

Driving mobile internet use in low- and middle-income countries

Lessons and insights from the GSMA Innovation Fund for Mobile Internet Adoption and Digital Inclusion



The GSMA is a global organisation unifying the mobile ecosystem to discover, develop and deliver innovation foundational to positive business environments and societal change. Our vision is to unlock the full power of connectivity so that people, industry and society thrive. Representing mobile operators and organisations across the mobile ecosystem and adjacent industries, the GSMA delivers for its members across three broad pillars: Connectivity for Good, Industry Services and Solutions and Outreach. This activity includes advancing policy, tackling today's biggest societal challenges, underpinning the technology and interoperability that make mobile work and providing the world's largest platform to convene the mobile ecosystem at the MWC and M360 series of events.

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GSMA Connected Society

The Connected Society programme works with the mobile industry, technology companies, the development community and governments to increase access to and adoption of mobile internet, focusing on underserved population groups in developing markets.

The Connected Society programme is currently funded by the UK Foreign, Commonwealth & Development Office (FCDO) and the Swedish International Development Cooperation Agency (SIDA) and is supported by the GSMA and its members.

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Introduction



Introduction

For most of the world’s population, mobile is the primary way to access the internet. Although mobile internet use continues to grow, a wide gap remains. At the end of 2021, 3.2 billion people lived in areas covered by mobile broadband networks but did not use mobile internet services,¹ missing out on the essential services and life-enhancing opportunities that mobile internet has to offer.

94% of the unconnected live in low- and middle-income countries (LMICs). This population segment is more likely to be poor, female, have a disability and live in rural areas. These groups are underserved and face a range of barriers that prevent them from connecting to mobile internet. These barriers include the affordability of an internet-enabled handset or data, lack of knowledge and digital skills, safety and security concerns, lack of relevant content and services, as well as many other barriers to access.

Figure 1

Barriers to mobile internet adoption and use for the underserved and unconnected



Affordability

Inability to afford devices, data plans or other service fees



Knowledge and digital skills

Lack of awareness about mobile internet and its benefits or a lack of the necessary skills to use digital technology



Safety and security

Concerns about the negative aspects and risks of the internet, such as harassment, theft, fraud and online security



Relevance

Lack of content, products and services that meet user needs and capabilities



Accessibility and usability

Content and services are not always accessible or easy to use

To help close the gap in mobile internet use, the GSMA Innovation Fund for Mobile Internet Adoption and Digital Inclusion (“the Fund”) was launched in 2020 with funding from the UK Foreign, Commonwealth & Development Office (FCDO), Deutsche Gesellschaft für Internationale

Zusammenarbeit (GIZ) GmbH, the GSMA and its members. The Fund supports start-ups that are committed to delivering innovative digital solutions for the underserved by addressing one or more of the digital inclusion barriers outlined above.

1. GSMA (2022). [The State of Mobile Internet Connectivity 2022](#).

In April 2020, after a competitive evaluation process, eight start-ups were selected to receive grant funding and technical assistance to help them scale their innovations over an 18-month period. This support included:

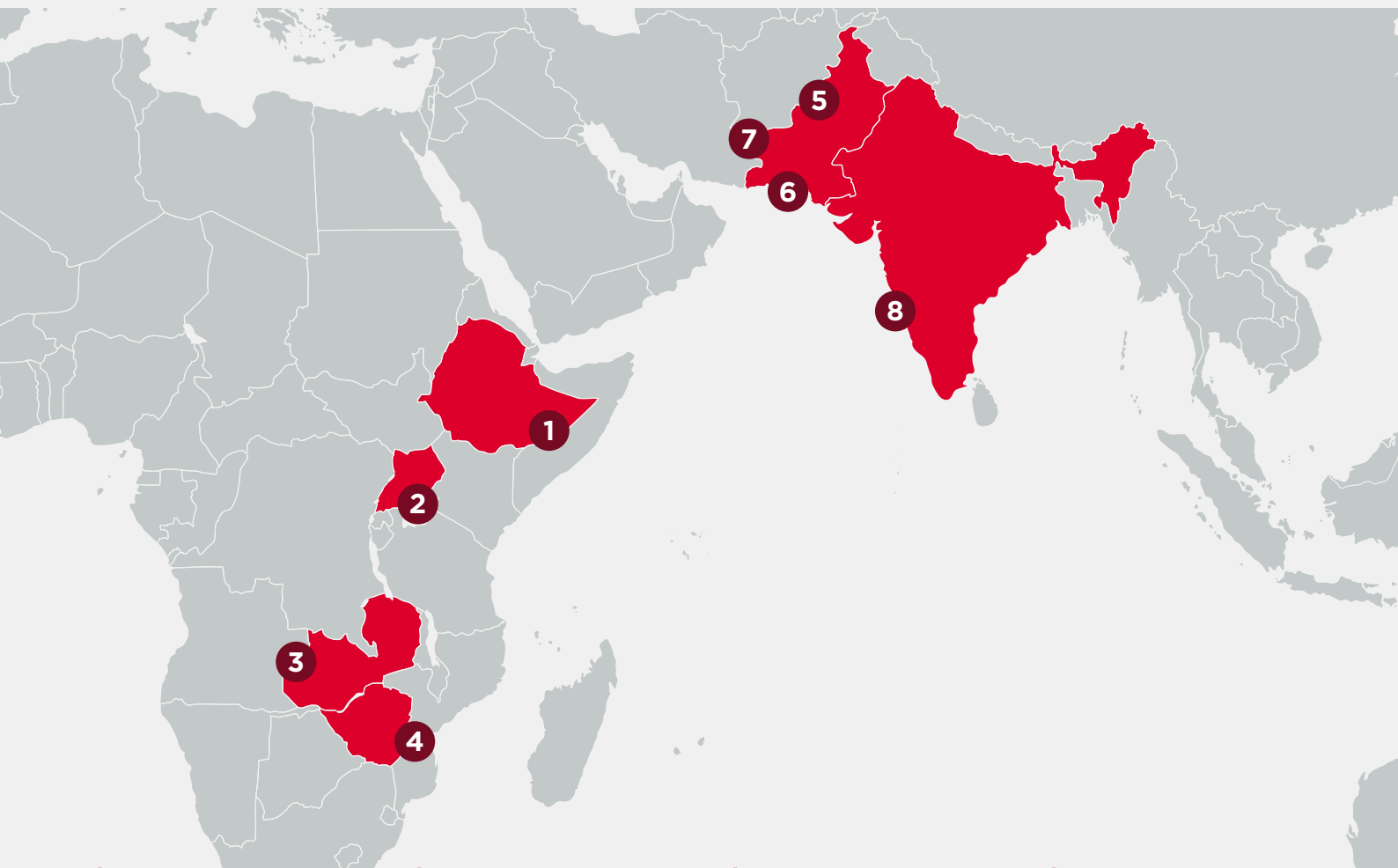
- An equity-free grant of up to £250,000
- Promoting partnerships between mobile network operators (MNOs) and grantees to extend the reach of mobile internet to first-time users
- Providing technical assistance on topics such as digital skills training, how to reach more women customers and addressing handset affordability
- Providing tools, templates and specialist advisory support to help improve their offering and evidence-based outcomes
- Support with scalability and sustainability planning
- Opportunities to promote and showcase their innovations



Overview of grantees

The eight start-ups were selected from six countries across Africa and Asia. Seven of these start-ups have now deployed commercially.

Figure 2
Map of grantees



<p>1 Ethiopia</p> 	<p>2 Uganda</p> 	<p>3 Zambia</p> 	<p>4 Zimbabwe</p> 
<p>5 Pakistan</p> 	<p>6 Pakistan</p> 	<p>7 Pakistan</p> 	<p>8 India</p> 

1 Africa 118 | Ethiopia

A digital marketing platform that enables micro-, small and medium enterprises (MSMEs) to connect to the internet to access new markets.

Innovation: Mobile Digital Starter Pack (DSP) with e-commerce and payment integration offered at a comparatively low price of \$100 per year and an option to pay monthly, which makes the solution affordable to most MSMEs in Ethiopia. Digital skills training is also provided for MSMEs using the GSMA Mobile Internet Skills Training Toolkit (MISTT).²

Barriers addressed:³ Affordability; knowledge and digital skills.



2 Ensibuuko | Uganda

A fintech company working to promote the adoption of digital financial products and improving access to devices and mobile services in rural areas.

Innovation: Digital ledger platform that automates transactions and operations of community banking schemes, and provision of tailored, affordable and relevant digital financial services that connect users to the wider digital financial ecosystem. Ensibuuko also layered digital skills training for users based on the MISTT, adapted and localised for rural customers.

Barriers addressed: Accessibility and usability; knowledge and digital skills.



