other businesswomen in the camp. They meet twice a week to discuss ideas and give monthly contributions. When it is her turn, Faida receives RWF 18,000 (USD 19.81), which she can use to build her business. The ichilimba group is considering using mobile money in the future to help manage the money.

3.3
Barriers to mobile phone ownership, access and mobile internet use

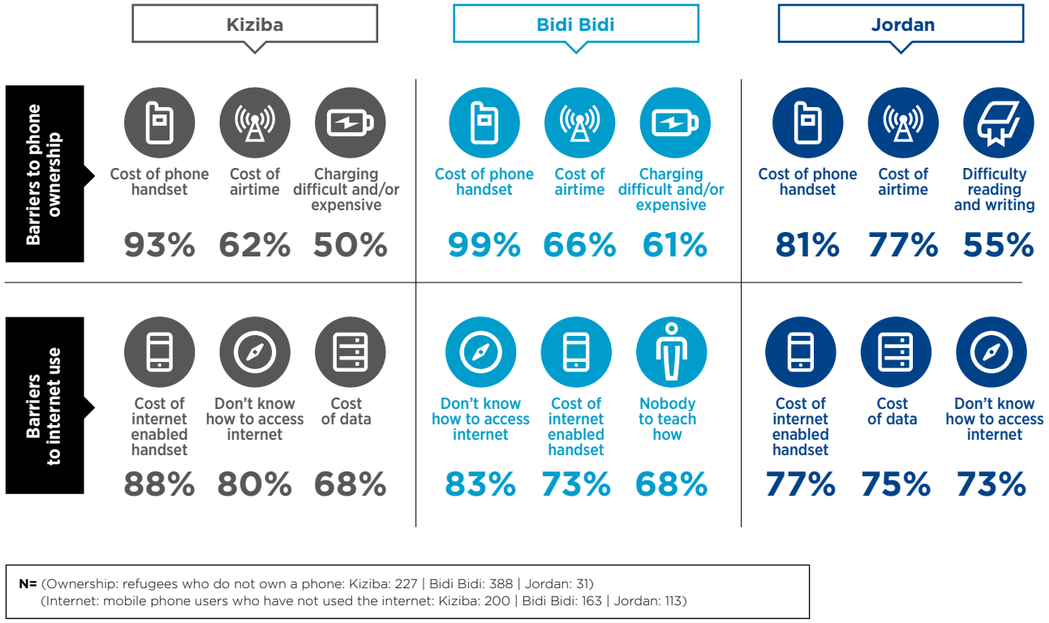
One of the key components of the research study was to understand the nuanced barriers to mobile access and use that refugees face. Mobile access and use are the foundation of a developing digital ecosystem as they enable providers to offer advanced services. Barriers to mobile ownership and basic use are therefore essential to address to ensure that refugees, especially the most vulnerable, are not excluded and can benefit from more advanced mobile-enabled products and services, such as mobile internet, particularly if they are part of a humanitarian programme. **However, these barriers are often not well understood by humanitarian and private-sector stakeholders**. This section explores the barriers in more detail.

Affordability, literacy and digital skills, and charging are the main barriers to mobile phone ownership and mobile internet use in all contexts

Figure 6 illustrates the top three barriers identified by survey respondents.

Figure 6

Top barriers to mobile ownership and mobile internet use reported by refugees



N= (Ownership: refugees who do not own a phone: Kiziba: 227 | Bidi Bidi: 388 | Jordan: 31)
(Internet: mobile phone users who have not used the internet: Kiziba: 200 | Bidi Bidi: 163 | Jordan: 113)

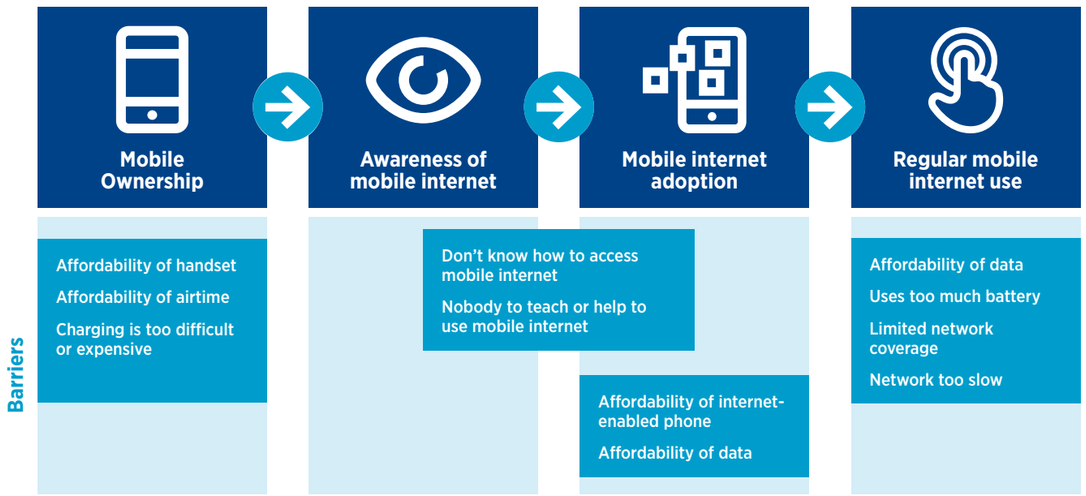
Affordability and charging are key barriers to phone ownership in all three contexts

Figure 6 shows that the **cost of a phone handset is the most significant barrier to mobile ownership for refugees** in all three research countries. Refugees have relatively limited livelihood opportunities, which makes it difficult to afford the upfront cost of purchasing a phone.

The second main barrier was the anticipated **cost of airtime**. Focus group participants also identified the anticipated **cost of handsets** as a key barrier, and the cost of charging a phone was one of the top three barriers in Rwanda and Uganda, due to the settlements being off-grid and the use of paid charging stations (see mobile-enabled utilities, section 6). In Jordan, where only four per cent of respondents reported not owning a mobile, **difficulty reading and writing** was the third most prevalent barrier to mobile ownership.

Figure 7

High-level user journey to mobile internet adoption[76]



A multi-faceted approach is necessary to increase mobile internet adoption among refugees in all research contexts. Although affordability is a key barrier across the user journey, interventions from MNOs and humanitarian organisations should also focus on digital literacy (see Figure 7), enhancing charging options and upgrading mobile coverage. A multi-pronged approach with joined-up interventions from both sectors will have the highest chance of accelerating mobile internet adoption among refugees.

76. GSMA, 2019, The Mobile Gender Gap Report 2019.

Cost of handset and data, and a lack of knowledge of how to use the internet, are common barriers to using mobile internet

In Kiziba and Jordan, the cost of an **internet-enabled mobile handset**[77] is the greatest barrier to mobile internet access by those who own a mobile but do not use the internet. **Cost of data** is also a prevalent barrier. Indeed, affordability is a common barrier in low- and middle-income countries and an area in which the GSMA has been focusing to accelerate smartphone ownership.[78]

In all three countries, survey respondents stated that not **knowing how to access mobile internet** was one of their top three challenges in using the internet. This was the most prevalent barrier in Bidi Bidi and is likely a reflection of the **high illiteracy rates** in the refugee population. One quarter (25 per cent) of refugee survey respondents in Bidi Bidi reported they are unable to read or write in any language, while in Kiziba these figures were 21 per cent and in Jordan 14 per cent. Lack of knowledge of how to access the internet was also a prominent theme among focus group participants.

> ***"We don't know about the information we want — we don't have smartphones, we can't do any of that. We have so many basic needs. We would need training. We would like to learn, we are ready."*** (Female, Refugee, Uganda)

Box 1

Low levels of digital literacy are a persistent barrier to mobile use in Rwanda and Uganda

- The survey shows that refugees in Bidi Bidi have the lowest level of digital literacy: 59 per cent of mobile users in Bidi Bidi reported having at least some difficulty using their phone, compared to 25 per cent in Kiziba and 23 per cent in Jordan.
- Qualitative and quantitative data from Bidi Bidi indicates that **digital literacy is particularly challenging for women and older people**; 39 per cent of refugees aged 51 and older (who are active users) reported that they always have difficulty using their phone.
- Focus group participants in Bidi Bidi noted that in terms of digital literacy, **mobile money was particularly challenging** and pointed to difficulties with knowing phone numbers and remembering codes and PINs.

  "I need help using mobile money — I don't know how to use it! I don't know where to take it to get help. When I receive the money and don't know how to withdraw it — I ask someone to withdraw the money for me. I give the phone to someone who knows how to use it and they will check the money is there and then withdraw the money." (Female, Refugee, Uganda)
- Focus group participants in Bidi Bidi also repeatedly reported **difficulty using mobile internet and knowing how to download content**. Many elderly focus group participants were clear that their inability to use mobile phones was because they were illiterate:

  "We do not use SMS because we cannot read and write. Even when calling a child has to show us how to find the number." (Female, Refugee, Uganda).
- In Kiziba, neighbours tend to help people overcome their difficulties in using their mobile, from sending messages to using the radio and being unable to read.

  "Not knowing how to use it [a phone] is not a problem, as long as someone has a phone they can learn or be taught how to use it." (Male, Refugee, Rwanda)

77. Internet-enabled handsets includes feature phones and smartphones.
78. GSMA (July 2017), Accelerating affordable smartphone ownership in emerging markets.

4

Gender and inclusivity

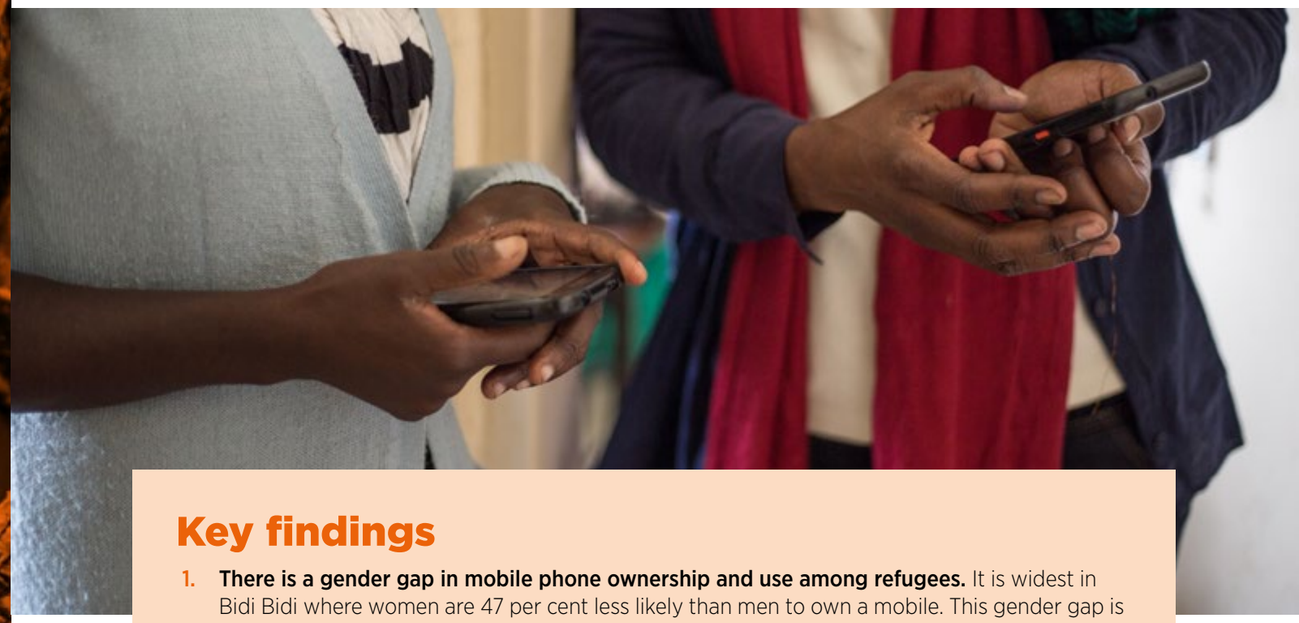
M4H thematic area: Gender and inclusivity

This thematic area focuses on increasing digital inclusion for vulnerable segments of crisis-affected populations, including women and persons with disabilities (PWD). The theme also explores the ways in which mobile-enabled solutions can enhance equality and accessibility of assistance and information for these vulnerable segments.

Mobile technology has the potential to address the barriers vulnerable populations face in accessing humanitarian assistance and livelihood opportunities, but there is still limited evidence to guide stakeholders implementing inclusive digital interventions. Examples of vulnerable populations include, but are not limited to: single women, persons with serious health conditions and disabilities, older persons, persons with diverse sexual orientation or gender identity and persons with specific legal or physical protection needs.

4.1 Introduction

This section addresses gender and disability in refugee contexts, but does not address every potential area of vulnerability explicitly.[79] It tackles gender first and then disability, exploring relative gaps[80] in mobile phone access, ownership and use, and the associated barriers these groups face.[81] The research aims to build the evidence base to enable humanitarian organisations and MNOs to address these barriers and unlock socio-economic and commercial opportunities.



Key findings

1. **There is a gender gap in mobile phone ownership and use among refugees.** It is widest in Bidi Bidi where women are 47 per cent less likely than men to own a mobile. This gender gap is 13 per cent in Kiziba.
2. **The gender gap widens for more diverse mobile services and use cases** (e.g. accessing educational services), especially in Bidi Bidi and Kiziba. However, in Jordan, there is more parity between men and women when it comes to the use of internet-enabled phones.
3. **Although the prevalence of disability among refugees is highest in Jordan, those with disabilities appear to face greater challenges accessing mobile phones in Kiziba and Bidi Bidi.**
4. **In both Bidi Bidi and Kiziba, SMS use is significantly lower among refugees with disabilities.**
5. **A key barrier to mobile ownership and use is limited livelihood opportunities for refugee women and PWD,** which means they are disproportionately affected by the cost of connectivity.

79. An additional consideration is that a broader socio-cultural exploration of the local factors and cultural attitudes around gender and disability are beyond the scope of this study.
80. The gender gap in mobile phone ownership and mobile internet use is calculated using the same formula as in the GSMA Mobile Gender Gap analysis. It is presented as a percentage reflecting how much less likely a woman is to own/use a mobile phone or certain features of one.
81. For further insights on the experiences with mobile technology of refugee women (compared to men) in Bidi Bidi and Kiziba see: GSMA (2019) Bridging the mobile gender gap for refugees

4.2
Fewer women own, access and use mobile phones than men

Box 2

Gender gap methodology[82]

Gender gap: Survey respondents were asked an (optional) gender-identifying question with binary choices. The gender gap in mobile phone ownership and mobile internet use is calculated using the same formula as in the GSMA Mobile Gender Gap analysis. It is presented as a percentage that reflects how much less likely a woman is to own/use a mobile phone or certain features of one.

Throughout this report, wherever mention is made of how much more or less likely a woman is to own or use a phone (or its features), it is referring to the GSMA gender gap analysis as opposed to a numerical difference in incidence.

"Ownership" in this report is defined as anyone who owns a mobile handset, not simply owning a SIM. This highlights the reliance on borrowing in both Bidi Bidi and Kiziba.

$$\text{Gender gap in ownership / use (\%)} = \frac{\text{Male owners / users (\% of male population)} - \text{Female owners / users (\% of female population)}}{\text{Male owners / users (\% of male population)}}$$

In Bidi Bidi and Kiziba, there is a wide gender gap in mobile ownership

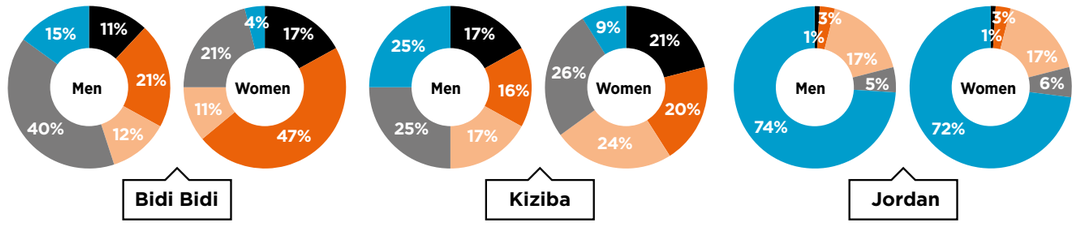
In Bidi Bidi, male refugees have a higher rate of phone ownership (67 per cent) than female refugees (36 per cent), representing a 47 per cent gender gap (see Figure 8). The corresponding mobile ownership gap in Kiziba is 13 per cent. If the gender gap for mobile ownership were closed today, this would equate to an additional 15,500 women owning a mobile phone in Bidi Bidi alone.