3 WidEnergy Africa | Zambia

A women-led enterprise that delivers clean and affordable energy and connectivity solutions to customers in the last mile.

Innovation: Community-based distribution hubs for pay-as-you-go (PAYG) smartphones, digital skills training based on the MISTT and a one-stop shop for community energy, water and connectivity.

Barriers addressed: Accessibility and usability; affordability; knowledge and digital skills.



4 Zonful Energy | Zimbabwe

A social enterprise that sells solar energy systems on a PAYG basis to rural, urban and peri-urban off-grid customers.

Innovation: Smartphone and data bundles on a PAYG basis and translation of the MISTT into local languages.

Barriers addressed: Accessibility and usability; affordability; knowledge and digital skills.



2. The [GSMA Mobile Internet Skills Training Toolkit](#) (MISTT) is a set of free resources that teaches people the basic skills they need to access and use mobile internet.
 3. Although the Fund focused on the key barriers of accessibility, affordability, digital skills, and safety and security, all the start-ups addressed the relevance barrier through the provision of relevant services and products for underserved users.

5 Orenda | Pakistan

An edtech company that provides engaging, high-quality digital education for children across Pakistan.

Innovation: Launch of a KaiOS mobile app and a School Enterprise Resource Planning (ERP) system.

Barriers addressed: Affordability; accessibility and usability.



6 Vceela | Pakistan

A social enterprise that strives to connect unconnected artisans to local and international markets.

Innovation: Mobile app and web portal with e-commerce and payment integration.

Barriers addressed: Accessibility and usability.



7 Knowledge Platform | Pakistan

An edtech company that creates learning solutions for emerging markets.

Innovation: Provision of digital education solutions and internet-enabled devices through microfinancing, with a goal to introduce one mobile device per family.

Barriers addressed: Affordability; accessibility and usability.

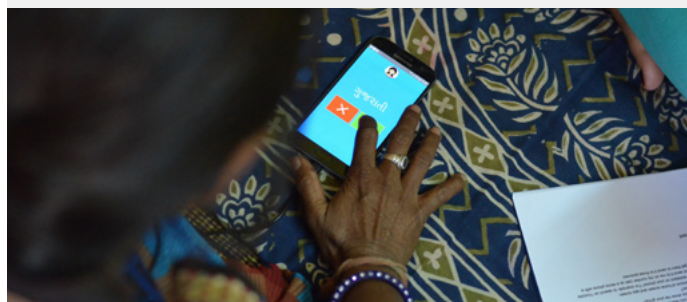


8 Navana Tech | India

A business-to-business (B2B) software-as-a-service (SaaS) company that develops text-free, image-based and voice-assisted technology for users with low literacy levels.

Innovation: Conversational AI voice bot that enables two-way communication in five Indian languages and integrated into financial services and e-commerce apps.

Barriers addressed: Accessibility and usability; knowledge and digital skills.



The focus of this report

This report synthesises rich insights from the Fund grant period and draws out important lessons for start-ups and MNOs that are seeking better ways to reach the underserved, as well as other ecosystem stakeholders, including investors and donors, that want to fund similar initiatives to close the gap in mobile internet use.

Methodology

The learnings presented in this report are based on the GSMA's monitoring of the progress of each start-up through regular calls and a range of reports. This includes findings from end-user surveys, scalability surveys, baseline and endline user feedback surveys, user-centred design sprints and start-up progress reports.

1. The impact of the GSMA Innovation Fund



The GSMA Innovation Fund for Mobile Internet Adoption and Digital Inclusion was established to address the key barriers to digital inclusion that are preventing 3.2 billion people from adopting mobile internet services.⁴ Each of the eight start-ups supported by the Fund sought to

implement innovative content and services that would reach the underserved and improve their lives. This section looks at the extent to which these objectives were achieved, highlighting the impacts across several key indicators (Table 1).

Table 1
Impact of the start-ups' innovations

	Active users*	Active female users*	Users without prior access to a similar solution (%)	Users without access to a good alternative to the start-up solution (%)	Users who report that their quality of life has "very much improved" (%) ⁵
Africa 118	1,863**	1,249**	90	84	33
Ensibuuko	3,387 ⁶	1,758	94	96	67
Knowledge Platform	167,324	75,296	92	85	26
Orenda	216,303	108,424	94	95	18
Vceela	62,325	52,355	74	58	6 ⁷
WidEnergy	1,301	468	78	92	71
Zonful Energy	2,000	1,121	63	65	54

Note: Impact data for Navana Tech was not tracked as it has not yet been deployed commercially. Navana Tech had a successful pilot that reached 611 total active users.

* Active users refers to the total number of customers onboarded to, and using, the start-ups' solutions at least once in a three-month period. Represents active users as of August 2022.

** Refers to the number of male- and female-led MSMEs using Africa 118's Digital Starter Pack.

4. GSMA (2022). [The State of Mobile Internet Connectivity 2022](#).

5. Users were asked to reflect on whether their quality of life has "got much worse", "got slightly worse", "not changed", "slightly improved" or "very much improved" as a result of using the start-ups' product/service. Users who say their lives have improved attribute the improvements to benefits such as increased income, access to loans, expanded business opportunities and improved teaching skills.

6. Ensibuuko's displayed active users refer to the number of savings groups leaders trained (on digital skills and e-ledger) and using the digital e-ledger app to run the operations of their groups (one leader per group). Ensibuuko's overall active users reached 73,960, i.e. the number of savings group members trained on digital skills and having access to the e-ledger customer interface. Of these members, 40,678 are women, representing 55% of all Village Savings and Loans Association (VSLA) members.

7. Only a small percentage of Vceela users (6%) reported that their quality of life has "very much improved". This relatively low number could be due to the availability of alternative selling platforms such as Facebook and Instagram, as the data indicates that users who had access to such platforms were more likely to report their lives have not "very much improved".

Impact on reach

The data indicates that the start-ups reached significant numbers of customers who were onboarded and actively using their products by the end of the grant period.

- In Ethiopia, where less than 10% of MSMEs had a digital presence, Africa 118 onboarded more than 1,800 MSMEs to their mobile Digital Starter Pack (DSP), 67% of which were women-led MSMEs. It is estimated that more than 14,200 total beneficiaries⁸ derived value from the services provided by Africa 118 and 52% were women.
- In Pakistan, Vceela successfully onboarded more than 62,000 users to their platform, including both artisans (sellers) and buyers. Significantly, 84% of Vceela users were women, an indication that the solution is meeting the needs of Pakistani women, artisans and consumers who have a need for home-based trade.
- In Uganda, Ensibuuko trained more than 73,500 members of village savings and loans associations (VSLAs), 55% of whom were women. Ensibuuko also onboarded and trained one leader per group, or more than 3,300 leaders, 52% of whom were women.
- In Pakistan, Orenda expanded the reach and impact of their educational products to more than 215,000 users, half of whom were women.
- Knowledge Platform, another edtech start-up in Pakistan, reached more than 167,000 users, 45% of whom were women.
- In Zambia, PAYG smartphone provider WidEnergy reached more than 1,300 users, 36% of whom were women.
- Zonful Energy in Zimbabwe sold PAYG smartphones to 2,000 users, 56% of whom were women.

The potential impact of the start-ups' innovations is even more significant given who they are reaching. For instance, Ensibuuko is reaching a

high proportion of low-income users in Uganda, with 52% of their customers living below the poverty line (on less than \$1.90 per day⁹). This is a much higher proportion than the estimated 30% of people in Uganda who live below the poverty line.¹⁰ In Zambia, 57% of WidEnergy's users live below the poverty line, which means their PAYG solution is providing access to a smartphone at a more affordable price for people who may not have been able to buy an internet-enabled device.

The start-ups are also reaching other underserved users, such as persons with disabilities and rural residents. For example, 20% of Zonful Energy users report having some level of disability, which is much higher than the national average¹¹ of disability prevalence in Zimbabwe (7%). Similarly, 9% of WidEnergy's customers report that they live with a disability, which is roughly proportional to the 10.9% disability prevalence in Zambia.¹² Vceela is another start-up with a diverse user base. Through their "village-to-world" model, Vceela connects artisans from remote villages in Pakistan directly to local and international markets, and ensures that approximately 40% of its portfolio are rural artisans.

Impact on mobile internet and services use

Data from endline user surveys indicates that customers who use the start-ups' digital solutions are now using mobile internet more than before. This includes customers who are first-time mobile internet users. For example, 60% of Ensibuuko users reported that they had never used mobile internet before using Ensibuuko's digital solutions. WidEnergy and Zonful Energy, two smartphone financing start-ups, also have some of the highest proportions of first-time mobile internet users: 46% and 45% of their customer bases, respectively. These high numbers underscore the importance of addressing affordability barriers, as this has the potential to connect large segments of the underserved population to mobile internet.