In Bidi Bidi, women are more than twice as likely to borrow phones, and in Kiziba 25 per cent more likely. In focus group discussions in Bidi Bidi, both men and women noted that women often borrow mobile phones whereas men own them.

82. GSMA (2018). Methodology: The Mobile Gender Gap Report 2018.

Figure 8

Mobile phone access by type and gender in Bidi Bidi and Kiziba



Base: all respondents (Bidi Bidi: 755 | Women:449, Men:306) (Kiziba: 727 | Women:430, Men:297)
Q: What type of mobile phone handset(s) do you own? (Smart / Feature / Basic)
Q: Do you use someone else's phone? (Yes)

Note: Respondents with more than one mobile phone type were coded as the most advanced. Borrowing indicates having borrowed a phone for personal use in the last 3 months.

There is also a gender gap in mobile use

In Bidi Bidi, 86 per cent of male refugees are active mobile users compared to 74 per cent of female refugees. In Kiziba, women are five per cent less likely to have used a mobile phone in the last three months.

These mobile gender gaps result in women and men not sharing the benefits of mobile connectivity equally. If these discrepancies are not addressed, vulnerable populations will not only be excluded from the potential benefits of mobile technology (e.g. access to important information, connections with loved ones, financial inclusion through mobile money and livelihood opportunities), but existing structural inequalities can also be exacerbated.

In Jordan, the rates of both mobile ownership and use of internet-enabled phones are more equal between men and women.

The gender gap increases for more diverse mobile services and use cases

The research also focused on the differences in mobile use cases between men and women in Bidi Bidi and Kiziba. Of the use cases included in the survey, there were none that women were more likely to report than men (Figure 9). This indicates that women are reporting their mobile use as lower and more limited than their male counterparts. This may reflect differences in self-reporting and self-perception, or it may reflect differences in usage levels. While some of these disparities are driven by the higher proportion of female borrowers, there are still notable differences (although slightly less pronounced) between borrowers and handset owners. The following section combines the results for mobile phone owners and borrowers.

- **Women are less likely than men to use mobile money:** In Bidi Bidi, women are 35 per cent less likely to use mobile money than men, and in Kiziba 15 per cent less likely. For women in both contexts who used mobile money, the benefits were clear and include:
  - receiving remittances from abroad;
  - conducting business (either purchasing goods or paying suppliers with mobile money or other business transactions);
  - paying for solar home systems and children's school fees (bill payment); and
  - sending money to children living away from home.
- **Women in Bidi Bidi and Kiziba are notably less likely to use mobile internet:** Mobile internet use by women in both refugee contexts is extremely low. Just four per cent of women in Bidi Bidi and 21 per cent of women in Kiziba had used mobile internet in the last three months. Compared to men's relatively higher usage, this results in a mobile internet gender gap of 89 per cent in Bidi Bidi and 54 per cent in Kiziba.

This gender gap is due in part to the higher proportion of women who rely on borrowing mobile phones (to avoid using others' expensive credit). When women do own a mobile, they are less likely to own internet-enabled handsets (Figure 8). In Bidi Bidi and Kiziba, more than twice the proportion of men own smartphones than women and are therefore able to make the most of the increased functionality smartphones offer. They also tend to have lower levels of digital literacy (see barriers, section 4.4).

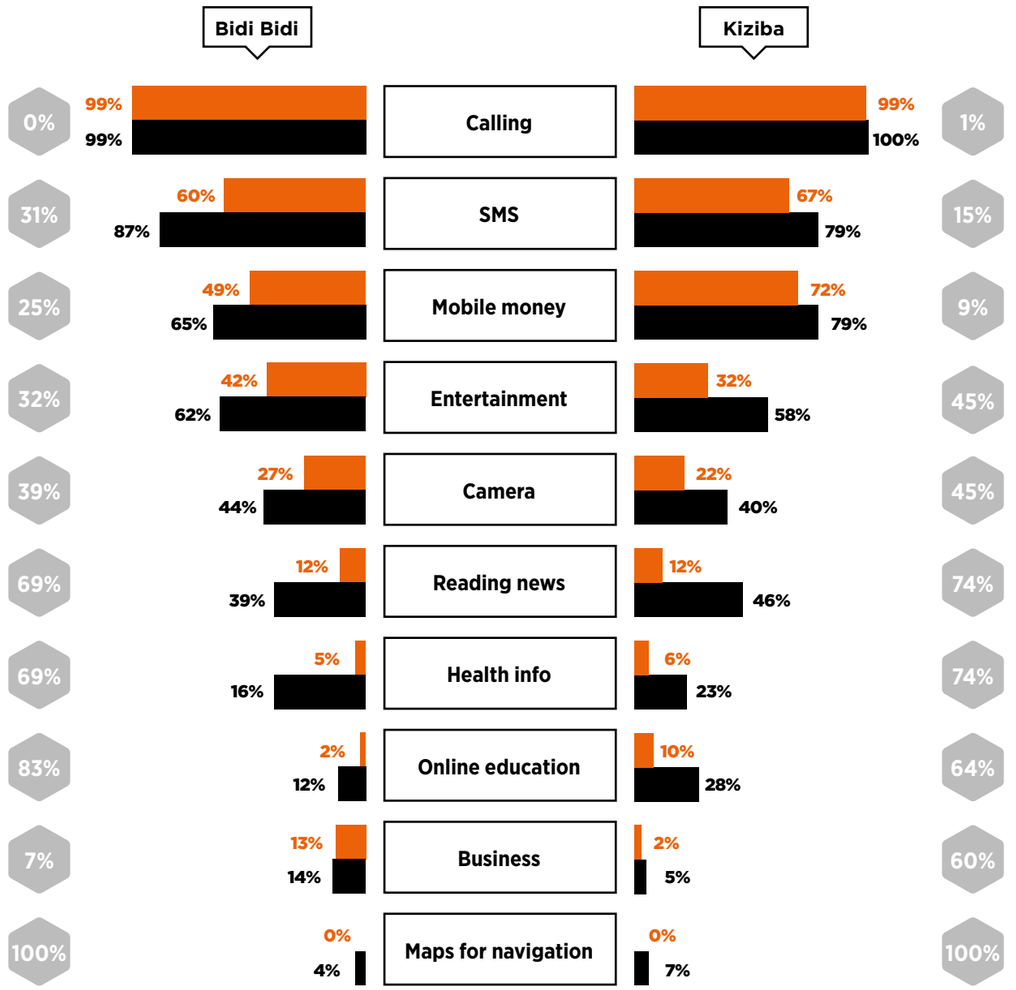
Furthermore, in Bidi Bidi, women are less likely to have heard of the internet. Six in ten (59 per cent) women in the settlement said they had heard of the internet compared to 85 per cent of men, indicating there may be a need for training aimed at women in Bidi Bidi to increase awareness of the internet and the benefits of connectivity.[83]

For further insights on this topic see: GSMA, March 2019, Bridging the mobile gender gap for refugees: A case study of women's use of mobile phones in Bidi Bidi Refugee Settlement and Kiziba Refugee Camp.

83. GSMA (2019), Bridging the mobile gender gap for refugees.

Figure 9

Mobile phone use cases by gender in Bidi Bidi and Kiziba



Base: all that use a mobile phone (Bid Bidi: 594 | women:332, men:262) (Kiziba:575 | women:331, men:244)
Q: Do you use the phone to send and receive SMS messages?
Q: Do you use the phone to send and receive calls?
Q: Do you use the phone for mobile money?
Q: Do you use the phone for any of the following uses?

4.3
Mobile ownership, access and use by disability

Determining disability in the survey sample

The survey used the Washington Group Short Set of disability questions to identify and categorise individuals who are vulnerable or disadvantaged in different ways. These categories were chosen to provide a data framework that would be comparable to other datasets that use the same categories.

Box 3

The Washington Group Short Set of Questions[i]

The Washington Group Short Set of Questions (WGQs) is designed to identify people with a disability. They focus on six core functional domains (walking, seeing, hearing, cognition, self-care and communication) to identify those at greater risk of exclusion than the general population if accommodations are not made.

The questions only identify one aspect of disability (difficulty functioning in) and therefore identify those at risk of exclusion as opposed to individuals with any form of disability. As such, they should not be used to diagnose individuals, but rather to disaggregate data.

Humanity & Inclusion has been running projects to test and assess the use of the WGQs in humanitarian action. It advocates using the WGQs to accurately measure the incidence of individuals with disabilities and to avoid the problems of under-reporting in the past.[ii]

These questions are preferable to other approaches because:

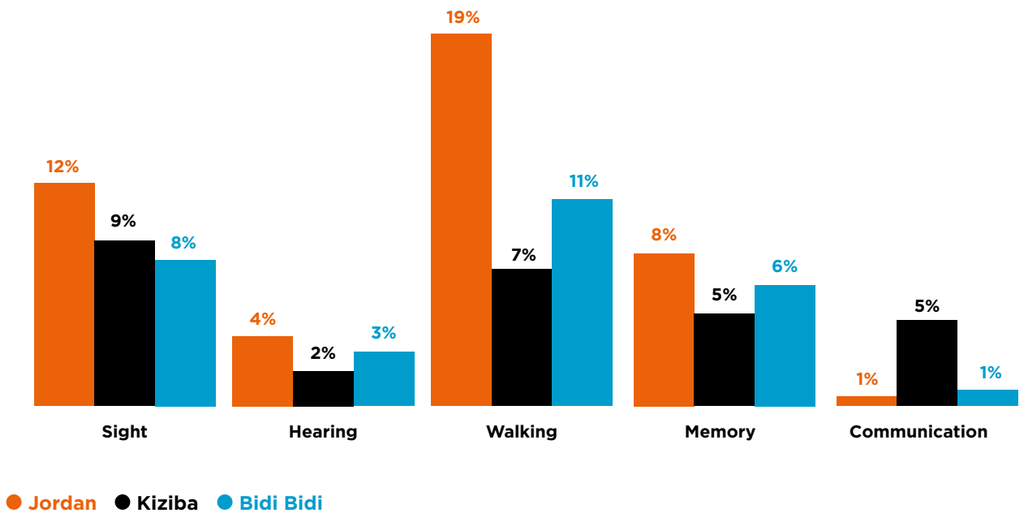
- They identify persons with disabilities using a human-rights based approach;
- They do not stigmatise the respondent;
- They rely on self-reporting; and
- They are internationally comparable.[iii]

This analysis identifies an individual who says they have "a lot of difficulty" with at least one of these activities as having a disability. Excluding those who say they have "some difficulty" helps to distinguish those whose difficulty stems from the aging process from those who truly have a disability.

i. The Washington Group (January 2016), The Washington Group Short Set of Questions on Disability.
ii. Humanity & Inclusion (October 2018), Disability Data Collection: A summary review of the use of the Washington Group Questions by development and humanitarian actors.
iii. Humanity & Inclusion (January 2019), Factsheet #1: Collecting Data In Humanitarian Action Using The Washington Group Questions.

Figure 10

Prevalence of disability among refugees in each refugee context



Base: all respondents (Jordan: 728, Kiziba: 727, Bidi Bidi: 755)

Although the prevalence of disability among refugees is highest in Jordan, those with disabilities appear to face greater challenges accessing mobile in Kiziba and Bidi Bidi.

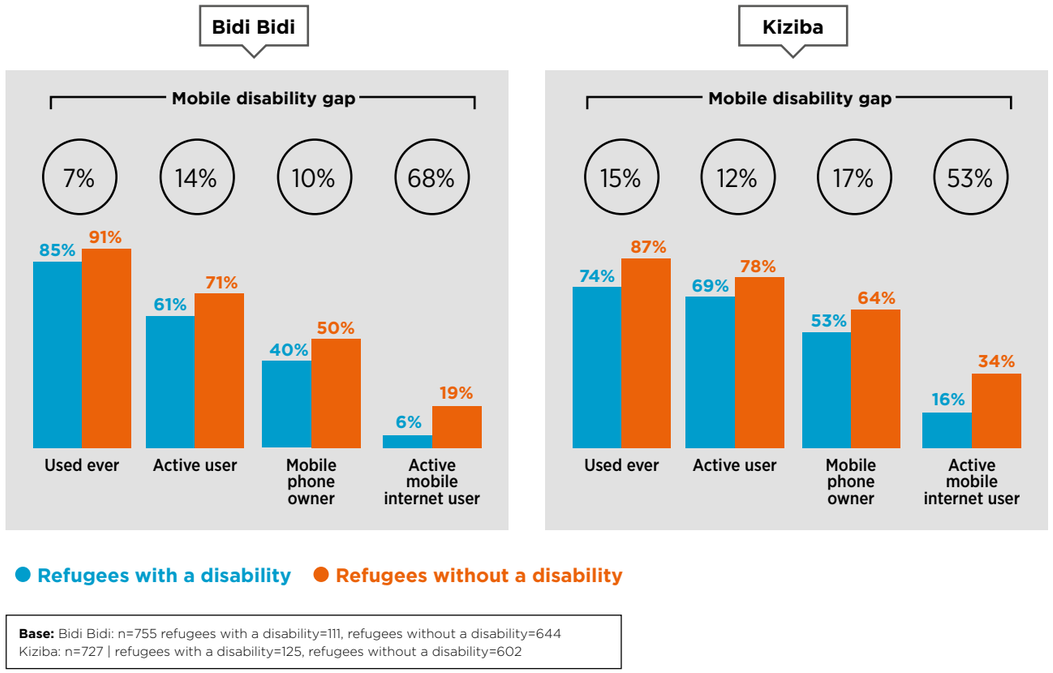
Disability prevalence: **The prevalence of disability is greatest among refugees in Jordan with one in four having a disability, established using the Washington Group short set of questions.** This number is lower for refugees in Kiziba (17 per cent) and Bidi Bidi (15 per cent).

Mobile disability gap: As with the mobile gender gap, there were some use cases for which refugees with disabilities experienced a seemingly entrenched disenfranchisement (in terms of access to and use of mobile technology) in both Bidi Bidi and Kiziba. This was not the case in Jordan.

Interestingly, in Bidi Bidi, mobile disability gaps were smaller than mobile gender gaps. In Kiziba, the figures were largely the same.

Figure 11

Mobile ownership and usage disability gaps in Bidi Bidi and Kiziba



Base: Bidi Bidi: n=755 refugees with a disability=111, refugees without a disability=644
Kiziba: n=727 | refugees with a disability=125, refugees without a disability=602

While there was a disability gap of 14% for active phone use in Bidi Bidi, there was no gap when looking only at those respondents who owned a phone. This suggests that, once connected, both groups are just as likely to use their phone regularly.

Among mobile phone owners in Bidi Bidi and Kiziba, refugees with disabilities were slightly less likely to own internet-enabled phones. In Bidi Bidi, 27 per cent of refugees with disabilities owned internet-enabled phones compared to 39 per cent of those without a disability. In Kiziba, the figures were 38 per cent and 42 per cent, respectively.

In Jordan, there was no significant mobile disability gap in terms of overall mobile phone ownership or ownership of an internet-enabled phone. Refugees with disabilities were just as likely to own a phone (99 per cent) as those who did not have a disability (97 per cent), and 79 per cent of both groups owned internet-enabled phones.

Like other groups, the most-used mobile channels by refugees with disabilities are calls and SMS. However, **SMS use was significantly lower among refugees with disabilities in Kiziba (53 per cent versus 74 per cent for those without a disability) and Bidi Bidi (68 per cent versus 77 per cent, respectively).** Interestingly, the inverse was true in Jordan: 86 per cent of refugees with a disability use their phone for SMS compared to 78 per cent of those without a disability. There were no other notable differences across the use cases in the survey.

4.4 Barriers to mobile access and use for more vulnerable groups

Barriers to mobile access and use for vulnerable groups are multi-faceted and this research only outlines the overarching barriers. Some of the barriers discussed earlier in the report (see section 3.3) are felt more strongly by vulnerable groups or are unique to them. For in-depth analysis of the mobile gender gap, see the recent GSMA report, Bridging the Mobile Gender Gap for Refugees. GSMA will also be publishing a report on the mobile disability gap in in the third quarter of 2019.

Limited livelihood opportunities mean that connectivity costs have a disproportionate impact on women and PWD

One of the reasons for lower rates of phone access for both refugee women and refugees with disabilities in Bidi Bidi and Kiziba is their **lower economic status and fewer livelihood opportunities.**

In these research contexts, it was observed that men are expected to earn an income to support their families and women are often responsible for the home, including time-consuming chores like collecting firewood. In this dynamic, women have less access to disposable income and are therefore unable to purchase a mobile phone or airtime.

> ***"For us women we are just cooking at home and fetching firewood and we get no money from that, so we can't buy a phone."*** **(Female, Refugee, Uganda)**

A focus group participant with disabilities in Uganda explained the difficult spending decisions they must make and the importance of staying connected:

> ***"There are challenges — for disabled people and for some who are single in their family, the challenge in getting airtime — you use the food given to you for airtime and you run out of food."*** **(Male, Refugee with disability, Uganda)**

For women and PWD in both Bidi Bidi and Kiziba, access to internet-enabled phones was even more limited than access to basic phones. In Kiziba, women are 31 per cent less likely to own internet-enabled phones and in Bidi Bidi 55 per cent less likely. **In both contexts, more than twice the proportion of men own smartphones than women and can therefore take greater advantage of the advanced functionality these phones offer.**

Refugees with disabilities are often unable to access or make use of mobile features designed to alleviate the challenges they face.[84] They are also at risk of **being further excluded from mobile technology if it is rolled out without features that enable all users to interact with the main interface, regardless of ability**.

> ***"The disabled people — if [we] could be helped in trainings on how to use a phone…that would be helpful, because most people regard us as beggars… Our capacity should be built."*** **(Female, Refugee with disability, Uganda)**

Barriers to mobile phone access and use highlight the ways in which women and refugees with disabilities are particularly vulnerable, and how overcoming these barriers can be an opportunity to fostering greater inclusion (see Digital day case studies: Faida and Akaliza). Digital inclusion could increase access to employment opportunities and foster a sense of connectedness to friends, family and the wider community. As one focus group participant with a disability explained:

> ***"[The most important benefit of a phone is] receiving calls because it makes communication easy because at least I can hear. I was born able to see, but when I came here I got a disease. The impact [of a phone] is that I feel connected with my family."*** **(Male, Refugee with disability, Rwanda)**

84. In wealthy contexts, mobile phones are often seen as enablers of greater accessibility and inclusion for people with disabilities. Some of the features of smartphones, such as speech recognition, customisable interfaces and voice-enabled commands, are particularly empowering to those with sight or hearing impairment. However, these are designed in and for wealthy contexts, and the relatively low level of smartphone ownership of refugee respondents with disabilities in Uganda and Rwanda means that these opportunities were not realised and the intended user interface remains a barrier for those with disabilities.

A DIGITAL DAY IN THE LIFE

Haitham

Communication as a lifeline

Haitham* is 29 years old and married with one young daughter with serious health complications (unspecified). His family has been in Jordan for four years, all that time in Amman as they need to be close to hospitals. Haitham owns a Samsung smartphone, which he uses primarily to communicate with family and doctors about his daughter's condition, which frequently requires urgent care. He also looks for odd jobs to earn extra money for more advanced treatment, but he primarily uses his mobile to deal with his family's situation. He tries to build networks that can help him get access to better medical treatment or resettlement options. In the interview, he was preoccupied with the hope that his family's resettlement case can be reconsidered on the basis of his daughter's health. *"My daughter does not deserve this, she has done nothing,"* he said, *"but I feel so helpless because I can do nothing. I can't work to pay for better treatment."*

Haitham explained that his phone was like a lifeline to his family, and notes that he would be much more anxious if he could not communicate to know how his daughter is doing. Every morning his wife goes to the hospital and he calls her by video on his mobile so he can see his daughter — and his mother is also able to communicate in the same way. He says, *"My mother would be very worried if she could not speak to me, if she could not speak to my daughter, but thanks to God that we can communicate — at least we have that."*

4.5 Considerations for making mobile technology more inclusive

Mobile solutions can foster greater inclusion and accessibility and, if used appropriately, can reduce inequalities for marginalised or vulnerable groups. While this is true for all low-resource environments, refugee populations have much to gain. The data not only shows how refugee women and persons with disabilities access and use mobile, but also the barriers they face. Removing these barriers and bridging the access and usage gap would be an important step towards greater economic and social inclusion for these more vulnerable groups.

Some areas to consider for further exploration include:

Bridging the mobile gender gap among refugees

- **Ensure data in refugee contexts is disaggregated by gender** wherever possible.
- **Help women move from borrowing to phone ownership by:**
  - Exploring innovative finance schemes to help them spread out the cost of ownership over time;
  - Providing specific livelihood opportunities to women and;
  - Avoiding free distribution of low-quality handsets, which can distort the market and exacerbate gaps in access.
- **Gender-sensitive training for both MNOs and humanitarian organisations** that addresses the specific barriers women encounter.
- **Literacy and digital literacy of female refugees:** until women have the necessary foundational skills, they are unlikely to make use of the full suite of benefits available to them via mobile.
- **In-depth assessment** of the systemic factors, cultural issues and underlying political economies that shape women's access and use of mobile technology in each context. This would equip humanitarian organisations with the detailed and nuanced knowledge required for effective interventions, including understanding how the experience of displacement may alter or have an impact on prevailing cultural norms.

Bridging the mobile disability access gap among refugees

- **Ensure data in refugee contexts is disaggregated by disability** wherever possible.
- **Conduct a structured review** (drawing on previous GSMA research)[85] of the accessibility features (including user-friendly interfaces) and services most important to refugees with disabilities, especially those who do not have access to smartphones.
- Work to **identify the ways in which mobile technology might be best deployed** in unique humanitarian settings to be transformational for refugees with disabilities.
- **Conduct an in-depth assessment** of the systemic factors, cultural issues and political economies that affect access and use of mobile technology for refugees with disabilities.

85. GSMA (November 2018), Leveraging the Potential of Mobile for Persons with Disabilities.

5 Mobile financial services

M4H thematic area: Mobile financial services (MFS)

MFS encompasses a range of uses of mobile phones to access financial services and transactions.[86] Globally, 1.7 billion people remain unbanked without access to safe, secure and affordable financial services.[87] With mobile money now available in 90 countries, including three-quarters of low- and lower-middle-income countries, it has become the leading payment platform for a digital economy in emerging markets.[88] Mobile money has the potential to transform the financial lives of underserved populations, particularly in countries where mobile agents are more prevalent than traditional banking infrastructure. It can be used to make person-to-person (P2P) payments (domestic transfers) or remittances (international transfers), as well as airtime top-ups, bill payments and other advanced services, such as merchant payments, credit and insurance.

86. GSMA. FAQS – Mobile Financial Services.
87. World Bank Group (2017). The Global Findex Database 2017.
88. GSMA (2018), State of the Industry Report on Mobile Money.

5.1 Introduction

Mobile money is the most commonly used financial services system by refugees and host communities in Bidi Bidi and Kiziba, and these refugee communities will be the primary focus of this section. Mobile money has the potential to meet a variety of needs for refugees and support their lives and livelihoods, including convenient access to financial services, the ability to save and transfer money with minimal risk of theft, and the financial security to deal with unpredictable events.

Key findings

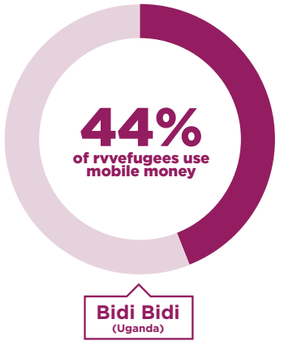
1. **Mobile money use is high among refugees in Bidi Bidi (44 per cent) and Kiziba (59 per cent)**, but only used by one per cent of refugees surveyed in Jordan.
2. **There are notable differences in mobile money use by gender.** Male refugees use mobile money more than female refugees, and this gender gap exists regardless of whether one owns a phone.
3. **Refugees with disabilities are less likely to use mobile money than those without disabilities** in both Bidi Bidi and Kiziba.
4. **P2P transfers, airtime top-up and international remittances are the most commonly used** mobile money services among refugees in Bidi Bidi and Kiziba. This somewhat reflects global trends, as P2P and airtime top-ups are the most commonly used mobile money services worldwide.
5. **In Bidi Bidi and Kiziba, identity-related issues**, such as not having the required documentation to register for a mobile money account, are a major barrier to reliable use of the service, and **levels of trust** in the mobile money service also have an effect on usage.

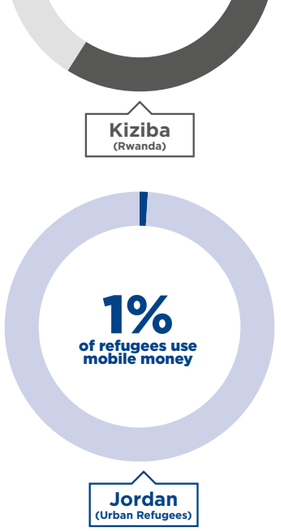
Financial services ecosystem in Jordan, Rwanda and Uganda[89]

	Jordan	Rwanda	Uganda	
Number of mobile money providers [90]	4	3	7	Central bank data
Number of registered mobile money accounts	-	9.4m [93]	23.9m [97]	
Number of registered mobile money agents	-	124,945	166,194 [98]	
Number of commercial banks	25 [93]	11 [96]	24 [99]	
Mobile money account use (percentage age 15+) [91]	1%	31%	51%	Findex data
Account at a financial institution (percentage age 15+) [92]	42%	37%	33%	

89. Note that Findex data is based on comprehensive survey data compiled using nationally representative surveys of more than 150,000 adults aged 15+ in over 140 economies. However, due to the nature of survey data, figures presented may differ from statistics presented elsewhere.
90. GSMA (March 2019), Mobile Money Deployment Tracker. Most up-to-date data available via the Mobile Money Metrics website.
91. The World Bank (2018), The Little Data Book on Financial Inclusion 18. Note that mobile money account (percentage age 15+) refers to the percentage of respondents who report personally using a mobile money account in the past 12 months.
92. Ibid. Note that account at a financial institution (percentage age 15+) refers to the percentage of respondents who report having an account (their own or together with someone else) at a bank or another type of financial institution (e.g. credit union, microfinance institution, cooperative or post office (if applicable)).
93. Central Bank of Jordan. Annual Statistical Bulletin. Money and Banking Sector. Licensed Jordanian plus foreign banks operating in Jordan as at the end of 2017.
94. National Bank of Rwanda (2018). BNR Annual Report 2017–2018. Data as of the end of June 2018.
95. Ibid.
96. National Bank of Rwanda. List of licensed banks: July 2018.
97. Bank of Uganda (2018), Mobile payment analysis. Data as of the end of September 2018.
98. Bank of Uganda (2018), Annual Report 2017/18. Data as of the end of June 2018.
99. Bank of Uganda. List of licenced commercial banks as of March 31, 2017.

5.2
Mobile money adoption, access and use





Mobile money use is high in Bidi Bidi (Uganda) and Kiziba (Rwanda) among both refugee and host community respondents. Overall, 44 per cent of refugee respondents in Bidi Bidi and 59 per cent in Kiziba have used mobile money on a mobile they currently use (owned or borrowed). For host communities, the figures are 56 per cent (Uganda) and 36 per cent (Rwanda). **Interestingly, mobile money use is higher among the refugee population in Kiziba than the host community.**

However, there are notable differences in mobile money use by gender, disability and age. In Bidi Bidi, women (including those who are not phone users) are 35 per cent less likely to use mobile money than men, and in Kiziba are 15 per cent less likely. This gap remains when looking only at mobile phone users (25 per cent in Bidi Bidi and nine per cent in Kiziba).[100]

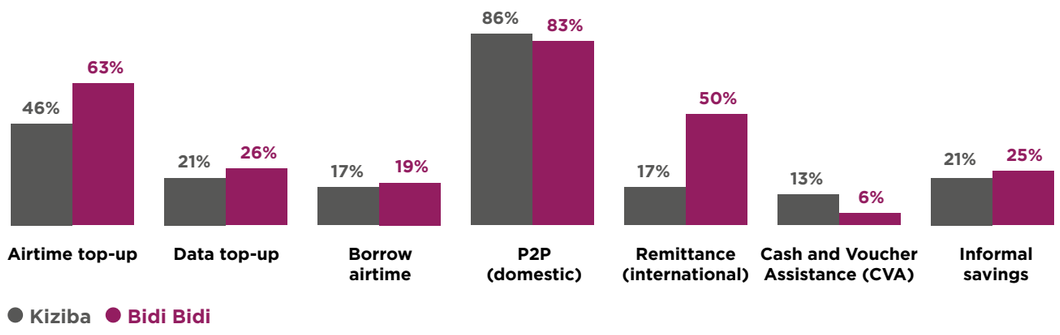
Refugees with disabilities are less likely to use mobile money in both Bidi Bidi and Kiziba. In Bidi Bidi, refugees with disabilities are 28 per cent less likely to use mobile money than refugees without disabilities. In Kiziba, 43 per cent of refugees with disabilities use mobile money compared to 62 per cent of refugees without (i.e. refugees with disabilities are 31 per cent less likely to use mobile money).

In Bidi Bidi, older people (over 51) use mobile money significantly less than younger people (aged 18 to 25) and middle-aged people (aged 26 to 50).[101] This reflects similar trends in rural areas where older populations are usually the "last adopters" of mobile money. Only a quarter (25 per cent) of older refugees use their phone for mobile money compared to 49 per cent of young refugees and 45 per cent of middle-aged refugees.

100. GSMA (2019). Bridging the mobile gender gap for refugees.
101. Throughout this section, "young" or "youth" refers to survey respondents aged between 18 and 25 years old, "middle-aged" refers to respondents aged between 26 and 50, and "older people" to respondents aged 51 and over.

Figure 12

Mobile money services used by refugees in Kiziba and Bidi Bidi [102]



Base: Mobile money users (Kiziba: 430, Bidi Bidi: 333)
Q: What do you use the mobile money account for? (purchase airtime / purchase mobile data / borrow airtime / send or receive money to and from people in Uganda/Rwanda / send or receive money to and from people in other countries / receive cash aid / savings)

P2P transfers, airtime top-up and international remittance are the most commonly used mobile money services among refugees in Kiziba and Bidi Bidi

As shown in Figure 12, although there is some variation in the mobile money services used by respondents in Kiziba and Bidi Bidi, the trends are broadly similar. In both contexts, **the most common mobile money service is P2P transfers** (i.e. sending and receiving money domestically). Focus group participants described transfers between family members and friends living in different camps and locations to help with (among other things) medical costs, unexpected expenses and school fees. In Kiziba, using mobile money to support children and siblings studying at schools outside the camp is common, increasing the value proposition for mobile money:

> ***"I use it mostly to send money to children who are in school, like pocket money and tickets. I find it to be so easy."*** **(Male, Refugee with disability, Rwanda)**

> ***"We use mobile money when a parent is sending money to a student for school. We get the money from mVisa and load it on the mobile money account and send to the student."*** **(Male, Refugee, Rwanda).**

Airtime top-up is the second most common mobile money service in both Bidi Bidi (63 per cent of users) and Kiziba (46 per cent of users). The qualitative data indicates that the ability to use mobile money to top-up airtime becomes more important when mobile money agents or airtime are unavailable:

> ***"I use mobile money for buying airtime. Sometimes when you find the agent they don't have airtime, so you might as well use it on your own account."*** **(Female business owner, Refugee, Rwanda).**

Mobile money agents are less accessible in Bidi Bidi. This reality, together with a recent ban on scratch cards,[103] may explain the increased use of mobile money to buy airtime. Focus group participants frequently noted the long distances they must walk to find an agent, and the survey found that 38 per cent of mobile money users walk for over half an hour to reach a mobile money agent. They also noted that problems with network coverage[104] limit agent services and the amount of airtime available.[105] In contrast, mobile money agents in Kiziba tend to be closer: 54 per cent of users in Kiziba are within a five-minute walk of an agent. It is important to note that Kiziba (0.3 square kilometres) is significantly smaller than Bidi Bidi (250 square kilometres). Nevertheless, focus group participants in Kiziba expressed frustration with the lack of availability of mobile money agents, who were not always at their kiosks or in their shops, and low amounts of airtime available.[106]

The third most common mobile money service is international remittances (sending and receiving money internationally), although this is nearly three times as common in Bidi Bidi (50 per cent of users) as in Kiziba (17 per cent of users). Qualitative findings suggest this may be because most refugees interviewed in Bidi Bidi have family members residing in South Sudan, particularly male family members who have stayed to protect property and cattle herds. Due to the protracted nature of the refugee crisis in Kiziba, and the small number of returned and resettled refugees, there is a less prominent trend of sending money back to the DRC or to other countries. On a global scale, international remittances account for just a small proportion of total transactions. The fact that it is the third most common mobile money service among refugees in both Bidi Bidi settlement and Kiziba camp highlights the important role it can play in refugee contexts.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Mobile money accounts are used as an informal mechanism for saving money

In addition to the use of these three main mobile money services, **focus group participants in Kiziba and Bidi Bidi emphasised the importance of using their mobile money accounts as a means of saving.** Male participants reported this behaviour more than female participants, which is most likely associated with higher income for men. They mainly reported informal savings habits (i.e. putting money aside in their mobile money account) rather than using the full functionality of the account for saving, such as MoKash, a savings product offered by MTN in partnership with the Commercial Bank of Africa (CBA).