Other evidence of the impact of mobile internet use included more regular use of mobile

8. Africa 118's beneficiaries refer to the number of MSMEs who have completed digital skills training and the number of end-user customers interacting with the DSP to buy and pay for products and/or services.

9. Note: At the end of 2022, the World Bank updated the international poverty line from \$1.90 to \$2.15 per person per day.

10. According to the World Bank, 30% of Uganda's population lived below poverty line between 2019 and 2020. See: [Uganda Poverty Assessment: Strengthening Resilience to Accelerate Poverty Reduction](https://www.worldbank.org/uganda/Poverty-Assessment-Strengthening-Resilience-to-Accelerate-Poverty-Reduction).

11. The 2013 National Survey on Living Conditions among Persons with Disabilities in Zimbabwe estimates a disability prevalence of 7% of the population or more than 900,000 people. See: <https://www.unicef.org/zimbabwe/disabilities>

12. The Zambia National Disability Survey 2015 estimates adult disability prevalence in Zambia to be 10.9%. See: <https://www.unicef.org/zambia/reports/zambia-national-disability-survey-2015>

internet among existing users and adoption of broader mobile services, such as mobile money. E-commerce platform providers appear to be increasing mobile internet use and the use of broader mobile services more than other start-ups in the Fund, on average.

- In Uganda, 80% of Ensibuuko users reported more regular mobile internet use after being introduced to the Ensibuuko app, and more than half attribute this change almost entirely to the Ensibuuko app.
- In Ethiopia, 73% of Africa 118's MSME users reported increased use of mobile data services thanks to the DSP solution and digital skills training. Furthermore, 46% of these MSMEs reported higher rates of mobile money use, which is quite substantial given the low penetration of mobile money in Ethiopia. Africa 118 reported an increase in mobile money use from 10% to 20% (baseline vs endline comparison) – good evidence of the impact of telebirr for Africa 118's users in Ethiopia.
- In Pakistan, 42% of Vceela users reported increased mobile internet use and 67% reported using new mobile services, especially mobile money. More than half (58%) of artisans reported that they now use WhatsApp and Facebook for marketing and sales.
- Edtech start-ups, Orenda and Knowledge Platform, also reported that customers increased adoption of a wider range of mobile services as a result of using their e-learning platforms. These include using the internet for follow-up learning and making mobile money payments to pay for certifications.

Differences in mobile internet use between men and women

The findings show that, for most of the start-ups, men were more likely to be first-time users of mobile internet or to spend more on mobile internet than women. This was particularly the case for Ensibuuko, Knowledge Platform and Orenda. This may be related to social norms and structural barriers that can prevent women from adopting mobile internet, including lower levels of education, income and confidence.¹³

For start-ups with more female than male customers reporting increased adoption of mobile internet services, these patterns were not consistent across all mobile internet use indicators. For example, although female-led MSMEs on Africa 118's platform reported higher mobile internet use than male-led MSMEs, male-led MSMEs were more likely to be new mobile internet users. Conversely, while Zonful Energy and Vceela recorded more female first-time mobile internet users, it was male users who spent more on mobile internet and adopted a broader range of mobile services. This suggests that even though Vceela and Zonful Energy were reaching more first-time female internet users, certain social norms or other related barriers could be preventing women from adopting a wider range of mobile services.



I have observed some changes in my internet usage, and it's mostly related to educational apps. In general, I use internet for my e-learning apps and social media apps like YouTube."

Grade 1 teacher, female



13. See, for example, [GSMA Mobile Gender Gap Report 2021](#).

Broader socio-economic impact

The data shows that the start-ups' solutions had a range of socio-economic impacts. Columns 4, 5 and 6 in Table 1 highlight these impacts, including better quality of life and ability to access essential mobile-enabled services. All the start-ups are meeting a critical unaddressed need, with 63% to 94% of users reporting that they had no prior access to a similar service, while 65% to 96% reported not having a good alternative to the start-up solutions. For example, without Ensibuuko's innovation, 94% of users (most of whom live in rural areas) would not have access to the kind of digital financial services Ensibuuko provides. As a result, 97% of Ensibuuko users reported an improvement in their quality of life, while 67% reported their life had "very much improved".

Creating innovative digital solutions to address the needs of underserved users provided significant overall economic benefits, including boosting the earning potential of users or agents and enhancing their quality of life. Africa 118's digital platform has accelerated the growth of MSMEs in Ethiopia, giving 90% of MSMEs on its platform a digital presence for the first time and the ability to be more discoverable. In addition, 78% of Africa 118's MSMEs reported an improvement in their quality of life, with 84% mentioning an increase in their sales or income.



Exposure to online has enabled us to get more customers and orders and this has also made us to increase the number of employees to match the orders, from 10 to 18 employees."

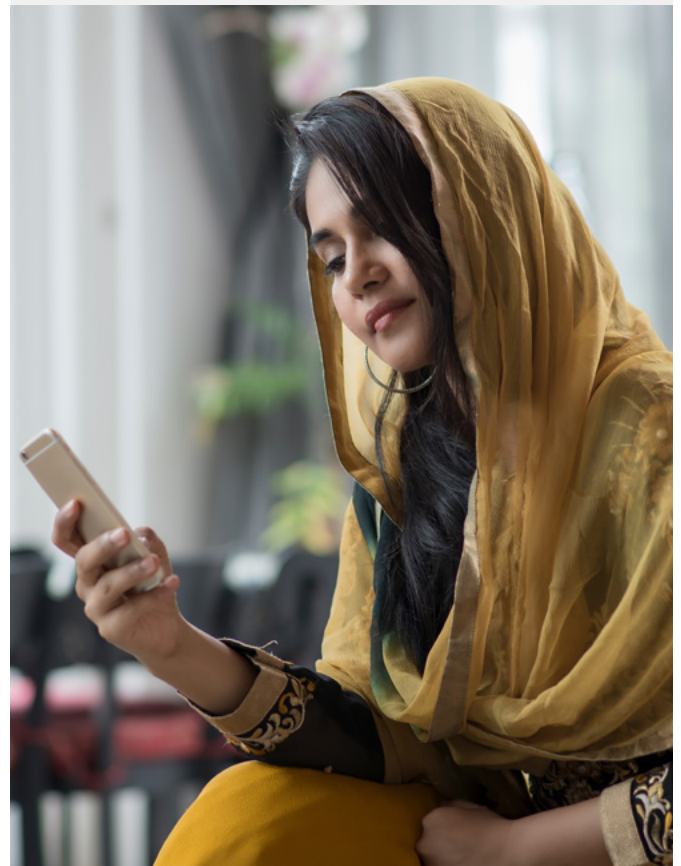
Caterer, Africa 118 customer

Similarly, Vceela is promoting economic growth in Pakistan by enhancing the capacity of artisans to generate income.



In our village in Sukkur, there was no way to sell products directly to end customers and we only had the option of selling to middlemen who only gave us Rs 550 for one Rilli.¹⁴ Through my online shop on Vceela, I can now sell directly to anyone in Pakistan, and I get Rs 4000 for the same Rilli and get paid through my JazzCash."

Rilli artisan, Vceela customer



14. Rilli is a traditional bedspread/quilt handmade by women artisans in remote villages of Sindh, Pakistan.

WidEnergy, Ensibuuko and Zonful Energy are all leveraging agents in rural areas to enhance the reach of their solutions. This provides employment and additional income, as well as incentives for agents. For instance, Zonful Energy pays agent commissions based on customer repayments for PAYG devices, which has motivated agents to follow-up on defaulting customers and created a healthy portfolio at risk (PAR) for Zonful Energy. Ensibuuko's local digital community entrepreneurs (agents) receive commissions based on training offered and products sold. The agent commissions amount to an estimated £45,000 in total additional income.



Zonful team came through our councillor, they were looking for an agent, I was interested. I am now an agent increasing my monthly income, more clients to my own business. As agents we got trained.”

Entrepreneur, Zonful Energy agent, male



Impacts on addressing barriers

A comparison of the baseline and endline surveys indicates that of the five start-ups with a baseline study, three have seen reductions in the proportion of users reporting barriers to mobile internet use. For example, 12% of Knowledge Platform's customers reported facing barriers to using mobile internet at baseline, but this dropped to 6% at endline. Similarly, 16% of Africa 118's customers reported facing barriers to mobile internet use at baseline, but only 8% faced barriers at endline. The most common barriers reported at baseline were network- and signal-related problems, the high cost of data and knowing how to use the internet (i.e. knowledge and skills barriers). For the endline study, digital skills barriers were mentioned less frequently, but network-related issues and cost (primarily of data and handsets) remained significant for most end users. Device financing start-ups, Zonful Energy and WidEnergy, had a lower proportion of users reporting affordability as a barrier.