> ***"For me, I withdraw part of it and save the rest to take me to the next month. For me, when money is sent to my account, I keep saving to keep the account active."*** **(Male, Refugee, Uganda)**

Focus group participants frequently described withdrawing small amounts of money from their mobile money accounts based on need and how this has improved their financial management:

> ***"I use mobile money after doing my jobs. I can get some and save it in mobile money. If you have it in your pocket you may misuse it. And it is more secure."*** **(Male, Refugee, Rwanda)**

102. Borrowing of airtime is a common mobile money use case in which customers can buy small amounts of airtime on credit. The cost of the airtime is deducted from their next purchase of airtime using mobile money. This is not an official product, but it is a common practice among mobile money customers, especially in emergencies or when an agent is unavailable to sell airtime. In this way, the borrowing of airtime is an informal method of accessing credit.
103. The ban on the use of scratch cards was implemented by MNOs on 31 July 2018 following a directive from the Uganda Communications Commission (UCC). Since January 2019, there have been calls from the government to reinstate scratch cards. More information available at: https://www.softpower.ug/kadaga-summons-ucc-boss-over-banned-airtime-scratch-cards/
104. If there is no or weak mobile coverage, mobile money agents are unable to make transactions for customers.
105. Agents have a limited amount of airtime to sell that they purchase from or are distributed by MNOs. During busy periods, agents reported struggling to meet customer demand for airtime as their airtime stock is too low.
106. Note: the proximity of agents does not mean that the agents are available or able to make the required transactions. Focus group participants reported that access to agents was impeded during the rainy season due to poor roads and mud. Access to agents is also restricted by opening hours. Poor network coverage can prevent agents from completing transactions, and low liquidity of cash floats and airtime can also hinder the ability to use services. Combined, these factors lead to frustration with the lack of availability of mobile money agents and services despite the close proximity of agents.

5.3
Barriers to mobile money adoption, access and use

In Kiziba, identity-related issues are a major barrier to the reliable use of mobile money

Qualitative findings from Kiziba demonstrate that the most significant barrier to using mobile money is the lack of legally recognised identity documentation to open a mobile money account (see Digital identity, section 7). Focus group participants without their own refugee identity card explained they must rely on others to register mobile money accounts and withdraw cash on their behalf.

"If [the mobile money account] is not in your name, you can't withdraw your money. You have to find the person who is registered and they have to come and withdraw the money — he may be very far. For example, if it's your child they may be at school. If it's not someone you know well they may charge you for that. The challenge is that the owner of the ID may lose their ID and then you can't use the account and withdraw money. It can take years to replace a lost or expired ID."
(Male, Refugee, Rwanda)

In Bidi Bidi, mobile money use is constrained by government-imposed mobile money tax, liquidity and network issues

In Bidi Bidi, the qualitative data shows there is no single primary barrier, but several were cited. **The first is taxation of mobile money imposed by the Government of Uganda.**[107] The charges on deposits and transactions have created a perception that it is cheaper to pay using cash, and this has reduced usage:

"People prefer to be paid in cash because if you are paid in mobile money the taxes mean the money is deducted. You receive 100,000 UGX and then it turns out you get 90,000 UGX and you get less than you paid for. Always the taxes are passed to you as a beneficiary."
(Male, Refugee, Uganda)

Focus group participants in Bidi Bidi reported that since the charges on mobile money were introduced they are making transactions less regularly; nevertheless, they have not abandoned the service. They described assessing whether it was worthwhile to make a particular transaction:

"Sometimes I am not using [mobile money] as promptly as before — I calculate whether it is worth using mobile money."
(Female business owner, Refugee, Uganda)

107. The Observer (October 2018), MPs approve new mobile money tax.

Box 4

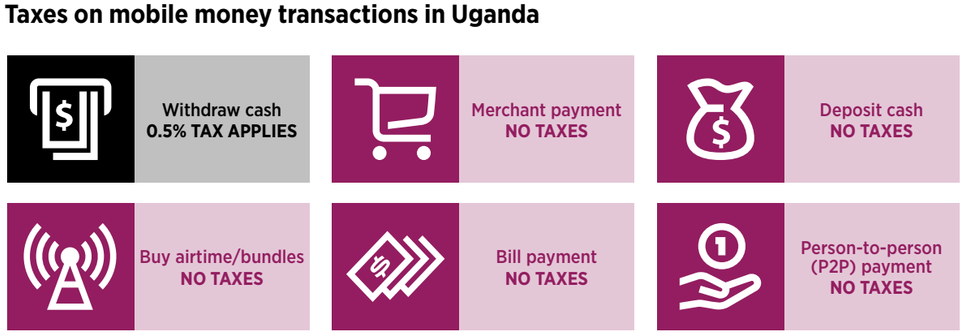
Mobile money tax in Uganda

In July 2018, a one per cent tax was initially applied to almost all mobile money transactions in Uganda, including depositing, sending and withdrawing cash.[108] There was also ambiguity and confusion around which transactions were subject to the tax and how exactly the tax should be applied (e.g. the sender and receiver are both taxed) with airtime top-ups the only transaction appearing exempt from the tax.

Since the primary research was conducted, taxes have been revised. Due to pressure from various sectors and segments of society, and an apparent misunderstanding of the recommended level of taxation,[109] as of November 2018 the tax was reduced to 0.5 per cent and now only applies to mobile money withdrawals[110] (Figure 13). Mobile money fees and taxes can encourage keeping money in the mobile money ecosystem, rather than cashing out, strengthening the digital ecosystem. However, for low-income populations that need to cash-out immediately in environments where digital ecosystems are still nascent, taxes can have the opposite effect, limiting mobile money adoption.

Figure 13

Taxes on mobile money transactions in Uganda



The second barrier in Bidi Bidi is the way in which mobile money can be limited by an agent's ability to manage their liquidity balance and the reliability of the network. Specifically, participants referred to issues with the network and cash floats that are making it difficult to access accounts. One mobile money agent reported:

"Sometimes, maybe once a week, I don't have enough float to make transactions for customers. Customers get angry. It happens when I have a lot of customers."
(Male, Refugee, Uganda)

This issue was noted in market observations in Bidi Bidi where focus group participants described being turned away due to agents having low cash floats for mobile money transactions.[111]

Thirdly, in Bidi Bidi some focus group participants reported that their accounts had been locked after periods of dormancy.[112] This happened most often when people had set up their account to receive cash aid, but had not used it regularly afterwards.

108. Kamulegeya, F. (2018), What 1% new tax on mobile money transactions means. PWC.
109. The East African (7 July 2018). Controversy over Uganda mobile money taxes.
110. Daily Monitor (19 November 2018). Mobile money volume to rise to Shs871b by December – report.
111. A total of 14 markets were observed in all five zones of Bidi Bidi settlement: five in Zone 1, three in Zone 2, two in Zone 3, two in Zone 4 and two in Zone 5. The markets were observed between 12 and 21 November 2018.
112. GSMA (April 2019), Mobile money enabled cash aid delivery: Operational handbook for mobile money providers.

A DIGITAL DAY IN THE LIFE

Samuel

Conducting business

Samuel* fled South Sudan and arrived in Bidi Bidi settlement two years ago. Samuel owns two feature phones: TECNO and FARO. Earlier this year, he noticed that he and his friends were struggling to access Airtel mobile money agents in the settlement. After assessing the available mobile money services, Samuel decided that he could help people and earn an income by becoming an Airtel mobile money agent. Samuel travelled to the Airtel service centre in Yumbe and paid the fee to register as an agent. He then received an hour's training and the mobile phone line he needed to work. Samuel said it was easy to learn everything. He enjoys his work and helping people, because "some people used to have to go to Arua or Koboko but now I can improve their life because I bring the services here."

Today, Samuel works from 8am to 5pm or 6pm as an Airtel mobile money agent. His busiest hours are between 3pm and 4pm, and throughout the day he uses his phone for business and communication with customers. Samuel assists customers with deposits and withdrawals of mobile money as well as helping them send money to other mobile money accounts, but his customers mainly request cash-out transactions from their accounts. When his float is low, Samuel calls the service centre to top it up. When business is slow, he uses his phone to check Facebook, talk to relatives in South Sudan and read the news. He also uses his own mobile money account to save the profit from his work as an agent.

Samuel faces some challenges that make his work difficult, such as poor network coverage. If the Airtel network is down or slow, he cannot work. At least once a week he does not have enough cash float to make transactions for his customers, which makes them angry, but there is nothing he can do about it. Samuel reports that the mobile money charges are affecting him and his customers, but that luckily people are still using Airtel mobile money.

Trust in the mobile money service has a major effect on usage

Respondents in both Bidi Bidi and Kiziba noted that they have faced fraud issues in the form of SMS messages offering a large sum of money and requesting mobile money details.

> ***"If you are using mobile money they have tricks and send you messages that you have received UGX 5 million and to go and withdraw and send your secret PIN. It is really difficult. They are using the number saying you have won the money."*** **(Female, Refugee, Uganda)**

In the wake of riots in Kiziba camp in 2018 and fake SMS messages purporting to be from UNHCR, some focus group participants reported they have become distrustful of SMS messages that appear to come from UNHCR. These fake SMS messages were associated with arrests during the riots and have undermined trust in UNHCR even though they did not send the messages.

In Bidi Bidi, focus group participants also reported that mobile money agents sometimes steal from their customers. Focus group participants described mobile money agents using customers' PIN numbers and account information to make unauthorised transactions to unknown accounts or to transfer one's entire savings to their own account. While these scams were not a regular occurrence, there was a perception among focus group participants that this was a potential threat and cause for wariness. Age also plays a significant role in the level of trust in different mobile financial services. For example, in Kiziba, younger people tended to trust mobile money more than banking systems, but older generations preferred banking systems.

> ***"Those banking systems — we don't trust them. We prefer using mobile money for young people — older people prefer the bank."*** **(Male, Refugee, Rwanda)**[113]

In Jordan, lack of perceived need is a major barrier to mobile money adoption

In Jordan, the most commonly cited barrier to using mobile money was that it was not needed, as refugees have bank accounts and bank cards to make transactions online.

> ***"I have heard of mobile money, but we don't use it. It's not that useful, because we can get a normal account and we can pay for things easily anyways."*** **(Female, Refugee, Jordan).**

A related barrier identified by some focus group participants in Jordan was that they had insufficient money to use mobile money, as there is a perception that a steady flow of money and a lot of savings are necessary. This is an incorrect understanding of the financial requirements for mobile money accounts, which generally require less money to be deposited than bank accounts. Participants also expressed a **lack of confidence in mobile money,** both in the security of the account and of the mobile money service providers:

> ***"I am afraid of safety [of mobile money], the current methods are not secure enough."*** **(Female, Host community, Jordan).**

This is also a misconception as mobile money accounts are secure. Usually, the physical cash stored by MNOs must be held in a trust account and kept in a licenced financial institution, such as a commercial bank, to maintain security of funds.[114]

Finally, some focus group participants said that while companies advertise that payments can be made via mobile money, merchants prefer to receive cash at the point of sale. This acts as a disincentive for mobile money use.

113. In Kiziba, many refugees receive CVA from Equity Bank on a prepaid card called "mVisa". This form of CVA cannot be considered financial inclusion in formal banking institutions as beneficiaries can only spend on specific items or withdraw from an ATM. As such, mVisa should not be viewed as financial inclusion in a bank.
114. Mobile money uses e-money, which is stored value held in the accounts of users, agents and the provider of the mobile money service. To ensure that a customer's money is available when the customer wants to redeem it, regulators typically require that the non-bank mobile money provider maintain liquid assets equal in value to the amount of money issued electronically. These funds are usually pooled in an account known as an escrow account and held by one or more banks in the name of the issuer (or in the name of a trustee appointed by the issuer).

5.4
Emerging trends and considerations

The research findings reveal the extent of the differences between the operating contexts for MFS in Jordan, Rwanda and Uganda. Most notably, the established banking infrastructure in Jordan, and the nascent mobile money ecosystem means that mobile money use is low. Although mobile money could be used to support refugee livelihoods in a range of ways, only a small number are currently being employed.

Some potential considerations:

- **Implement effective programme and policy interventions** that could help address the trust and security concerns that some refugees have associated with using mobile money services. For example, a complaints (recourse) mechanism could be set up to alleviate these concerns. Humanitarian organisations could also work with community leaders to assuage people's fears, and MNOs could train agents to educate their customers on the benefits of mobile money and the safety of their money.
- **Explore the context-specific implications of taxation and charges on mobile money transactions**, with a focus on how this may be stifling usage in Uganda.
- **Undertake a study** in Bidi Bidi to understand whether the lack of mobile money agents is a significant causal factor inhibiting the use of mobile money. For example, this could be "tested" by incentivising mobile agents in a specific location to determine whether there was increased uptake.
- **Design training and capacity building activities** to increase overall awareness of the MFS ecosystem of products, with a specific objective to increase uptake among early adopters in the refugee population and build nascent communities of practice to influence wider use. In-depth understanding of behaviours, needs and aspirations of early adopters is necessary to design user-centric training and activities.
- **Conduct additional qualitative research to understand men's and women's experiences with mobile money adoption and use** and tease out the implications for digital humanitarian programming, including cash and voucher assistance (CVA). For instance, understanding why beneficiaries tend to use mobile money to save informally rather than through specific mobile money savings products, could shed light on what needs to be done to encourage beneficiaries to use more formal mobile money products and services. This could also help MNOs and humanitarian organisations collaborate on tailoring products and services to the unique needs of this population and encourage effective use of mobile money services.
- **Accelerate the issuance of appropriate identity documentation.** Even where the law specifically accommodates refugee access to SIM cards and mobile money accounts (as in Rwanda and Uganda), refugee populations do not have timely access to appropriate forms of identification[115] While not a legal or regulatory issue per se, such delays mean refugees remain digitally and financially excluded or are forced to find workarounds by borrowing others' SIM cards and mobile money accounts (See Digital identity considerations, section 7.4).
- **Ensure that KYC policies are appropriately flexible** to allow refugees to access mobile services with common ID documents, such as a UNHCR ID or attestation document. For example, lower, tiered KYC requirements[116] for opening mobile money accounts may be appropriate in contexts where there is low penetration of appropriate ID.
- **Enhance understanding of taxes.** Humanitarian organisations and MNOs should ensure refugees understand the taxes associated with mobile money to avoid confusion and misconceptions. For example, mobile money tax in Uganda, even when applied only to withdrawals (cash-out), acts as a disincentive given the low levels of mobile money ecosystem development and consequent need for beneficiaries to cash-out.

115. UNHCR, 2019, Displaced and Disconnected
116. For examples of countries that have enabled tiered KYC see page 10: GSMA Policy Note: Enabling Access to Mobile Services for the Forcibly Displaced

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6

Mobile-enabled utilities

M4H thematic area: Mobile-enabled utilities

Mobile-enabled utilities focuses on the ways in which mobile technology can be used to expand or improve access to energy, water and sanitation services in humanitarian contexts.[117] While utilities are critical requirements for forcibly displaced persons (FDPs), many lack access to these basic services. Mobile technology can be used in a variety of ways to expand or improve access to utility services in humanitarian contexts, including mobile payments, machine-to-machine (M2M) connectivity and by leveraging mobile infrastructure.

For refugees living in contexts where utility infrastructure is limited or unavailable, mobile-enabled utilities are particularly important. For example, paying for utilities with mobile money can reduce or amortise the upfront costs of infrastructure, such as solar home systems, which may be out of reach for refugees. Off-grid and smart solutions can sometimes provide more reliable, convenient and environmentally-friendly options for refugees and host communities.

6.1 Introduction

At the time of data collection, mobile technology was being leveraged for energy services in Bidi Bidi and Kiziba, primarily for solar home systems (SHS) whereby people were paying for these using mobile money on a pay-as-you-go (PAYG) basis.

Mobile-enabled utilities are less relevant in Jordan where the mainly urban refugee population has similar access to established utility infrastructure as the host population (electricity mains, piped water, liquid petroleum gas). However, some of the data on general utilities usage in Jordan is provided below to inform humanitarian stakeholders of how access to utilities could be enhanced with mobile technology. It is also worth noting that this research does not cover the 17 per cent of refugees/asylum seekers in Jordan that reside in camps,[118] where mobile-enabled utilities may be more relevant.

117. GSMA Mobile for Development Utilities programme: https://www.gsma.com/mobilefordevelopment/m4dutilities/
118. UNHCR. Registered Persons of Concern: Refugees and Asylum Seekers in Jordan.

Key findings

1. **Lack of a power supply can affect the ability of refugees to keep their mobile phones charged and stay connected.** Only a third of refugees in Kiziba have a power source in their home compared to around half of refugees in Bidi Bidi. Conversely, virtually all urban refugees in Jordan have a power source in their home.
2. **Use of solar home systems (both mobile and non-mobile enabled) is highest in Bidi Bidi** where 13 per cent of those surveyed use one.
3. **Refugees report that their most pressing energy need is charging phones,** and the availability of charging and the associated cost have a significant influence on mobile phone usage.

6.2 Energy access and use

Lack of a power supply can affect the ability of refugees to keep their mobile phones charged and stay connected. Only a third of refugees in Kiziba have a power source in their home compared to around half of refugees in Bidi Bidi.

Access to energy sources varies across the three research locations. Refugees and host communities surveyed in Rwanda and Uganda live off the electricity grid and therefore have significantly lower access to energy than urban refugees in Jordan. Refugees in Kiziba (Rwanda) have the lowest access to energy, with around a third (34 per cent) having access to a power source at home compared with over half (54 per cent) of those surveyed in Bidi Bidi (Uganda). In contrast, 100 per cent of refugees and the host community surveyed in Jordan have a power source in the home.

The only refugee context in which a gender difference was found was Bidi Bidi, where 59 per cent of male survey respondents have access to a power source compared to 49 per cent of female respondents. Access was also found to be 14 per cent lower for refugees with disabilities in Bidi Bidi and the same percentage for older people (aged over 51).

Charcoal and wood are the main fuel sources for cooking in Kiziba and Bidi Bidi

A range of fuel sources are used by refugees and host communities for cooking. **Charcoal and wood are commonly used in Uganda and Rwanda, whereas liquid petroleum gas (LPG) is most commonly used in Jordan by both refugees and the host community.**

In Bidi Bidi, the majority of refugees (81 per cent) use wood and 41 per cent use a charcoal stove to cook their food, and we see similar trends in the Uganda host community. In Kiziba, most refugees use charcoal (71 per cent) and 58 per cent use wood for cooking, compared to 10 per cent and 97 per cent in the host community, respectively.

Clean cooking alternatives and more fuel-efficient stoves not only create healthier environments, but can be an important entry point for mobile-enabled utilities. A variety of initiatives are underway to encourage clean cooking alternatives in refugee contexts, several of which are underpinned by mobile technology (see Box 5).

Box 5

Clean cooking initiatives

The GSMA Mobile for Humanitarian Innovation programme is providing a grant, through its Innovation Fund, to Alight (formerly the American Refugee Committee) for the implementation of a clean cook stove solution in Bidi Bidi and Kiziba.

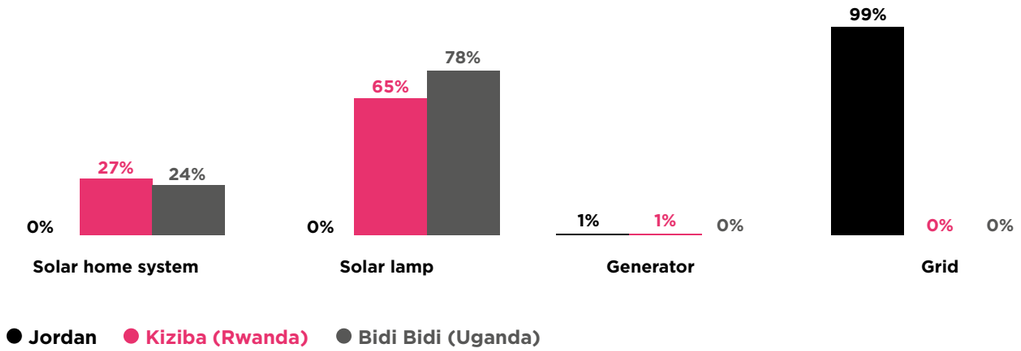
In partnership with supplier Biolite, the team is testing a market-based approach to improved energy by providing a clean cook stove solution combined with a solar off-grid lighting home system. The project will test the adoption of the two kits and their impact on improved energy access for vulnerable households. Through close evaluation of the effectiveness of different financing methods (e.g. conventional consumer finance, pay-as-you-go, savings and loan/credit) on product repayments, Alight will ensure responsible and reasonable repayment terms to vulnerable households via the use of mobile technology. GSMA M4H is also working in close collaboration with Alight Rwanda to improve capacity and training on financial service for refugees.

Solar energy use is high in Bidi Bidi and Kiziba, but few systems are mobile-enabled

Solar-powered energy is the most popular energy source for refugees and host communities surveyed in Kiziba and Bidi Bidi.

Figure 12

Types of power sources used in refugee homes with power



Base: refugees with power source in their home (Jordan: 728, Kiziba: 248, Bidi Bidi: 401)
Q: What type of power source [do you have at home]? (solar home system / solar lamp / generator / grid)

Of the refugees with a power source in the home in Bidi Bidi, 78 per cent use solar lamps and 24 per cent use an SHS, not all of which are mobile-enabled. Solar use is higher in the host community surrounding Bidi Bidi: 87 per cent of homes with a power source use solar lamps as their main power source and 22 per cent use an SHS. The focus groups demonstrated that high access to solar lamps was largely due to a distribution by UNHCR when refugees arrived in Bidi Bidi in 2016. However, the qualitative findings suggest that many of the solar lamps have become damaged over time and are not as useful anymore.

In Kiziba, 65 per cent of refugees with a power source in their home use a solar lamp and 27 per cent use an SHS. The use of SHS is higher in the host community around Kiziba, where 61 per cent use an SHS and 13 per cent use a solar lamp. While the majority of focus group participants do not have power at home in Rwanda, many are aware of SHS, such as d.light. This may be an opportunity for solar energy providers active in the host communities to offer their products to a new, underserved segment of customers, as brand recognition and awareness is already established and less investment would be needed in marketing.

Mobile money is used to pay for energy, but use is limited

Methods of payment for energy varied across the research contexts. In Jordan, there was no indication that participants use mobile money to pay for utilities.[119] Some focus group participants reported paying for electricity online, although this is not the preferred method of payment by electricity companies. The majority of participants pay for electricity in person:

> ***"We can pay online like 'e-fawateer' but we don't do it that much."*** **(Female, Refugee, Jordan)**

In Kiziba, 19 per cent of refugees with energy in their home use mobile money to pay for their energy source. Focus group participants revealed there are different models of PAYG energy: lease to own (or finance purchase) and energy as a service. The most common type is lease to own offered by d.light:

> ***"I pay for a home solar system called d.light. Once you finish paying it, it is done and there are no other fees. You pay with the network you used to register, and I registered with MTN."*** **(Refugee, Rwanda)**

The focus groups also indicated that some families with solar home systems are supported by those who have left the camp or have been resettled abroad. Mobile money is used to transfer funds via P2P transfers (domestic) or international remittances to pay for the SHS.

The use of mobile money for energy payments is lower in Bidi Bidi where only seven per cent of people with energy in their home use it to pay for their energy source. The general reluctance to pay for energy with mobile money is largely due to the taxes imposed on mobile money transactions by the Ugandan government (see Barriers, section 6.3).

119. Mobile money is nascent in Jordan and therefore the low adoption of mobile money for bill payments is unsurprising. See the Mobile financial services section of this report.

Mobile-enabled solar solutions

While widespread use of mobile-enabled solar power has not yet taken root in any of the research locations, there are several indications that these markets are ready for mobile technology to be leveraged for energy solutions. These include:

- Logistical, political or practical challenges to the extension of grid power infrastructure;
- Consumer confidence in the reliability of mobile providers;
- Ability and willingness to pay via mobile; and
- Availability of relevant solar solutions.

In each of the contexts, there are at least some indications of readiness for mobile-enabled solar solutions, although other prerequisites or market conditions may not have been met. A few examples of mobile-enabled solar solutions include:

- **Bboxx** – an international company that designs, manufactures, distributes and finances plug-and-play solar systems to improve access to energy across Africa and the developing world.[120]
- **Fenix International** – an international company providing solar home systems that deliver rugged, efficient consumer electronics technology to remote, off-grid households. With a focus on energy-spending data, Fenix builds pricing plans based on what customers can afford.[121]
- **Moto energy solutions** – a local provider in Rwanda and DRC of modular power solutions that integrate with existing use cases and user needs.[122]
- **d.light** – a social enterprise that provides distributed solar energy solutions for households and small businesses.[123]

120. https://www.bboxx.co.uk/our-story/
121. https://www.fenixintl.com/product/
122. https://www.motoenergysolutions.com/
123. https://www.dlight.com/about/

The most pressing energy need is charging phones

The most frequently mentioned need for energy is the ability to charge phones.

> ***"Charging is challenging for many people. In one week you can spend between 33 or 400 [RWF] (USD 0.04–0.44) just on charging."***
> **(Female, Refugee, Rwanda)**

In both Bidi Bidi and Kiziba, charging stations, which are often solar powered, are the most regularly used method of phone charging among survey respondents.

> ***"Some people have power in their homes, but using it for charging depends on their meter boxes, if they don't have then they also go to the charging station to charge."***
> **(Female, Refugee, Rwanda).**

In Bidi Bidi, 62 per cent of active phone users charge their phone using a charging station, 26 per cent use a solar lamp and 19 per cent use a solar home system. In Kiziba, 89 per cent of active mobile users use a charging station, seven per cent use an SHS and only two per cent use solar lamps. A focus group participant explained:

> ***"If we don't have solar [energy in our homes] we go to the charging centres and pay in cash."***
> **(Female, Host community, Uganda).**

As this participant explained, when solar power is unavailable at home, either because there is no solar power source or there is insufficient sunlight to use the equipment, charging stations are used for charging phones and appliances.

In Bidi Bidi, focus group participants also noted that charging stations are currently paid in cash rather than mobile money. A mapping exercise undertaken during the focus group discussions (FGDs) showed that charging centres are readily available throughout Bidi Bidi, although many participants reported having to walk for over 15 minutes to reach one.[124] Unlike mobile agents or small businesses, some charging stations operate from homes and are therefore available throughout the smaller villages of Bidi Bidi, as well as in marketplaces.

Charging availability and cost have a significant influence on mobile phone use

Focus group participants also noted they moderated use of their phones to preserve battery. Games and music were regularly identified as draining the batteries, and were seen as a luxury rather than a primary use of phones. The availability of charging and the associated cost therefore have a significant influence on the nature and extent of mobile phone use (see Digital day study: Akaliza).

> ***"It's difficult and a big issue, you only go to the charging station. Sometimes you stay days without it charged. But if really desperate you can go to the hospital or ARC [American Refugee Committee] and really beg them if you know someone there."***
> **(Male, Refugee, Rwanda)**

124. During the FGDs, participants were asked to pinpoint on a hand-drawn map where they live, where the charging stations are and estimate how long they walked to reach it.

A DIGITAL DAY IN THE LIFE

Akaliza

Connecting to loved ones

Akaliza*, 23, has lived in Kiziba camp almost her entire life, and currently lives there with her mother, daughter and four nieces and nephews. Akaliza owns a Tecno smartphone, which she shares with her family members living in Kiziba. Akaliza's siblings are living outside the camp for work or school and her uncle was resettled in the US, so her phone is very important for keeping the family in touch with each other. Saturday is the main day that Akaliza uses her phone because everyone in the family is available and she can use the WiFi for free at Kepler University.

On a Friday night, Akaliza will charge her phone to be ready to communicate with her family on Saturday. Akaliza spends about RWF 300 (USD 0.33) a week charging her phone, but rarely buys airtime as she uses Wi-Fi at the university. In the morning, she will do chores and have her phone with her in case anyone calls to talk to her or her mother. No one is allowed to use the radio or play games so that the battery lasts throughout the day. In the afternoon, Akaliza and her mother go to Kepler University and start calling friends and relatives over WhatsApp and Facebook. They are usually there from 2pm until the building closes at 6pm. They talk about family matters like meetings, weddings and whether people are sick. Sometimes, Akaliza has to wait until people are online before she can talk to them, so she will watch music videos on YouTube to pass the time.

Akaliza also uses her phone to pay for a solar system through mobile money, which the family has been using for about a year. Before, they used candles, but one of the children accidentally caused a fire that damaged the house and they decided it was safer to have a solar system instead. Akaliza's uncle in the US pays for the solar home system by sending money to Western Union, which Akaliza then uses to pay for a month's electricity using TigoCash. This is a relief for Akaliza and her mother as the children are much safer and they have reliable energy in the home.

6.3
Barriers to accessing and using mobile-enabled energy

Although PAYG solar reduces the upfront costs of energy products, the capital cost remains high for most refugees

In all three research contexts, refugees have constraints on their purchasing power. While phones are widely considered a spending priority, refugees are forced to make difficult decisions about allocating resources to phones or to other needs, such as food. Limited financial resources and income-generating opportunities are inevitably a major barrier to accessing and using mobile-enabled utilities.

In Kiziba, focus group participants pointed to the initial capital cost of solar home systems, which is perceived as prohibitive for most refugees living in the camp unless they have the support of relatives and friends outside the camp:

> ***"We can't afford to buy solar [...] They are sold outside of the camp, because here in the camp no one can afford it."*** **(Female, Refugee, Rwanda)**

The widespread use of solar technology (solar lamps and charging stations) demonstrates that refugees are aware of and largely satisfied with solar energy, and this base of familiarity could be built upon to increase use if initial capital costs can be overcome.

Focus group participants in Bidi Bidi also cited the affordability of solar home systems as the primary barrier to greater use of solar energy:

> ***"We are interested in a solar home system, but we only get given food and there is so little work available, it would be too difficult to afford."*** **(Male, Refugee, Uganda)**

Another barrier to the use of mobile-enabled utilities is the reluctance of refugees to use mobile money to pay for services. A prominent theme in the qualitative data from Bidi Bidi was a preference for cash payments over mobile money payments due to the introduction of taxes on transactions. These charges are considered a financial burden by refugees and are encouraging a preference for cash over mobile money. However, the mobile money tax in Uganda now only applies to withdrawals (cash-out), so in practice payments made through mobile money for mobile-enabled utilities products would not be subject to the 0.5 per cent tax. The perception that the tax would apply is likely due to the tax initially applying to all transactions at a higher rate of one per cent and confusion about how the tax is applied in reality (see Mobile financial services, section 5).