For start-ups whose users reported an increase in barriers to mobile internet adoption (i.e. baseline vs endline comparison), this could be due, in part, to the fact that many users in the endline survey were first-time mobile internet users or lived in rural areas where internet connectivity is limited. For example, there was an increase in the proportion of Orenda's Taleemabad app users who reported facing barriers (12% at endline vs 4% at baseline). While poor connectivity was the greatest barrier reported by Orenda's users in both baseline and endline studies, this increased from 53% (baseline) to 91% (endline), a trend that is likely attributable to Orenda gaining traction in lower tier cities (see Box 1). WidEnergy also reported an increase in users facing barriers to mobile internet use (from baseline 15% to 36% at endline). However, these barriers were not cost-related, but instead were due to limited internet connectivity, lack of power to charge devices and other problems such as poor battery life and technical issues.

Similar trends were observed with Zonful Energy, another PAYG smartphone provider, which saw 41% of their users reporting barriers to mobile internet use at endline (no baseline comparison study). It is noteworthy that, like WidEnergy, the most reported barriers were not cost-related. Not surprisingly, about a third of WidEnergy's and Zonful Energy's customers pointed to their ability to make flexible payments as the main reason for giving the start-ups a high Net Promoter Rating (NPS),¹⁵ an indication that the start-ups are successfully addressing the affordability barrier.

15. Net Promoter Rating (NPS) is a gauge of satisfaction and loyalty among customers surveyed in the baseline and endline studies.

In Uganda, 46% of Ensibuuko’s customers also reported facing barriers to mobile internet adoption at endline, with limited connectivity and lack of power to charge devices among the most-cited barriers. In addition, 52% of customers cited safe and digitised bookkeeping as a reason for Ensibuuko’s high NPS rating, a signal that the start-up is addressing safety and security barriers.

Overall, the data analysis indicates that WidEnergy, Zonful Energy and Ensibuuko are addressing several barriers to mobile internet adoption for their users, most of whom are women and live in rural or peri-urban areas. Digital skills training, device financing schemes and/or discounted data offerings have made it possible for users to own a smartphone, enhance their digital skills and ultimately become empowered to use internet services to meet various needs.



That was my first smartphone all along I was using a feature phone, The smartphone was affordable, even with my little income I was able to purchase it.”

Farmer, Zonful Energy customer, male



My greatest challenge was the lack of skills and understanding of mobile phone usage, but after Ensibuuko training, I can comfortably use my mobile phone for different use cases like mobile money, digitally pay agri-inputs merchants, use other applications like WhatsApp for communication.”

VSLA member from Yumbe district, Ensibuuko customer, female



I’m an old woman now but the digital skills trainings boosted my confidence and morale, now I can freely use my smartphone without any assistance from my grandchildren.”

Farmer, Zonful Energy customer, female



I have been able to use the app better since I do not require bundles [because data is zero rated], and also other applications like WhatsApp are helpful for communication to support my VSLA group. I have been able to sell cheaper phones to my members through Ensibuuko's support."

Digital Community Entrepreneur (DCE) and VSLA member of Uraku community, Ensibuuko customer



My life has improved after attending the digital skills training because I can market my metal fabrication business on Facebook and am able to find more customers than before... Before having a smartphone, I could only access it at the internet café but now I can access it on my smartphone. I now prefer using mobile money payments for my business as it is more convenient and safer."

Metal fabricator, WidEnergy customer

The start-ups' customer profiles provide additional insights into how barriers to mobile internet use are being addressed. On average, four in five users indicate they do not have access to good alternatives, which suggests that the start-ups are implementing strategies that address the barriers to adoption of their digital solutions. For example, 75% of women on Vceela's platform reported having no access to alternatives compared to 25% of men. At the time of reporting, 84% of Vceela users were women, many of whom live in rural areas. This shows that Vceela is addressing barriers that previously excluded women from accessing and using e-commerce.

An analysis of open-ended responses to a question on the main barriers to mobile internet use revealed a range of challenges beyond those the Fund sought to address. These include network connectivity, battery and device-related challenges. However, these issues cannot be addressed by start-ups on their own. Edtech start-up, Knowledge Platform, has attempted to address these barriers by offering apps with offline capabilities, but this is not a far-reaching or holistic solution.

2. Addressing barriers to mobile internet adoption and use: Lessons and insights



This section highlights the lessons start-ups learned from addressing barriers to mobile internet adoption and use.

Lesson 1: Solutions that address multiple barriers to digital inclusion and meet a wider range of needs can reach more underserved customers

A holistic approach that addresses multiple barriers at once can reach more customers and drive uptake of mobile internet. Such efforts are mutually reinforcing or complementary, and there are two main approaches.

Innovations that address multiple adoption barriers have greater reach and drive mobile internet use

Several start-ups recognised the benefit of tackling multiple barriers at the same time. For example, Zonful Energy and WidEnergy provide digital skills training together with the provision of PAYG smartphones. The PAYG model helps make devices more affordable, while the digital skills training equips customers with basic skills to use the smartphones and raises awareness of apps and services they might find relevant and useful.

Ensibuuko developed an interesting approach to address multiple barriers, including ones that were not a direct focus of the Fund. For example, adapting their digital skills training kit for rural customers addressed the digital skills barrier, and leveraging their existing network of digital field agents to reach VSLAs addressed the accessibility and usability barrier and provided users with digital skills support. Ensibuuko also addressed the relevance barrier by providing digital savings, credit and insurance services and other products, such as solar home systems (SHS) and stoves and agricultural inputs and products. Tackling multiple barriers at once and providing ongoing digital support through agents can also extend the customer relationship beyond the point-of-sale, enhancing mobile internet use among the underserved and reducing churn.

The impact data (see section 1) shows that Zonful Energy and WidEnergy had the greatest impact, alongside Ensibuuko, across several critical dimensions. For example, while they had the highest percentage of users who reported they faced the greatest barriers to mobile internet use, and more often, they also recorded the highest proportion of first-time mobile internet users.

These three start-ups also had the greatest impact on quality of life (see Table 1) and the highest proportion of users who rated the innovation as good value for money and the most likely to recommend the service. Together, this underscores the importance of addressing multiple barriers simultaneously.

Innovations that provide bundled solutions for underserved users can enhance uptake and use of mobile internet

Start-ups that address multiple life or business needs add important value for underserved users, and may help to drive uptake and use of digital solutions. Three of the start-ups – Zonful Energy, WidEnergy and Ensibuuko – all provided bundled offerings with several important use cases. For example, Zonful Energy and WidEnergy mixed data bundles and PAYG smartphones with their original product – PAYG SHS – to offer a unique value proposition to customers. Ensibuuko also combined Mobis, their savings and loans app, and digital skills training with other relevant products, such as agri-inputs and products accessible through a marketplace as well as financial services like digital loans. Creating a bundle of different products into one simple, secure, and reliable platform has been key to keeping users engaged with the platform over time. As mentioned earlier, these start-ups had the highest proportion of users reporting that their quality of life was “very much improved” as a result of the start-ups’ services.

In Pakistan, Vceela’s research revealed the importance of bundling multiple offerings to enhance uptake and use of digital solutions. Their research found that customers wanted more than an e-commerce app, preferring bundled offerings that addressed the relevance barrier, such as sharing home décor ideas, blogs and sales offers. Vceela’s customers also wanted digitised sourcing and purchasing capabilities, which led Vceela to introduce an app that allows customers to purchase raw materials. Such value-added bundles are important to retain app users and keep them engaged.

Lesson 2: Addressing social and behavioural norms is essential to drive adoption of mobile internet among underserved segments

Traditional social norms persist in underserved markets, preventing certain groups from adopting mobile internet, especially women. These norms can manifest in challenges posed by “gatekeepers” and in users’ preconceptions of digital solutions. Digital solutions alone cannot overcome these norms, but solutions that do not take them into account may struggle to succeed.

Gatekeepers present unique challenges to mobile internet adoption and should be considered a key stakeholder

Gatekeepers, such as fathers, husbands, in-laws or other influential family members, are key stakeholders in ensuring that underserved segments can adopt and use digital solutions, especially in more conservative settings. Several of the Fund start-ups encountered this challenge, as children’s or women’s uptake of digital services often depends on the approval of male gatekeepers. For example, in Zambia, WidEnergy encountered difficulties onboarding women, as many women depend on their husbands to make purchasing decisions. In Pakistan, where the edtechs found mothers to be the right target for digital educational solutions for children,¹⁶ women may have little say in signing up to the app or paying for mobile internet. These decisions tend to be left to male gatekeepers, which has a negative impact on uptake of digital solutions among the underserved.

Despite the potential challenges they present, gatekeepers can create an opportunity to drive mobile internet use if start-ups can reach them effectively. Start-ups can include products that deliver value to both parents and children, or husbands and wives, turning gatekeepers into users and potential advocates of the service. Orenda adopted this strategy, incorporating supplementary content on child development, socio-emotional development and storytelling on their app. In this way, they were able to target middle-class mothers who were one of the gatekeepers to the service for their children.

In Zambia, WidEnergy targeted both male gatekeepers and their wives. The value proposition was sold to the male gatekeeper, who could get a new PAYG smartphone. If he already had a smartphone, selling the device to him made an extra device available for another member of the household to use, usually his wife. In most instances, wives were first-time smartphone users. The overarching lesson for start-ups is that they must identify which gatekeepers need to be brought in to ensure uptake and how best to communicate the right value to these gatekeepers.

Users’ preconceptions of digital solutions are a barrier to uptake

Start-ups in the mobile ecosystem may need to overcome negative preconceptions of mobile internet and help potential users understand the value digital solutions can add to their lives. For this reason, educational campaigns about the value of mobile and digital solutions are important. They can lead to new behaviours that drive adoption. For example, in Pakistan, Vceela found that artisan users were risk averse to using digital payments. Vceela’s response was to initiate a campaign to educate first-time platform users, and now up to 70% of the artisans are comfortable making digital payments on a marketplace platform.

In Ethiopia, Africa 118 found that MSME users were not yet ready for formal e-commerce and had little understanding and negative perceptions of using mobile money. In response, Africa 118 pivoted their offering to equip MSMEs with the knowledge and skills they needed to adopt informal online commerce (IOC), including how to use a smartphone and familiar digital platforms such as Google Maps, Facebook and WhatsApp to promote their business. In addition, Africa 118 integrated their digital starter pack (DSP) with Ethio telecom’s telebirr mobile money service, leveraging a trusted telco brand and educating users how to use it. Mobile money was a completely new concept to MSMEs in Ethiopia, and for Africa 118, the telebirr integration was the first of its kind since the DSP was the first

16. Although women may often be gatekeepers of their children’s use of edtech solutions in Pakistan, they tend to rely on male figures such as fathers (male gatekeepers) to grant approval or pay for the solutions.

platform in Ethiopia to integrate with a local mobile money provider. These experiences highlight the importance of educational campaigns to drive mobile internet use, and that first movers need to educate underserved users more on the value of digital solutions and how to adopt them.

Negative preconceptions of digital solutions among gatekeepers were also common in the edtech space. For example, many parents,

especially those with lower education and income levels, were apprehensive about, or did not understand, Knowledge Platform's and Orenda's digital education apps in Pakistan. Also, since many believe that education is a basic human right that should be provided for free, they did not want to invest in a paid-for solution. Although raising awareness of the benefits of digital solutions can make a difference, negative preconceptions can sometimes be difficult to overcome.

Lesson 3: Focusing on the needs and context of underserved customers, from user-centred design to marketing and distribution, can drive greater adoption

Designing digital solutions with the local context and unique capabilities and needs of underserved segments in mind are critical to drive uptake and adoption of mobile internet services.

Designing and adapting digital solutions to users' capabilities and preferences

Since many underserved customers face a range of barriers to using mobile internet, it is important to take their needs, circumstances and preferences into account. For instance, understanding how much they are able and willing to pay, ensuring that user interfaces match their literacy, digital skills and digital confidence levels and using marketing channels and messaging that are accessible and relevant.

Enhancing usability through user-centred design: User-centred design of products is essential for those with limited literacy and digital skills, or for persons with disabilities who have specific accessibility requirements to use digital solutions and services effectively and independently. A core strategy adopted by many start-ups, especially Orenda and Knowledge Platform, was to ensure user flows and interfaces were designed to be simple and intuitive and that they were tested with users to enhance usability.

For underserved populations with entry-level smartphones, device storage capacity can be a limitation. Similarly, low connectivity often prevents rural users from downloading big and data-heavy apps, while users with visual impairments, especially older persons, are less

comfortable using devices with small screens. To address these challenges, WidEnergy and Zonful Energy provided devices with larger screens and developed apps that consumed less data. In Pakistan, Orenda addressed teachers' usability concerns by hosting a design sprint to understand their unique needs and capabilities. This led to the creation of a separate, user-friendly platform for teachers. Incorporating these practical design considerations has allowed teachers to use teaching-related products more easily, anytime and anywhere. Combined with high-quality teacher training content, Orenda's user-centred approach has driven very high retention rates on their platform.

Designing marketing and distribution strategies tailored to the underserved: Implementing a mix of marketing approaches (word of mouth, inclusive marketing material, roadshows, use of agents, radio, digital channels, etc.) that are tailored or stylised to users' preferences and capabilities, timely, targeted effectively and feature relevant use cases and images or icons, can boost awareness and adoption of digital solutions.

Several start-ups have organised roadshows or adopted in-market activities driven by agents to demonstrate products to users, especially in rural areas where internet connectivity is not stable. In Zambia, WidEnergy successfully delivered digital skills training and sold smartphones using a door-to-door approach with sales agents and brand ambassadors from the same community who could communicate in the local language. This inclusive approach to marketing and distribution increased the sales and adoption of WidEnergy's

devices and internet services. WidEnergy is also empowering women through their portfolio of female agents who are equipped with the digital skills to reach other customers, particularly women. To reach more women, sales agents visit local market areas where income-earning women can be targeted with marketing in a timely way. Ensibuuko also uses an inclusive approach to reaching the underserved, delivering digital skills training through a network of field agents selected from the local community (see Box 2 for more on Ensibuuko's approach).

Roadshows and agents as marketing and distribution channels may be expensive and often have limited geographical reach. Still, they are effective at reaching people in rural areas and provide opportunities for one-on-one interaction. For instance, Africa 118 deployed agents to recruit MSMEs in Ethiopia, and although only a small number of MSMEs were reached, the conversion rate was much higher than through digital channels.

Partnering with other organisations can also be an effective and cost-efficient way to market and distribute digital solutions to underserved user segments. For example, Knowledge Platform entered an innovative partnership agreement with McDonalds to market and distribute their edtech products (see Lesson 4 for more on partnerships). Traditional media, especially radio, can be effective at reaching underserved users at scale, especially hard-to-reach segments and rural areas (see Box 1 for more on Orenda's creative approach to using traditional media).

Improving mobile internet use through innovation and support in the user adoption journey: Paired with simple and intuitive product design, start-ups can enhance uptake and use by adapting their product features and activities to match the characteristics and capabilities of users. To align with users' income levels, Orenda is experimenting with different pricing mechanisms for their app, including a tiered model that offers a base price for the lowest-fee schools and additional features that schools demand. Ensibuuko is improving mobile internet use via an MNO partnership to zero-rate data, which would allow users to access their services without being charged.

Some start-ups also provide ongoing post-sale support to help underserved customers overcome challenges along the user journey. For example, Africa 118 developed an entire product offering to enhance their post-sale support for artisans in Ethiopia, restructuring their business around this offering. Using a team of customer managers who each serve around 100 customers, Africa 118 is helping underserved users with everyday challenges, such as how to reset their e-mail passwords or upload product images to social media. Similarly, Ensibuuko's rural agents provide extensive training and support whenever users encounter challenges. Through the creative use of visual storytelling, skits and illustrations, Ensibuuko is encouraging participatory training and enhancing users' knowledge retention. Ensibuuko's users also include persons with disabilities, who can take advantage of Ensibuuko's alternative, more accessible registration, as well as ongoing support for visually impaired users and those who are less technology savvy.



BOX 1

Spotlight on Orenda: Overcoming barriers to mobile internet adoption

Orenda, an edtech platform in Pakistan, found that users were facing significant affordability, accessibility and usability barriers, as well as social and behavioural norms that were impacting adoption of mobile internet services. Orenda implemented a range of approaches to enable teachers and students to overcome these barriers. First, the start-up developed the Taleemabad app for low-cost KaiOS phones, which helped to reach large segments of the underserved population in tier 2 and 3 cities.¹⁷ Second, they increased awareness and accessibility in areas with low internet penetration through Pakistan Television and Radio Pakistan (both of which have a wide reach across the country), which broadcast free content, promoting Orenda's brand and increasing viewership and ratings. This approach improved Taleemabad's penetration in tier 2 and 3 cities. Orenda also identified school chain networks¹⁸ in tier 2 and 3 cities that could disseminate the app to their students and improve access. Roadshows also proved to be an effective early strategy for Orenda to break into the low-fee private school market.