Finally, the free provision of water, sanitation and health (WASH) services by humanitarian organisations in Kiziba and Bidi Bidi means that PAYG utility services have so far been limited to energy because this has not traditionally been provided in refugee settings. However, humanitarian organisations are beginning to explore how mobile technology can make the provision of WASH more efficient, especially PAYG solutions for water. This emerging trend was reflected in Round 2 of the M4H Innovation Fund, which received a number of applications proposing to leverage mobile technology for WASH services.[125]

125. GSMA (December 2018), Key Trends from Round 2 of the GSMA Mobile for Humanitarian Innovation Fund.

6.4
Emerging trends and considerations

Access to power in the home is limited in Bidi Bidi and Kiziba, and energy is the only type of mobile-enabled utility reported in these locations. In these contexts, solar energy is being used in a number of ways, suggesting a high level of willingness to use solar energy and confidence in its effectiveness. However, the initial capital cost remains the main barrier to the use of mobile-enabled energy systems, such as SHS, and this will need to be addressed if widespread adoption is to happen.

Mobile technology is not currently widely used by refugees in any research context for water and sanitation services.

Some potential considerations:

- **Pilot the deployment of PAYG SHS in refugee contexts.** Humanitarian organisations, energy service providers and MNOs should work together to trial PAYG solutions, tailoring payment plans to understand refugees' ability and willingness to pay. This will shed light on the commercial viability of these solutions and provide evidence for whether there is a need for humanitarian organisations or other stakeholders to cover some of the capital expenditure, at least in the short term.[126] This should include an analysis of mobile money ecosystems to assess whether they are mature enough to support PAYG solutions.
- **Consider specific ways in which mobile-enabled utilities can provide employment opportunities.** PAYG solutions have the potential to foster income generation and support livelihoods for refugees by making localised power sources more available and affordable. Stakeholders should draw on lessons from the development sector.[127]
- **Develop an operational plan for how to capitalise on the existing use of solar energy and mobile phones,** and trial a range of pricing models.
- **Educate refugees about mobile money taxes, products and services to dispel misconceptions.** Humanitarian organisations and MNOs should ensure that refugees understand the taxes associated with mobile money to avoid confusion and misconceptions. Mobile money tax in Uganda, even when applied only to withdrawals (cash-out), is currently discouraging mobile money use.

126. GSMA (2019), Mobile-Enabled Energy for Humanitarian Contexts: The case for pay-as-you-go solar home systems in Kakuma Refugee Camp.
127. GSMA (2015), Fenix International Scaling Pay-as-you-go Solar in Uganda.

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7

Digital identity

M4H thematic area: Digital identity

The ability to prove your identity is essential for accessing basic services and a prerequisite for socio-economic development.[128] However, refugees often relocate to countries without any form of legal identification as these can be forgotten, lost, destroyed or stolen during a refugee's journey. Others who are fleeing persecution based on some aspect of their identity might choose not to travel with documentation.[129] The digital identity thematic area focuses on the potential role of mobile to establish unique digital identities for people affected by humanitarian crises and improve access to identity-linked services. It also considers identity an entry point to accessing mobile services.

Lack of identification can be a major barrier to accessing basic mobile services, such as voice communications and messaging. In over 150 countries, including the top 10 refugee-hosting countries in terms of volume, MNOs are now subject to mandatory SIM registration requirements, which require customers to present an approved identity document before a SIM card or mobile money account can be activated.[130] This can be especially challenging in humanitarian contexts where refugees may lack official identity documents or proof of entitlement to rights or services.

Beyond acting as an entry point for mobile services, digital identities can also enable a refugee to register their needs or vulnerabilities with local authorities and humanitarian organisations, and make it easier to access a range of humanitarian services. Digital identities can be understood as a set of electronically captured and stored attributes and credentials that can uniquely identify a person. A digital identity can be linked to an individual's biometric details (such as their photograph, fingerprints or iris scan[131]) for the purposes of targeted aid distribution.

128. See more from the GSMA Digital Identity programme: https://www.gsma.com/mobilefordevelopment/digital-identity/
129. GSMA (2017), Refugees and Identity: Considerations for mobile-enabled registration and aid delivery.
130. GSMA (2019), Access to Mobile Services and Proof of Identity 2019: Assessing the impact on digital and financial inclusion.
131. See IrisGuard example.

7.1 Introduction

This section focuses primarily on identity and privacy-related challenges and concerns surrounding mobile access and use. It also explores how refugees use their phones to store personal information associated with their identities.

Considerations are proposed for humanitarian organisations, MNOs and policymakers to overcome identity-related challenges to mobile access and use and embrace the opportunities digital identity offer for refugees.

Key findings

1. Refugees need proof of identity to access mobile (and increasingly humanitarian) services in their own name. However, **slow issuance of identity documentation is hampering refugees' ability to register for mobile services**, especially in Bidi Bidi and Kiziba.
2. **Privacy concerns associated with digital identity are common** and are felt acutely by community leaders in Bidi Bidi.
3. **Refugees use their mobile phones to store personal information** related to their identity.

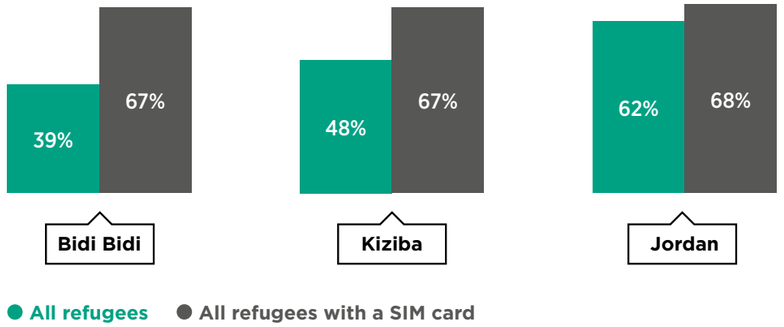
7.2 Identity-related challenges

Slow issuance of identity documentation hampers the ability of refugees to register for mobile services in their own name, especially in Bidi Bidi and Kiziba

Refugees need proof of identity to access mobile (and increasingly humanitarian) services in their own name. In Uganda, Rwanda and Jordan, refugees must present an approved identity document for SIM registration and meet know your customer (KYC) requirements, set by the national financial regulator, to open a mobile money account. The research survey provides evidence that many refugees do not possess the requisite identity documents, and in these instances must employ workarounds (borrowing another person's ID or using a SIM card registered by someone else) or are simply excluded.

Figure 15

Proportion of refugees with a mobile SIM card registered in their own name



In both Bidi Bidi and Kiziba, local host communities were significantly more likely to have SIM cards registered in their own name. In Bidi Bidi, 78 per cent of people in the local host community who owned a SIM card had it registered in their own name (compared to 67 per cent of refugees) and in Kiziba it was 88 per cent (compared to 67 per cent of refugees). This pattern was not seen in Jordan, where 68 per cent of Jordanians who owned a SIM had it registered in their own name, the same figure as for refugees.

The identity requirements and associated challenges were different for each country.[132] While lack of access to identity documentation is not an issue commonly encountered by participants in Jordan, focus group participants in Bidi Bidi noted that the use of attestation documents for the whole family can prove problematic. **Participants who did not own a mobile phone explained that accessing the correct identity documentation was the second most common barrier to phone ownership, after the cost of handsets.**

At the time of data collection, many refugees had not been issued with refugee ID cards from the Government of Uganda, yet all heads of household have an attestation document.[133] There was divergence in the qualitative data regarding whether different members of the family can use the attestation document to register for a SIM card, as it is a family document.

Focus group participants disagreed about the number of SIM cards that could be registered per attestation document and the role of the head of household in registering dependents. This highlights the lack of clarity about the national policy for SIM registration, making it unnecessarily complicated for refugees to get connected. Specifically, focus group participants reported that dependents have difficulty registering for their own account using the attestation document:

> ***"If you are a dependent you can't register your own account. The family head has to be the one to register her — then it is not in your own name. It means I don't have my own account. I would like to have my own account so I could use it to receive money from my parents."*** **(Female, Refugee, Uganda)**

In Kiziba, the refugee ID card is also a vital document for registering a SIM card, mobile money account and a requirement to leave the camp boundaries. At the time of data collection, this was a barrier to accessing mobile services in Kiziba due to the fact that a third of refugees (33 per cent) in Kiziba had not been issued refugee IDs since the recent re-verification process.[134]

132. Identity requirements: Jordan – refugees may legally obtain a Jordanian SIM card and mobile money account if they provide a passport, work permit, residency permit or a Ministry of Interior (MOI) card (issued to Syrian refugees only). Uganda – refugee ID cards are needed for SIM registration. In the absence of a refugee ID card, an attestation letter and reference letter from OPM is sometimes accepted to open a bank account. Rwanda – refugee access to SIM cards and mobile money accounts in practice differs across urban and camp settings. In some cases, a UNHCR Proof of Registration will suffice while other times a Refugee ID is necessary. For further details see: UNHCR (2019), Displaced and Disconnected.
133. Refugees are given one attestation document per household, which records the identities of each member of the household living in the settlement or camp. Until an official refugee ID card is issued for each individual in the household, the attestation document is used as a form of identity to register for SIM cards and mobile services.
134. Relief Web (2018), Joint verification exercise of refugees and asylum seekers residing in Rwanda launched.

In Kiziba, focus group participants reported that the registration process is easy if the person registering has a refugee ID. As illustrated in the following quotation, individuals sometimes resort to asking others with sufficient identification to register SIM cards on their behalf. However, this can limit access to mobile services for the person using a SIM card that is not registered in their own name.

> ***"Most of us don't have registration forms [for refugee ID], so our SIM cards are registered in friends' names. We all have proof of residence (POR), but don't have a refugee ID. You can't use a POR to register a SIM card. Some of us have a refugee ID from before but it expired after 5 years."*** **(Male, Refugee, Rwanda)**

Privacy concerns about digital identity are common

A significant barrier to mobile use mentioned in focus groups is privacy concerns and willingness to allow companies (creators of third-party services like mobile apps, as well as MNOs) to have access to personal information.

Refugees were asked how concerned they were about sharing personal information with UN officials, NGOs, mobile agents and on social media. The level of concern expressed in survey results could be influenced by cultural and personal factors, but also by the level of digital literacy and awareness of security risks, both real and perceived. In contexts where disinformation and uncertainty about the reliability of information sources are prevalent, digital identity concerns about using mobile phones may persist even when services improve.

> ***"For us using Facebook or WhatsApp, I am worried we will be hacked or tracked, and someone reading the information we are sharing."*** **(Male, Refugee, Rwanda)**

Such concerns were heightened for some community leaders:

> ***"There are worries for us leaders — we are all refugees, we came because we are targeted, if you expose your location and you are targeted, there are traffickers and they may come and find you. Protecting your location, when you are on social media account you don't write all your details, you hide your information, you don't use a photo. Sometimes you even lie to throw people off! Most people are not connected to politics so you are free to use social media as you wish."***
> **(Male, Refugee community leader, Uganda)**

The survey data confirms this was a particular concern in Bidi Bidi where 78 per cent of refugees said they were very or somewhat concerned to share information with UN officials or NGOs, 64 per cent with mobile agents and 30 per cent on social media.

In Kiziba, the survey data suggested less concern about privacy, however, there was concern that refugee respondents in Kiziba had not answered these questions freely due to the evident fear and concerns about sharing information following the riots and arrests in early 2018.[135]

135. Violent unrest broke out in Kiziba camp in February 2018 and 11 refugees were killed. Following the unrest, a number of refugees were arrested and sentenced to jail, charged with inciting violent behaviour through the organisation of the protests. Refugees in the camp told researchers they believed that the sharing of information relating to the riots through WhatsApp and other messaging services had resulted in arrests, so they therefore mistrusted information sharing through messages or with "outsiders" to the community. The atmosphere during data collection was one of tension and suspicion, and fear of repercussions may have influenced participants' willingness to respond openly about their perceptions of trust and privacy. Source: https://www.nation.co.ke/news/africa/Toll-refugees-killed-Rwanda-police-goes-up/1066-4321146-12236joz/index.html

7.3
Digital identity access and use

Refugees use their mobile phones to store personal information associated with their identity

Having access to identity is vital for refugees — so much so that they often keep it in a safe place at home or must submit it to authorities for certain periods. In these cases, a digital version of their proof of identity could be helpful for managing day-to-day needs and supporting freedom of movement. According to the survey, refugees are already using their phones to record key identity details, or to take pictures of their identity documents in case they need quick access to that information.

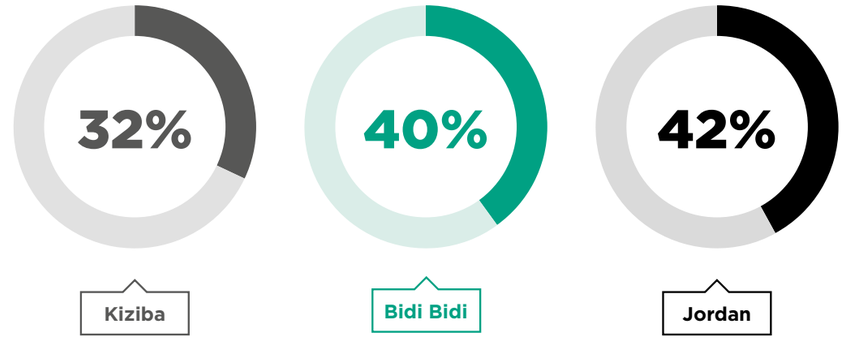
In Jordan, 42 per cent of phone owners reported using a range of (mostly) informal ways to store and share aspects of their identities on their phone. This includes taking photos of identity documents and storing ID numbers and personal information in notes and messages.

> ***"You can save your personal information and secrets on your phone and remember to put your password, saving the personal identity information like a photo of ID."***
> **(Male, Refugee, Rwanda)**

In Bidi Bidi, four in 10 refugees reported using their phones in this way, as did nearly a third of active phone users in Kiziba (Figure 16). It is noteworthy that in Jordan, Syrian refugees are able to show a photograph of their identification on their phone to UNHCR as long as the barcode is clearly scannable. However, this is not always the case, as a photo of a physical ID on your phone is not considered a digital ID as such.

Figure 16

Proportion of refugees who store personal identity information on their phone



The range of mobile services used for storing and sharing identity documents in Bidi Bidi and Kiziba is restricted by the low penetration of smartphones, which can manage more advanced solutions. However, even in these contexts, people use their basic or feature phones to keep a record of their identity.

This suggests there is demand for more mobile-based services that make identity credentials more portable and secure, especially if they could be verified digitally against recognised databases and enhance assistance provided by the authorities involved in refugee protection.

Box 6

Refugees use mobile as a communication channel to access humanitarian services

Ensuring refugees have the necessary documentation to access mobile services has become an increasingly important challenge to solve as humanitarian assistance becomes more digitised. For example, during an identity verification exercise in Uganda in 2018, UNHCR collected refugees' phone numbers for communication purposes.

In Bidi Bidi, mobile phones are widely seen as a reliable way to stay in contact with humanitarian organisations, and 67 per cent of active phone users gave out a phone number when registering for services. In October 2018, UNHCR, Office of the Prime Minister (OPM) and partners launched a refugee call centre to provide "safe, accessible and reliable communication channels to refugees and asylum seekers."[136] The phone number is used as an identifier and a link to refugee as part of the IFRRM (the Interagency Feedback Referral Response Mechanism) system, and enables agents on the refugee helpline to see a call history whenever a call from a phone number is received.

Given the importance of mobile services in refugee contexts, humanitarian organisations may want to ensure that every unique ID on their database is linked to a mobile number. This in turn makes it easier for refugee profiles to be updated.[137]

136. UNHCR (October 2018), UNHCR and partners launch communication system for refugees in Uganda.
137. GSMA (2017), Refugees and Identity: Considerations for mobile-enabled registration and aid delivery.

7.4
Considerations for digital identity in refugee contexts

The ability to prove your identity is becoming increasingly important for refugees to access services and opportunities in their host communities. However, lack of identification can be a key barrier to accessing even basic mobile services. The policy environment and clarity of the rules in Rwanda, Uganda and Jordan on what IDs are required for SIM and mobile money account registration have an impact on refugees' adoption and use of mobile services.

Beyond acting as an entry point to mobile services, digital identity can help to both consolidate identity documentation, which may have been fractured or inconsistent in the past, and improve future opportunities for refugees who are relocated again.