Certain social norms, user preferences and preconceptions slowed the uptake of Orenda's educational products. In the earlier stages, Orenda had to overcome the challenges that led parent gatekeepers and teachers to drop off. Both mothers and fathers are gatekeepers for the adoption of Orenda's products – mothers are the main gatekeepers for their child's use of the app, but fathers typically need to permit and, in some cases, enable the

use of the app for mothers or children. Parents initially felt the solution did not provide adequate visibility into their child's learning progress while “new to tech” teachers were uncertain how to use the app or felt uncomfortable providing too much information upfront.

In response, Orenda added to its ERP a parents' portal that gives parents an easily digestible way of keeping up to date with their child's learning and a teachers' portal containing relevant teaching and tech-related instructional resources for teachers. Minimal user information was requested at sign-up, and then more added bit by bit after onboarding. Many women needed male gatekeepers (who are often the phone owners) to provide access to the one-time code needed for registration. To address these barriers and retain more women on the platform, Orenda sent out promotional messages after work hours, making a deliberate effort to ensure apps could be downloaded when male gatekeepers were available to give women instant access. Orenda also targeted female gatekeepers (mothers) directly by adding supplementary content that was relevant to women (see Lesson 2). A big challenge was the unwillingness of parents to pay because they think an educational app should be free, even though Orenda's app only costs £8 per year. This was a difficult barrier to overcome (see section 3, Lesson 5 for Orenda's response to this problem).

17. Tier 2 and 3 cities refer to a classification range for cities that are outside a country's recognised major cities. Such classifications can be based on population size or level of economic opportunity available in the city. In South Asian countries such as India, tier 2 cities are those with a population in the range of 50,000 to 100,000, while tier 3 cities are those with a population of 20,000 to 50,000. See: <https://www.india-briefing.com/news/india-tier-2-tier-3-cities-15932.html/>

18. School chain networks are broadly “brand name” networks of schools typically owned by for-profit groups or non-profit charitable organisations.

Designing and adapting digital solutions for the local context

Digital solutions that are designed to fit the infrastructure in LMICs and the daily realities of underserved users are more likely to be adopted and used over the long term. In underserved contexts, there is often a lack of relevant content in local languages, which users understand better than English. Orenda and Knowledge Platform addressed this relevance barrier by adding content not just in English, but also in Pakistan's primary local language, Urdu. This represents a novel value proposition in a market typically dominated by English content.

In rural contexts, many customers do not have access to reliable broadband connectivity, and

users may struggle to charge their devices due to insufficient (or lack of) electricity. For this reason, Ensibuuko, WidEnergy and Zonful Energy provide devices with long-lasting batteries to ensure that devices can run longer before needing to be recharged. Knowledge Platform designed their products with offline capabilities to enable users to access services even in areas with poor internet connectivity. In Zimbabwe, where rural connectivity is very low, Zonful Energy included offline capabilities and app sharing, allowing agents and users to share the app with others via Bluetooth. A complement to these approaches could be ensuring that mobile apps are downloaded at the point of sale where internet connectivity is stronger, rather than relying on customers to download the app on their own.

BOX 2

Spotlight on Ensibuuko: Adapting solutions to local users and contexts

Since rural populations are largely excluded from mainstream services, Ensibuuko's offerings had the potential to have a major impact. However, they also had major barriers to overcome, including a lack of knowledge about relevant digital products and services and the basic skills to use them.

To address these barriers, Ensibuuko introduced a basic mobile digital skills training, based on the GSMA Mobile Internet Skills Training Toolkit (MISTT), that was localised, adapted and simplified for low-literate users (e.g. included images and icons). Ensibuuko also maintains a network of field agents who train users and provide ongoing refresher training with the digital skills training kit. To meet users' needs, Ensibuuko offered services (e.g. mobile devices, data, SIM cards) and products (e.g. PAYG solar home systems and gas cookers, and agri-inputs and products) to users.

The COVID-19 pandemic introduced new challenges. Although Ensibuuko initially planned to use roaming agents, COVID-19 restrictions meant they had to rethink how to reach users. They identified "champion" VSLA members or digital community entrepreneurs (DCEs) who are trained as digital agents to equip others with digital skills and raise awareness of Ensibuuko's offerings. By focusing digital inclusion efforts in users' existing social networks, Ensibuuko's DCE model fosters ownership and provides users with the ongoing support they need to build their confidence and overcome their fears about digital solutions. Ensibuuko's innovative approach has brought about success, mainly with low-income users and women who have onboarded, 60% of whom are first-time mobile internet users.

3. Barriers and strategies to scale digital solutions: Lessons and insights

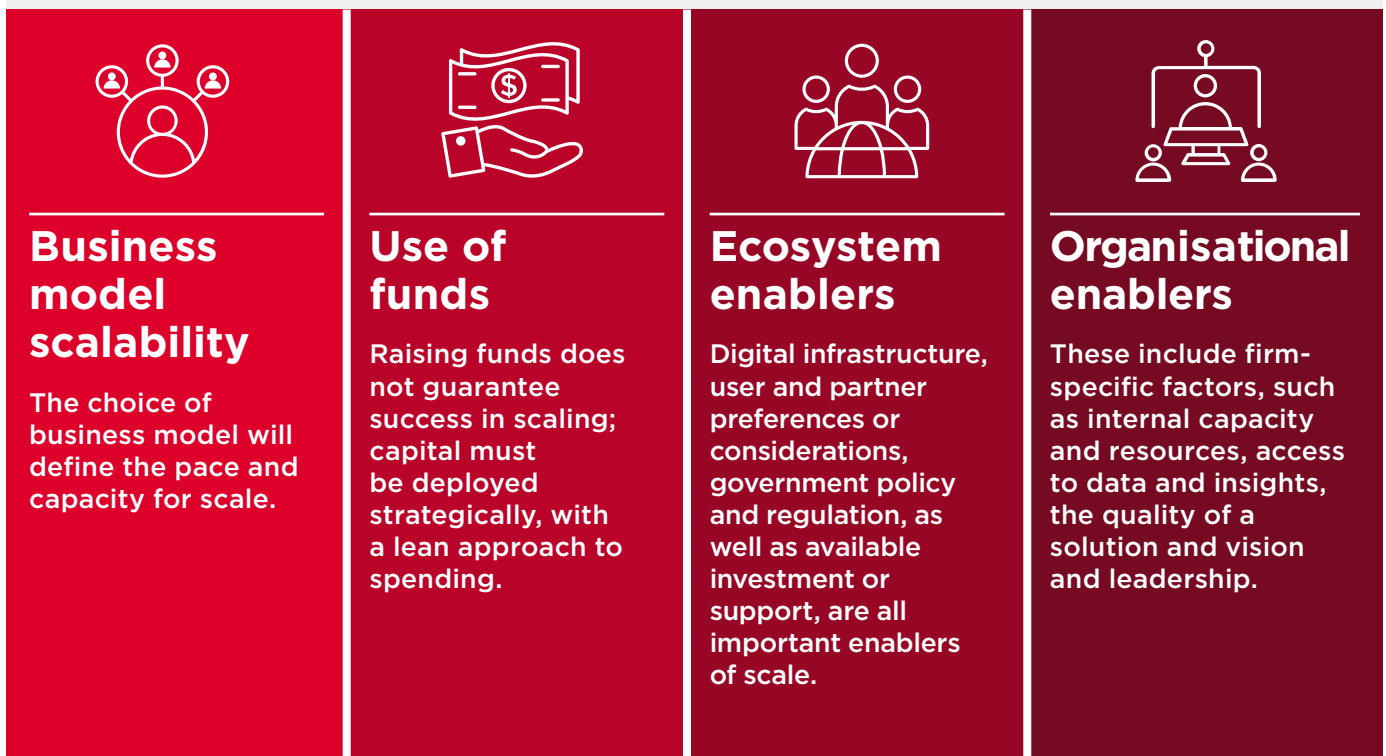


This section presents the barriers and strategies that start-ups used to scale innovations for digital inclusion. Scale can mean different things to different start-ups and can be measured in different ways, including: (i) reaching a certain number of end users (within a determined market); (ii) deploying in other geographical areas/new markets (replication in a new market); and (iii) achieving a stated annual net revenue.

Running a start-up is hard, with many internal and external daily challenges. Running a start-up focused on underserved users is even harder. Evidence from the implementation of the Fund shows that user- and partner-related challenges, as well as a lack of internal capacity and

inadequate infrastructure, are some of the most significant barriers to scaling digital solutions for the underserved. Other barriers include lack of access to data and insights on customers and markets, poor implementation or poor quality of a solution, the lack of an enabling environment and other ecosystem challenges, such as heightened competition. These barriers make it more difficult for start-ups to achieve scale within a short time frame. Therefore, start-ups need to be mindful from the outset of the potential opportunities and barriers, while also seeking the funding, partners and additional support they need to become scalable. Figure 3 summarises the enablers and barriers to scaling in four broad categories.¹⁹

Figure 3
The fundamentals of scaling



19. See also the forthcoming GSMA report on start-up scalability, which applies a broader innovation focus to the fundamentals of scaling: Scaling Digital Innovation in Emerging Economies: The Impact of GSMA's Grant Funding in Scaling Start-ups in LMICs.

There are a range of potential models for scaling digital solutions, including organic growth, licensing, partnerships and acquisition. For the Fund start-ups, all four are potentially relevant. Organic growth and partnerships proved to be more relevant for early-stage scaling while licensing and acquisition were potentially more relevant for later-stage scaling.

BOX 3

Key models for scaling digital solutions

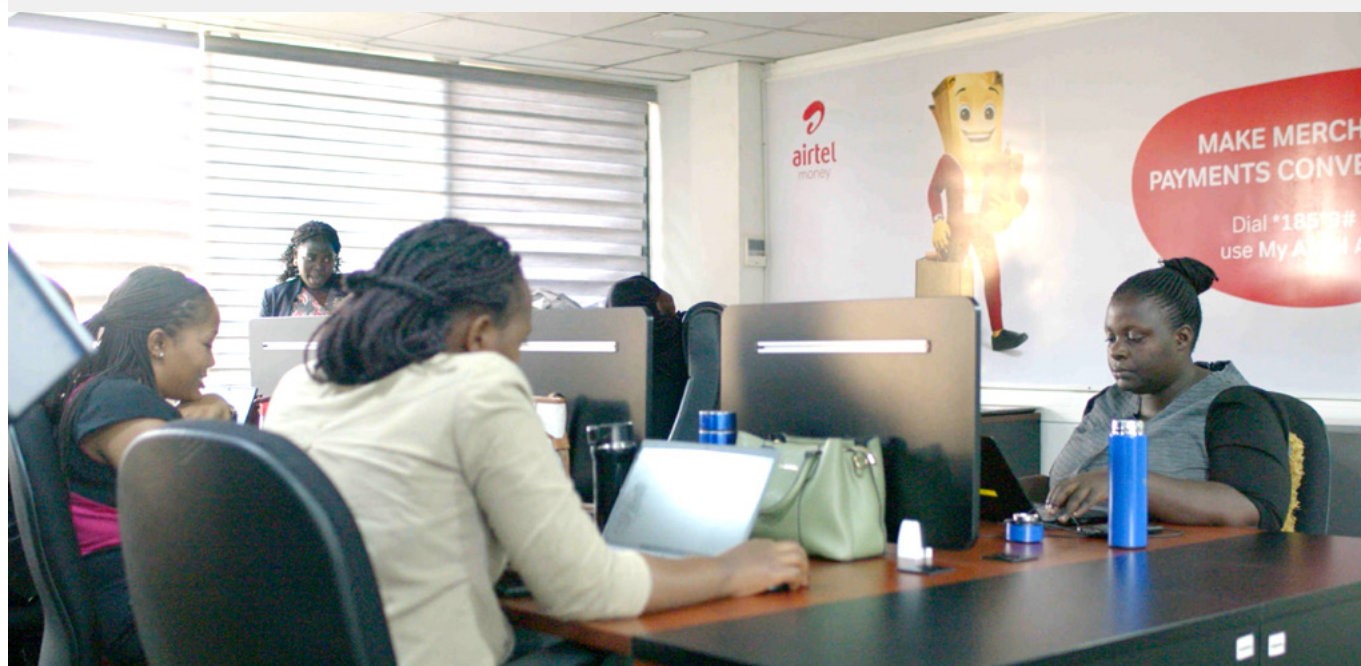
Organic growth: The Fund start-ups applied their existing competencies and resources to expand the scale of their business, mainly via two approaches: (i) activities, including improved marketing efforts or activities aimed at acquiring customers, such as referrals/ incentives for users and agents; and (ii) adding new functionalities or a wider range of services to appeal to a wider audience. Organic growth is the primary model for scale for Zonful Energy, WidEnergy and Africa 118. Organic growth has also been an important part of scaling for Vceela and Orenda. However, these start-ups are exploring other options to drive higher sustained growth beyond organic growth.

Licensing: The start-ups typically adopted licensing by selling APIs directly to more established businesses as a product, effectively leveraging APIs as a pathway to a business-to-business (B2B) model. Orenda's licensing overlaps with their partnership model,

as partners can customise Orenda's branding and re-sell the product to their customers, but Orenda retains control over the quality of the academic content. Other start-ups (e.g. Vceela and Ensibuuko) are in the early stages of implementing a licensing model.

Partnerships: The Fund start-ups partnered with various organisations, including MNOs, with complementary resources and capabilities to sustainably deliver scalable digital solutions for the underserved. All the start-ups adopted partnerships either as a primary or secondary approach to scale.

Acquisition: This is a later-stage scaling strategy as start-ups typically need to have a proven track record and degree of scale before acquisition becomes an option. A future exit strategy could include being acquired by a larger organisation operating in similar or adjacent verticals.



Lesson 4: Multistakeholder partnerships are key to scaling

Start-ups often rely on different kinds of partnerships, including with private sector actors, government and other stakeholders, to scale digital solutions for the underserved. These partnerships may provide the expertise and resources to reach the underserved at scale or access certain hard-to-reach underserved segments. They may also provide the expertise to understand and serve these user segments effectively or the support to develop the necessary innovation or capabilities, among other important benefits.

The Fund start-ups fostered partnerships with stakeholders in three broad categories: MNOs, government and other private or non-governmental organisations (NGOs). These partners complement the efforts of start-ups, creating pathways to accelerate scale or removing scaling barriers. Through these partnerships, start-ups found efficiencies by aligning themselves with organisations that had the same customer segment and/or complementary value propositions.

MNO partnerships add significant value for start-ups and help digital solutions to scale

MNO partnerships are critical for scaling most digital solutions. To build a partnership with an MNO and ensure the engagement is successful, start-ups must first identify potential synergies and evidence of shared value. For example, MNOs have market reach, but start-ups can provide an opening to new markets, helping MNOs to grow their core revenue, create new revenue streams or boost their value proposition, all of which lead to higher customer retention, customer acquisition and a stronger reputation. A 2017 GSMA report²⁰ breaks down the opportunities for MNOs and start-ups to collaborate in emerging markets.



Traditional internet-based platforms require that you load data on your platform, but in rural areas this is hard to achieve. So, what we did was to partner with MTN and Airtel and we designed an innovative pricing model for internet services that does not require a savings group to subscribe for internet. We have bundled up the cost of internet into the cost of other services that we have on the platform. So, for savings group, they can access an internet-enabled application that we offer with zero internet bundles.”

Gerard Otim, founder and CEO, Ensibuuko

- Ensibuuko sought partnerships with Airtel and MTN Uganda for marketing and promotion, mobile money integration and driving mobile products and services. These partnerships have not only created more value for customers, but also improved the perceptions of Ensibuuko and the MNOs in the market. Ensibuuko’s partnerships with MNOs to activate SIM cards, phone sales and merchant acquisitions have also driven commissions and incentives for agents, as these services are centred around a group agent. Meanwhile, Airtel integrated Ensibuuko’s services in their main customer service menu, which Airtel customers access frequently, and has increased exposure for Ensibuuko’s services in the market. Also, MTN Uganda provided reverse billing arrangements for Ensibuuko to zero-rate data costs and improve affordability for their customers. In return, MNOs used Ensibuuko’s rural presence to deliver their core products and services in hard-to-reach areas and populations, potentially lowering the need to maintain their own rural agent networks.

20. See: GSMA. (2017). [Building Synergies: How Mobile Operators and Start-ups Can Partner for Impact in Emerging Markets.](#)



We need partnerships that provide many different markets. Africa 118 provides a platform for our customers to access several products and services and pay for them using telebirr. We hope this collaboration with Africa 118 will continue to expand in the future.”

Belayhun Aragaw, Partner Management Manager, telebirr, Ethio telecom

- In Pakistan, Vceela needed easy payment collection and brand visibility. Vceela’s partnership with the biggest MNOs in the country, Telenor and Jazz, provided opportunities for mobile money payment integration, marketing support and collaborations and free or discounted internet packages for Vceela customers. It also helped the MNOs acquire new customers, potentially growing their core revenues through increased user engagement with products such as mobile money.
- Africa 118 needed visibility and access to mass payment channels for MSMEs. Their partnership with Ethio telecom for mobile money payments accelerated the revenue growth of MSME merchants by allowing buyers to pay through mobile money. As the first local e-commerce platform to integrate Ethio telecom’s telebirr app as a payment solution, Africa 118 provides value to Ethio telecom by driving adoption of telebirr among MSME customers and helping the MNO capture additional revenue as mobile money accelerates in Ethiopia.