Some potential considerations:

- **Policymakers should provide clear guidelines on what identification is acceptable for refugees to access mobile services**[138] and ensure that a critical mass of refugees has access to an acceptable form of identity. This will improve clarity for refugees, MNOs (including agents) and humanitarian organisations on the required documentation.
- **Harmonise identity-related SIM registration requirements with the lowest tier of KYC requirements** in countries where SIM registration is mandatory. An integrated policy approach would simplify the end-user journey for refugees and enable them to open a mobile money account at the point of SIM registration. This requires close collaboration between the telecommunications regulator or relevant ministry dealing with SIM registration rules and the financial sector regulator dealing with KYC requirements.[139]
- **Accelerate the penetration, adoption and use of smartphones among refugee populations.**[140] A barrier to accessing more advanced digital identity solutions is the capabilities of the phones refugees are using. More than half of surveyed refugees in Rwanda and Uganda do not own internet-enabled phones, which currently diminishes the relevance of advanced digital identity solutions for most refugees.
- **Conduct qualitative research on refugees' digital identity needs** to enable humanitarian and MNOs to tailor products to their needs and preferences. There could be opportunities for stakeholders to develop new ID-linked services for refugees that help them access information, register their vulnerabilities or prove their ID digitally (see Box 7).
- **Humanitarian organisations and MNOs should align their efforts to educate and raise awareness among refugees of digital privacy, data sharing and staying safe online.** The level of concern among refugees regarding sharing personal information is strongly influenced by the broader operating context, so training and sensitisation should be tailored to the context.
- **Governments should develop consistent data protection and privacy frameworks to encourage uptake of digital identity and adoption of identity-linked mobile services.**[141] Governments have a responsibility to foster a trusted environment where consumer privacy is respected and expectations of privacy are met. This could strengthen trust in using mobile services.

138. See GSMA Policy Note: Enabling Access to Mobile Services for the Forcibly Displaced
139. Ibid.
140. For examples of accelerating smartphone adoption, see: GSMA (2017), Accelerating affordable smartphone ownership in emerging markets.
141. Link to UNHCR article once live

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Box 7

Examples of digital identity technologies in Jordan[142]

Recent initiatives have shown that new technologies, such as distributed ledgers and digital identity/attribute verification solutions, can help refugees establish functional identities that are often linked to biometrics, but with data protection and privacy mechanisms built in. For example, through its Building Blocks initiative, the World Food Programme (WFP) has leveraged blockchain to make cash-based transfer operations faster, cheaper and more secure. In Jordan, Building Blocks uses a smartphone interface to allow WFP personnel to authenticate and record the transactions when vulnerable families receive their food or cash assistance. This ensures disbursements are reaching the intended beneficiaries and helps WFP track and verify how families are using these funds. WFP has a system that relies on biometric registration data from UNHCR and uses biometric technology for authentication. Instead of using cash, vouchers or e-cards to purchase food from supermarkets in the camp, refugees have their iris scanned at the point of sale.

142. See GSMA Policy Note: Enabling Access to Mobile Services for the Forcibly Displaced and GSMA (2017), Blockchain for Development: Emerging Opportunities for Mobile, Identity and Aid.

8

Food security and climate change

The thematic area on food security and climate change focuses on mobile solutions for food security, adaptation and resilience to climate change. Climate change and food security can affect refugees in a multitude of ways and are inextricably linked to conflict and forced displacement.

Key findings

1. **Among refugees in Bidi Bidi, calling is the primary mobile channel used for agriculture,** but a small number of farmers are learning new agricultural practices online.
2. In Bidi Bidi, there is **high demand to leverage mobile services** to support agriculture and **access information on pricing and weather**.
3. Refugees who engage in subsistence farming are **price sensitive**, and their relative lack of engagement with mobile to support their livelihood is driven primarily by **lack of affordability**.

8.1 Introduction

In this research study, the focus was on understanding the challenges faced by refugees engaging in agricultural activities and the current and potential use cases of mobile solutions. In northern Uganda, food is in short supply and good quality seeds are scarce, resulting in low yields. This is compounded by recurring climate shocks, such as flooding and drought.[143] Mobile solutions have the potential to support agricultural practices and strengthen resilience to shocks.

143. Mercy Corps (2018), https://www.mercycorps.org.uk/countries/uganda

Subsistence crops are grown by most refugees in Bidi Bidi, but by very few in Kiziba or Jordan.

Subsistence crops are grown by the majority (84 per cent) of refugees in Bidi Bidi (Uganda), an indication of the widespread dependence on smallholder farming in this context. Indeed, farming is a source of income for 27 per cent of all refugees in Bidi Bidi. In contrast, most refugees in Kiziba (Rwanda) and Jordan do not have access to land for agriculture, which makes this theme of limited relevance in their contexts. Therefore, the following analysis focuses largely on the survey findings from Uganda with brief qualitative observations from Jordan and Rwanda.

8.2 Mobile phone use among farmers for agricultural practices

Although mobile phones are being leveraged to support agricultural practices, the frequency of agriculture-related use cases remains relatively low in Bidi Bidi.

Of the refugees who grow crops (84 per cent), 21 per cent use mobile phones to exchange information about farming practices, and 12 per cent use them to exchange information with others inside and outside the settlement about buying and selling food. Only five per cent use their mobiles to gather information about farming practices from a specific agricultural service (i.e. an app or online). Within this small sub-group (23 survey respondents), the majority search for advice about good agricultural practices, approximately half search for prices and weather information, and one respondent searches for information about credit. There is, however, a notable practice of agricultural trade that does not currently use mobile phones (54 per cent of farmers are selling crops or food they have purchased or received). There may be an opportunity for mobile to be leveraged more in this space, particularly mobile money. For example, through the digitisation of agricultural payments, mobile can enable unbanked smallholder farmers to access formal financial services.[144]

Among refugee farmers in Bidi Bidi, calling is the primary mobile use case for agriculture, but a small number are learning new agricultural practices online

Among focus group participants in Bidi Bidi who are farmers, the main reported phone use for agriculture was calling friends, group members (of farming cooperatives) and NGO workers to seek agricultural advice:

> *"I use my phone in my work as a farmer. It helps me to share information and to call the group to help me, such as weeding or in an emergency."* (Male, Refugee, Uganda)

A small number of participants in the focus groups were using their mobile for more advanced agricultural uses. These included payment for crops and services (e.g. crop or input deliveries) through mobile money, checking prices in local markets online or by calling, and searching for agricultural advice on different seed varieties using mobile internet.

> *"I grow peppers. I go to the internet and I get information about the type of insecticides I should use to spray the pepper. Like how to mix local insecticides — mixing tobacco leaves and soap and spraying that on the plants — and the insects don't come. I found that on the internet and I found that it works."* (Male, Refugee, Uganda)

> *"There are some agriculture companies that create Facebook pages and you can see the varieties they have and the prices. I check that information before I travel to Arua. I have one I trust most that I follow — twice a year I check their Facebook at the beginning of the season, and go to Arua to get the seeds for the season."* (Male, Refugee, Uganda)

144. For further information on how mobile can be leveraged to advance the productivity and profitability of smallholder farmers and the agricultural industry at large through scalable and commercial mobile services, see GSMA mAgri resources: https://www.gsma.com/mobilefordevelopment/magri/

A DIGITAL DAY IN THE LIFE

Mustafa

Accessing know how for farming business

Mustafa*, a young man in his late twenties, has lived in Bidi Bidi for two years since fleeing the conflict in South Sudan. Mustafa owns an ITEL smartphone and uses it for business, farming and personal use. Between 10am and 6:30pm, Mustafa works as an Airtel mobile agent for SIM card registration. He has worked as a mobile agent for 18 months after working as a translator for Airtel staff visiting the settlement and becoming interested in increasing access to mobile services in the settlement. Mustafa manages a biometric machine that Airtel use to meet identity requirements for SIM card registration. He uses it to take fingerprints and fill out the application form. Mustafa says that there are a lot of people who do not have the right documentation for registering a SIM card, particularly dependents who can only register if the head of household comes with them. Throughout the work day, Mustafa uses his phone to take photos of documentation, call the service centre to help customers and fill out KYC forms online. Some customers had their SIM cards deactivated when the SIM card registration system changed, and Mustafa has to send these customers to the service centre to get their SIM card re-activated.

After work, if there is battery left on his phone Mustafa will use it to connect with people online and chat to friends on Facebook. Mostly, however, Mustafa uses his phone to support his mushroom farming business. He uses his phone to order seeds from Kampala, paying with Airtel Mobile Money, and to call his mentor in Kampala to get ideas. If the garden is diseased he takes photos on his phone and emails his mentor for advice. The mushrooms have to be kept in a dark room, so Mustafa uses the torch on his phone to check them. Once the mushrooms are ready, Mustafa calls his customers to promote the product. Mustafa reports that he increased his customers from 30 to 130 by using his phone to contact customers who spread the word with their friends, which has increased his income.

In Bidi Bidi, there is demand to leverage mobile services to support agriculture and access to weather information

Almost half (47 per cent) of farmers in Bidi Bidi who do not currently gather agricultural information using a mobile phone said they would like to. While this indicates notable demand for services, many of this group (40 per cent) do not currently own a mobile — a clear barrier to uptake. Within this broad category, over half would like information on pricing (54 per cent) and a third (33 per cent) on weather.

"If I had a smartphone, I would like to look at weather conditions, and also making more customers — by advertising on Facebook — that is something I would really like to do."
(Male, Refugee, Uganda)

8.3
Barriers to leveraging mobile for agricultural purposes

Refugees who engage in subsistence farming are price sensitive, and their relative lack of engagement with mobile to support their livelihood is due mainly to lack of affordability

As noted earlier, in Bidi Bidi, 99 per cent of those who do not own a mobile phone cite the cost of a handset as a barrier (Figure 6). Thus, the lack of disposable income and overall financial resources is the main factor inhibiting phone use, and the lack of access to information about agriculture is one of the consequences of this.

Box 8

Agricultural extension platforms

Farmers often struggle to access information that could help with the cultivation of crops and rearing livestock because their land-use requirements mean they are in rural and more isolated areas. The use of mobile phones to access information related to their livelihoods provides a major opportunity, as discussed in GSMA's 2017 mAgri report, Creating scalable engaging mobile solutions for agriculture.[145] Illustrative examples of mobile services that provide information and agricultural extension services include:

- M'chikumbe 212 – an Airtel Malawi initiative in partnership with Viamo providing voice and text-based agricultural extension services
- FarmDrive – mobile-enabled alternative data and machine learning to close the data gap preventing financial institutions from lending to creditworthy smallholder farmers
- Vodafone Farmers' Club – tailored weather, market price and agronomy information provided to farmers by Vodafone Ghana
- Govi Mithuru by Dialog Sri Lanka – tailored agronomy information based on crop, growing conditions and irrigation method
- Telenor Pakistan 7272[146] – an agricultural value-added service (Agri VAS) giving users access to weather forecasts and agricultural and livestock advice via SMS and IVR

145. https://www.gsma.com/mobilefordevelopment/magri/creating-scalable-mobile-solutions/
146. GSMA (2017), Khushaal Zamindar: A mobile agriculture service by Telenor Pakistan.

8.4
Considerations for accelerating the use of mobile services for food security in refugee contexts

Climate change and food security are significant systemic issues in each of the three research contexts. It is important to interpret the data with an awareness of this broader context and the critical importance of food security. In Kiziba and Bidi Bidi, the average refugee spends over two-thirds of their income on food each month,[147] while in Jordan it is more common for refugees to use food and labour surpluses as income-generating opportunities to meet other expenses.

This research highlights lessons in the use of mobile technology for agriculture in Bidi Bidi where most refugees depend on subsistence farming. There is widespread interest in making use of mobile for agriculture, but cost barriers stand in the way of translating this into usage.

Some areas for consideration:

- **Develop a learning exercise between humanitarian organisations and MNOs.** Work with a cohort of refugee farmers, providing them with financial support to overcome the initial cost barrier to mobile use. This could help build a more accurate understanding of how refugee farmers in Uganda would use mobile services if they were more affordable.
- **Conduct more qualitative research on the agricultural needs of refugees.** Agri-tech providers and humanitarian stakeholders should consider conducting research on refugees' agricultural needs and how digital solutions can be tailored to meet these needs.
- **Raise awareness of applications for agricultural extension platforms,** such as M'chikumbe 212 and Vodafone Farmers' Club.
- **Focus on the integration of mobile financial services related to agriculture and climate change,** such as microinsurance, to provide simple, turnkey solutions.

147. 69 per cent – 7,734 Ugandan Shillings (UGX) spent on food on average, out of a total average income of UGX 11,211. The precision of this self-reported data has been called into question, so a more qualitative description was more appropriate given the likely margin of error.

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9 Conclusion and considerations

9.1 Concluding remarks

This report has demonstrated the ways in which mobile technology can improve access to financial services, utilities (notably energy) and identity services, as well as access to information to improve food security. It has also demonstrated the importance of understanding how certain groups within refugee populations, such as women and persons with disabilities, are using mobile technology. This will not only help vulnerable groups to maximise the potential benefits of mobile, but also ensure inequalities are not further entrenched by the digitisation of humanitarian assistance. Finally, the report builds an evidence base for how refugees currently access and use mobile technology, and outlines the associated barriers.

A significant cross-cutting theme of this research is that the effective expansion of resources and opportunities for digital humanitarian assistance depends on a mature digital ecosystem. The services and infrastructure that enable mobile services relevant to refugees require, among other things, penetration of identity documentation which meets national requirements for SIM and mobile money registration, robust agent network and connectivity, as well as high rates of literacy and digital literacy. This study highlights specific entry points and levers to help stakeholders understand how to best utilise mobile technology and where they could have the most impact. Each of the thematic areas in this report offers key insights and considerations for stakeholders.

In this section, we propose overarching considerations that cut across all five thematic areas to provide practical guidance on accelerating the growth of digital ecosystems in refugee contexts, while ensuring that the benefits of mobile are shared equally by all. To maximise their impact, stakeholders (including humanitarian organisations, mobile network operators, and policymakers) should coordinate and base their actions on an understanding of the context in in which they operate. This list is by no means exhaustive, but it highlights key barriers where collaborative interventions could have a significant impact in the three refugee contexts studied.

9.2 Overarching considerations

Support the development of digital ecosystems in refugee contexts, ensuring that the benefits are shared equally by all.

A shift is underway towards mobile-enabled services for refugees, which requires an enabling ecosystem in which to mature. The transition to mobile-based services means there are significant protection dividends and other wide-ranging benefits for refugees who are digitally literate, have the means to be digitally included (such as appropriate IDs), and are able to access and engage with these services effectively.

This is an opportunity that humanitarian organisations should spend time and resources embracing, particularly since digital ecosystems do not mature equitably, as demonstrated by the significant mobile gender and disability gaps. Without concerted efforts to promote digital inclusion, existing inequalities in refugee populations may be exacerbated and deny the most vulnerable the life-enhancing opportunities of mobile.

There is also an important role for MNOs to play in this transition, namely, ensuring that products and services are tailored to meet the needs of specific demographic groups. Providing mobile services to refugees who are currently unconnected and underserved is an opportunity for MNOs to expand their customer base. For instance, if the mobile ownership gap was closed in Bidi Bidi, an additional 15,500 women would own a phone.

It is therefore important to structure the transition to mobile-based services to prioritise equity. There are several ways this can be achieved, and these key focus areas — affordability, usability and availability — are outlined below.

Table 3

Considerations Table

a. Affordability

In all three research contexts, one of the **top three barriers** to **mobile ownership** and **mobile internet use** is the **cost of mobile handsets, airtime and data. Limited livelihood opportunities** for women and persons with disabilities mean that the cost of connectivity has a disproportionate impact on more vulnerable groups.

MNOs	Humanitarian Organisations	MNOs and humanitarian organisations	Policymakers
Lower cost-barriers to enable MNOs to reduce the price of handsets and mobile services, making them more affordable for low-income groups			
Consider offering innovative finance schemes to refugees, particularly lower income segments, to help them spread out the cost of phone ownership over time and reduce the initial outlay.[148]	**For marginalised groups in specific circumstances consider providing subsidies for low-cost, high-quality smartphones** to drive mobile internet adoption.		**Review taxes that may exacerbate the real or perceived cost barrier to mobile ownership and use,** which have a disproportionate impact on the most vulnerable.
Consider providing special bundle services to meet the unique needs of refugees and humanitarian organisations while expanding the customer base.[149]	**Implement initiatives to promote awareness of the benefits of mobile phones** and encourage community-led savings groups to save money for mobile phone handsets.		**Consider innovative approaches to diverting Universal Service Funds** in ways that encourage the commercial sustainability of and investment in mobile services.
Enhance digital centred income-generating activities			
	Design livelihood interventions with digital components, adopting examples such as those presented in this research (Digital day case studies: Faida and Samuel) of how refugees are already using their mobile phones to enhance their income.		**Ensure that legal frameworks are designed in a way that enables refugees to engage in income-generating activities,** such as earning an income online or through phone charging businesses, for example.
	Explore how mobile-enabled utilities can provide income-generating opportunities, for example, PAYG solar home systems can include multiple charging outlets for community members to charge phones.		

148. See examples here: Accelerating affordable smartphone ownership in emerging markets
149. In Lebanon, for example, local MNO, Touch, observed a similarly high demand for international calls among Syrian refugees. Touch saw an opportunity both to deliver the humanitarian aims of their CSR programme, and to reach out to a new and growing customer base, offering refugees a special bundle for USD 11 per month that included extra international call time. This represented a significant saving compared to the standard USD 25 bundle. The project was a success from both a commercial and CSR perspective.

b. Usability (literacy, skills and regular use)

To use mobile phones effectively and take advantage of the services they offer, refugees require a functional degree of **literacy and digital literacy.** The research findings demonstrate that an individual's level of digital literacy will determine how effectively they can engage with mobile services. For **refugees without a functional degree of literacy and digital literacy,[150] the transition to mobile-based services risks further exclusion and marginalisation. It is not enough to ensure people have the requisite skills to use a mobile phone; mobile use should also be meaningful and effective.**

MNOs	Humanitarian Organisations	MNOs and humanitarian organisations	Policymakers
Encourage adoption of mobile phones			
Ensure that mobile services are designed in a way that reduces barriers to usage. For example, MNOs could improve the interface user experience (UX) by designing menu layouts in a simple and functional way, making them more user-friendly for people with low levels of digital literacy. Involving communities in the design of value-added services for refugees and vulnerable populations can lead to adoption and usage.		**Curate awareness raising and training initiatives.** Work with all actors in the digital ecosystem, including frontline humanitarian workers, community leaders, mobile agents and refugees, to increase the digital literacy of users and potential users through effective training.	
Ensure marketing and services are accessible for those with lower levels of literacy, digital skills and understanding of the internet. With one in four refugees in Bidi Bidi having never heard of the internet, content and advertising in local languages and simple language complemented with pictures, icons and videos are key.			
Drive sustained and meaningful use of mobile-enabled products and services			
Create value-added services tailored to the needs of refugees and market them appropriately to drive regular use. For example, in Bidi Bidi, a high proportion of mobile money users send and receive remittances, while in Jordan, the majority of phone users make international calls, so adapting pricing plans to meet these specific needs could be beneficial. Further, making people aware of the benefits of mobile and mobile-enabled solutions like PAYG solar, including how they might address pain points or even support them with income-generating activities, is essential to drive sustained and meaningful use.		**Humanitarian organisations and MNOs should align their efforts to educate and raise awareness among refugees of digital privacy, data sharing and staying safe online.** Although these are worldwide issues, refugee populations can be particularly at risk due to limited education opportunities and low digital literacy. The level of concern among refugees regarding sharing personal information is strongly influenced by the broader operating context, so training and sensitisation should be tailored to the context and disseminated appropriately via training sessions, community discussion groups and distribution of written information and guidance.	

150. Partnership for Finance in a Digital Africa (2017), How can advances in UX help meet user needs and enhance user engagement?

c. Availability

Although not a primary barrier to mobile phone access, the low availability and sub-standard quality of phone hardware remains a significant issue. **The research showed the challenges refugees face because they are often only able to access sub-standard handsets or hard-to-reach repair services or charging facilities.** This is worth further consideration as the problems they encounter with their device will likely hinder their engagement in the mobile ecosystem. Furthermore, **unreliable mobile coverage in Bidi Bidi and Kiziba impacted negatively on refugees' experiences of connectivity, particularly for mobile internet, and collective efforts should be made to improve coverage, including providing commercial incentives for MNOs to expand their networks.**

MNOs	Humanitarian Organisations	MNOs and humanitarian organisations	Policymakers
Ensure a reliable supply of high quality and reasonably priced devices are available			
	Avoid free distributions of low-quality handsets, which can distort the market and are often only a short-term solution. Ensure durable and affordable handsets are readily available in refugee contexts.	**Foster robust mobile device distribution networks** (including handsets, spare batteries, chargers etc) that cater to the needs and budgets of target populations (potentially with PAYG capability).	Ensure that **national regulations and policies facilitate effective access to handsets** for the most marginalised wherever possible.
Improve options for mobile phone charging			
		Explore the deployment of PAYG solar home systems for charging in refugee contexts. Humanitarian organisations, energy service providers and MNOs should work together to trial PAYG solutions, tailoring payment plans to better understand refugees' ability and willingness to pay. This will help define an optimal business model for sustainable energy provision.	
Improve mobile coverage			
Engage with humanitarian organisations to shed light on key information needed to understand the potential opportunity (both commercial and social). For example, humanitarian organisations have data on current and predicted refugee / IDP population flows and humanitarian organisations' connectivity requirements that can be aggregated in a specific area. **Explore ways to share commercial risk.** This could be through working with development agencies who may provide 'Loss Guarantees' to de-risk upfront investment[151], or through partnerships with other MNOs by sharing towers, for example.[152]	**Engage with other humanitarian organisations to gather necessary information (i.e. aggregate demand)** in order to incentivise mobile network operators to invest in infrastructure and agent networks, to achieve digital and financial inclusion outcomes.	**Think holistically about the connectivity needs (and associated commercial and social opportunities) outside of the refugee population and over time.** This could include humanitarian organisations and host communities' long term connectivity needs. Connectivity needs should be considered beyond basic voice and mobile internet connectivity, encompassing potential business revenue from cash and voucher assistance programmes, for example.	**Leverage Universal Service Funds** (where available) to de-risk and/or incentivise investments for network deployment in rural areas where there is demand from refugees and host communities for mobile services.

151. The United Nations Capital Development Fund (UNCDF) collaborated with an MNO in Uganda to embark on a 'Loss Guarantee' agreement approach. The promise of a loss guarantee, by which the UNCDF would reimburse the MNO for any losses suffered through the site on a quarterly basis, for a set period of time, enabled the MNO to invest without financial risk. No reimbursement was required, as the site became immediately profitable.
152. As part of the GSMA Connected Society programme's rural connectivity project, three MNOs in Tanzania (Airtel, Millicom and Vodacom) have embarked on a tripartite national roaming agreement. In this model, pilot sites jointly provide broadband connectivity to all operator customers from a single tower, allowing subscribers to roam on each other's networks in selected rural locations. Such a model could be applied in areas where refugees reside.

9.3
Reflections on methodology and further research

- **The methodology employed for the study has generated a unique dataset on refugees and mobile technologies.** This report captures and articulates the most significant overarching themes from the dataset. However, the richness of the data is noteworthy and extensive additional analysis could be conducted. For example, the data on the access and use of mobile technology by persons with disabilities will be published by the GSMA in the third quarter of 2019.
- **The data has demonstrated the importance of local context when considering refugees' access to and use of mobile technologies.** The data from each of the three research contexts is influenced by the broader social, economic and cultural contexts within which the refugees are living. It is therefore important when extrapolating from the analysis to be cautious about applying the findings to refugee contexts beyond Jordan, Rwanda and Uganda. In addition, as discussed throughout the report, the refugee populations and the types of interventions they are likely to benefit from are both extremely diverse. Again, caution must be taken when using the findings to inform policymaking and programme design. **It is essential to understand the behaviours, needs and aspirations of people affected by crisis in their specific context in order to provide them with digital products and services that give them flexibility and dignity.**

The study provides robust and vital data on refugees' digital access, use and associated barriers. Our hope is that humanitarian and private-sector stakeholders can use this data to tailor products and services to refugees. Moreover, this study presents an opportunity for stakeholders to conduct additional research. We recommend:

1. Employing a similar methodological approach in other contexts where people are affected by crisis;
2. To design effective, targeted digital interventions in the three study countries, focus in-depth on a specific user group in a particular location to gain deeper insights into the nuanced barriers they face.
3. Conduct a landscape review at the regional level to identify gaps in the empirical findings. This will serve as a tool for the sector and help to shape future research priorities.
4. Take these findings forward by engaging with private sector/humanitarian partners and consider whether they resonate with your experiences. In collaboration with other ecosystem players, design products and services that respond to these findings.

Each of these options would be a valuable contribution to building the evidence base and designing relevant digital interventions, which will ultimately help to deliver dignified aid or support self-sufficiency for people affected by crisis.

Annexes

Annex 1
Full research methodology

The research approach involved three country studies, in Jordan, Rwanda and Uganda, to collect quantitative and qualitative data in three distinct refugee settings with three distinct refugee populations. The mixed methods approach used a range of tools to gather data from different stakeholders and refugee groups to build an in-depth picture of refugees' experiences, perceptions and needs, and to triangulate data from different sources. The following section details these tools, which were applied in the same way in each context, followed by a summary of the analysis and approach to writing the report.

Tools

The methodology included both quantitative and qualitative elements, including the following in each country:

- Household surveys;
- Market observations;
- Focus group discussions;
- Digital day case studies; and
- Key informant interviews.

The following table presents the data-gathering tools applied, the target participants and the number achieved.

Table 4

Data-gathering tools and participants reached

Tool	Jordan	Kiziba	Bidi Bidi	Total
Survey interviews with refugees	728	727	755	**2,210**
Survey interviews with host community members	258	63	273	**594**
Market observations with refugee communities	1	7	14	**22**
Focus groups with refugees	11	19	19	**49**
Focus groups with host community members	3	1	2	**6**
Digital day case studies with refugees	4	5	5	**14**
Key informant interviews (UNHCR and MNO staff)	3	4	2	**6**

Survey interviews

A survey was conducted with refugee and host communities in each location. Surveys were collected digitally using Kobo Collect software to streamline data collection, backups and quality checks. Surveys were administered by a team of trained data collectors using a one-to-one interview approach. Surveys lasted approximately 15 to 25 minutes depending on the respondent's mobile ownership and access, as well as the time it took for enumerators to translate. The survey collected information on ownership, access, use and impact of mobile; barriers to access and use; potential usage; specific needs and preferences; and key demographic information. The survey was sampled to ensure a representative sample of the population based on gender, age, nationality and other relevant demographics.

Mobile agent surveys and observations

In each location, mobile agent surveys and observations were conducted to collect market information about the local population's mobile access, use, specific needs and gaps in services. Observations supplement information on user demographics and demand for different services. One trained enumerator (from the trained team) was responsible for conducting all surveys and observations in each country, to ensure consistency across observations. Observations were collected by hand and then saved digitally to allow greater flexibility. Surveys lasted approximately 10 minutes and observations 50 minutes. Mobile agent sampling ensured a representative sample of MNOs operating in the area and types of services provided. Agent surveys for urban refugee communities were adapted to include the sectors/types of agents relevant to the surrounding community.

Focus group discussions

A series of in-depth focus group discussions (FGDs) were conducted with refugees and host community populations in each location. FGDs were used to explore mobile access and use, drivers and barriers, and the specific needs of different groups in detail. Participatory methods, such as mapping, group discussion, flashcards and ranking exercises, were used to elicit active discussion of experiences and encourage storytelling. FGDs followed a semi-structured template of questions and were conducted by a member of the Jigsaw research team. Discussion groups lasted approximately 60 minutes and were conducted in a variety of locations in each refugee setting to ensure representative samples.

The evaluation team worked with UNHCR and in-country partners to identify and mobilise participants. They ensured there was demographic representation of the population and different types of phone access and use.

Groups included in the FGDs were as follows:

- Non-phone users, basic phone users and internet-enabled phone users
- Men and women
- Younger people (aged 18 to 25), middle-aged people (aged 26 to 50) and older people (51+)
- Persons with disabilities
- Business owners
- Community leaders
- Mobile agents
- People currently in higher education (Rwanda)
- Farmers (Uganda)

Digital day case studies

The digital day case study is a "day in the life" methodology that asks a participant to walk through their typical daily mobile phone usage to identify stories, experiences and unique use cases. Participants were identified through FGDs. The case study interviews were administered by a member of the Jigsaw research team using a semi-structured interview template. Information gathered made up part of the qualitative data and is included in the analysis. A selection of case studies are included in the report to provide specific insights into a variety of unique use cases among refugee populations.

Key informant interviews

A combination of remote and in-country interviews were collected for each location. Participants included humanitarian agency staff (UNHCR and key partners) and MNO staff. The research team gathered information on key stakeholders during the inception phase, for example, MNOs operating in the market, the structure of the humanitarian system and key actors, and the identification of humanitarian programmes linked to the mobile sector, such as mobile-enabled humanitarian cash transfers, calling stations and bulk SMS services.

Data analysis and report writing

Following data collection, all data was checked and cleaned for accuracy and consistency. Quantitative analysis included:

- Basic descriptive statistics, disaggregated by country, refugee or host population and relevant demographics: disability, gender and age.
- Comparative analysis of the locations studied.

Qualitative analysis was carried out using Dedoose. Data was coded to identify key themes, which were incorporated with deductive themes based on the FGD semi-structured template. The analysis was disaggregated by country, refugee or host population and relevant demographics. Qualitative findings were triangulated with quantitative analysis to ensure a holistic and accurate representation of the findings.

Annex 2
Research limitations and challenges

Limitations in Uganda

- It was difficult to mobilise people effectively for FGDs without the support of humanitarian organisations working in the Bidi Bidi settlement. The research was assisted by DanChurch Aid (DCA), which mobilised participants. As a result, DCA phone users were over-represented in the sample, as were non-phone users as the DCA phones were prone to breaking.
- It was necessary for enumerators to adapt the five household sampling strategy to the dispersed geography of the camp, reducing it to three households in sparsely populated areas. In some cases, enumerators struggled to identify sufficient numbers within certain age groups for the household surveys and thus resorted to purposive sampling.
- Multiple events, such as community meetings and distributions, were taking place in the settlement at the same time as the data collection which made it challenging to engage with some refugees for the survey.

Limitations in Rwanda

- The recent riots in Kiziba led to a range of challenges with data collection. First, the enumerators could only access people living in the safer zones of the camp, which created a slightly skewed sample, but with minor implications. Enumerators also had to be accompanied by partner agency community mobilisers due to security concerns, and this slowed down data collection.
- Participants expressed some fear of being associated with UNHCR and this affected the recruitment of respondents for digital day case studies. It is possible that this also affected the willingness of focus group participants to share honestly. In addition, enumerators reported that some survey respondents were hesitant to participate because they were concerned they might be tracked or that information they shared could affect their financial position and resettlement prospects.
- In Rwanda, there were difficulties with sampling some sub-groups, such as mobile agents, business owners and people with disabilities. These groups were still reached, but in an ad hoc manner as a structured approach was not feasible.
- Enumerators were initially only able to access 63 host community members inside the Kiziba camp boundary and there were delays in conducting additional host community data collection.
- Some survey respondents in Rwanda answered the question regarding income in an unanticipated way, conflating cash aid and other types of support. This is likely to have had an effect on the reliability of this aspect of the data.

Limitations in Jordan

- The integrated settlement of the sample population in Jordan meant there were no limitations in terms of access. However, the dispersed nature of the population meant that it was more logistically challenging to do face-to-face interviews than in the other contexts. As a result, the research was undertaken using the same methodology UNHCR Jordan normally follows in surveys of the refugee population, which relies on phone interviews. Thus, 90 per cent of the sample was surveyed by phone. The remaining 10 per cent of the sample was interviewed face to face, and these two datasets were cross-referenced to ensure there was no bias in responses introduced by the variation of the methodology.[153]

153. UNHCR's use of this methodology has shown no statistically significant differences between face-to-face and phone interview responses in their surveys with tens of thousands of refugees over the past several years.

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