- In Pakistan, Orenda needed to expand the reach of their offerings in a market with low penetration of digital educational services. They partnered with Telenor Pakistan to provide digital content to public schools, with Telenor providing advocacy support and match funding for content development on Orenda’s platform. This helped scale the reach of the Talemabaad app and supported Telenor’s aim to enhance digital inclusion in Pakistan.
- Also in Pakistan, Knowledge Platform entered a partnership with Jazz to provide a payment gateway and low-cost prepaid data bundle for users, which provides affordable internet access to Knowledge Platform’s portal. This initiative could drive new customer acquisitions for Jazz.
- Zonful Energy needed MNO partnerships to deliver and scale their solutions, including to provide discounted data bundles, SIM cards and to facilitate customers’ smartphone repayments. This led Zonful Energy to sign a Memorandum of Understanding (MoU) with Econet in Zimbabwe to provide customers with data bundles that are cheaper than the market bundles and to leverage the mobile payment service provided by Econet’s sister company EcoCash to facilitate PAYG instalments. The MNO, meanwhile, leverages the start-up’s rural presence to reach more rural users. The Head of Merchant Payments at EcoCash describes the value of the partnership with Zonful Energy:



We are driving financial inclusion for the rural communities with Zonful through the related services that they offer. In the EcoCash Business, we have seen a growth in the number of EcoCash wallet subscribers that are very mutual towards Zonful services and EcoCash services.”

Kuziwa Nyakanda, Head of Merchant Payments, EcoCash

Government partnerships can play an important role in driving uptake and scaling digital solutions for the underserved

Governments can play a critical intermediary role in connecting underserved populations. This includes strengthening the policy and regulatory environment for start-ups to grow, providing support to reach underserved populations at scale through their national commitments to digital inclusion and serving as a customer for public service solutions, such as education. To build partnerships with government, start-ups must identify synergies with government investment strategies and priorities and demonstrate evidence of how the digital solution would support the government to achieve its objectives.

For example, Orenda worked with the Government of Pakistan to launch its ERP system and teacher training programme, as well as introduce an education app and provide digital content in public schools, with the government as a customer. Both Knowledge Platform and Orenda are tapping into a government partnership²¹ to provide content that is relevant for Kindergarten through grade 12 (K-12) using both TV and digital channels. When fully implemented, this will help to scale the start-ups' digital solutions in the country, even for children without access to a digital device. Orenda is also partnering with the Qatar Foundation, a government-led NGO, to help reduce the number of out-of-school children in Pakistan²² through the deployment of a modified version of Pakistan's school model in non-formal basic education centres around Pakistan. This fits with the Qatari government's objective of reducing the number of children worldwide who have no access to education. In Uganda, Ensibuuko is using their digital skills expertise in partnership with the government and development partners to provide on-demand e-learning services for users.

The Government of Pakistan is also encouraging innovation by creating an enabling environment for start-ups. For example, the Ministry of Federal Education and Professional Training (MoFEPT) developed a distance learning department with a mandate to engage start-ups to introduce edtech innovations. This enabled Orenda and Knowledge Platform to receive support to tailor their e-learning content to the national curriculum and deliver relevant digital educational content, thereby promoting uptake.

Other private sector organisations and institutional actors are key partners in scaling digital solutions for the underserved

Several of the Fund start-ups benefitted from partnerships with other private sector companies (i.e. beyond MNOs) and non-profit institutional actors, which have complemented their efforts and accelerated scale. For example:

- Ensibuuko partnered with KeiPhone, a women-led company addressing the digital gender divide, to improve access to smartphones for rural women. Through this partnership, KeiPhone provides free smartphones for Ensibuuko users through an innovative ad revenue model. For KeiPhone, the Ensibuuko partnership provides digital skills content and access to rural women and connection with local MNO partners. This partnership helped KeiPhone and Ensibuuko create shared value for low-income users (e.g. complementary educational content on farming best practices) and share knowledge in the process.
- Orenda partnered with other organisations in the education space (i.e. book publishers and school chains), leveraging their networks to extend to tier 2 and 3 cities. This could improve learning outcomes and enrolment for school chains. For publishers, white-labelling Orenda's products as a value-added offering to schools provided a means to distinguish themselves in a highly competitive market.
- Africa 118 is implementing a partnership with Google, leveraging Google's brand and content to improve the reach and perceptions of their offering. Google also helps with data-driven lead generation campaigns and provides expertise in training MSMEs on Africa 118's platform. Through this partnership, Google can derive customer and market insights, as well as increased revenue generation within the MSME segment.
- WidEnergy entered a range of partnerships, including with Mara Phones for the supply of their made-in-Africa smartphones (see Box 4). WidEnergy leveraged their SHS distribution network to deliver the phones to customers. This helped boost Mara's presence, reputation and customer acquisitions.

21. Pakistan's Ministry of Federal Education and Professional Training signed a contract with five edtechs to make K-12 educational content available across Pakistan.

22. Pakistan has the world's second-highest number of out-of-school children (OOSC) with an estimated 22.8 million children aged 5-16 not attending school, representing 44 per cent of the total population in this age group. See: <https://www.unicef.org/pakistan/education>

Non-profit institutional actors have also proved to be key partners for start-ups, as they tend to have expertise in reaching the underserved and established relationships and trust within this segment. For example, Africa 118 built successful partnerships with MSME support organisations that helped them reach more MSMEs, including women-led MSMEs. These partnerships expanded their reach, particularly among women, which are now about 70% of Africa

118's user base. Vceela is exploring a pathway to expansion by partnering with United Nations Development Programme (UNDP) offices in different countries to run pilots to implement their digital solution. Also, Orenda adopted an innovative approach to reach underserved segments via partnerships with media companies (see Box 1 for more on the start-up's approach to widening their reach).

Lesson 5: To reach scale, start-ups need to be agile and ready to adapt to a changing context

Start-ups need to test different approaches to find the right mix that will sustain and grow their business and better meet the needs of their customers. Customer revenues alone may not be enough to achieve commercial sustainability, especially for digital services in LMICs and where the target market is the underserved.

Start-ups may need to adjust their roadmap to scale by altering their business model, adapting their products to enhance replicability or leveraging internal competencies to create value in new ways

When start-ups encounter challenges that impact their ability to achieve scale or commercial sustainability, they must iterate and identify ways to develop new competencies or leverage existing competencies in new ways. This is particularly relevant for start-ups in the digital space, where improvements or changes can be made remotely for new features or additional use cases.

Leveraging existing competencies in new ways: Africa 118 developed an MSME database for their own use, but over time they found new value in it and are now leveraging it as a licensed product to share with MNOs and other large organisations. In Uganda, Ensibuuko, whose focus before the Fund did not include digital skills, is now leveraging their expertise and digital skills content to establish new partnerships, including positioning as a government partner.

Altering the business model: To enhance commercial sustainability, start-ups can shift their business model from a single source, customer-centric revenue model to multiple sources, perhaps even eliminating the need for customer revenues entirely. This was Orenda's approach, as the start-up could not overcome the barrier of users being unwilling to pay for educational solutions. In response, Orenda switched to a new model involving partnership development and licensing. For example, they are positioning the value of the Taleemabad app to the government instead. Also, Orenda is targeting low-cost private schools directly, in addition to the non-paying customers (i.e. parents) who continue to be an important part of Orenda's overall strategy of promoting value-add for private schools and shaping school behaviour.

Adapting solutions to enhance replicability: Start-ups must be ready to adapt their solutions to cater to the needs and contexts of new users, especially where it involves new use cases and changing partnerships. An agile approach might also involve changing or expanding user segments, for example, expanding from a core PAYG SHS offering to PAYG smartphones. This may require new resources, approaches and partnerships. Replicating core products to apply them to a new use case in new contexts is challenging and a "copy-and-paste" approach may not work.

BOX 4

Lessons on scalability from device financing

PAYG device financing can enable low-income earners to purchase a smartphone for the first time by paying in instalments, thus spreading out the cost over a longer period. For the Fund start-ups, this model typically offers low-income users a smartphone with a small upfront payment. Device financing as a pathway to reach the underserved is challenging to implement, given that it is capital-intensive and requires multiple partnerships. Four of the Fund start-ups implemented device financing schemes, with varying levels of success. Evidence from these start-ups shows there are several essential requirements for the successful implementation of a device financing/PAYG model.

Essentials for device financing:

- **Understand customer behaviour, aspirations and preferences**, including device aspirations and appropriate instalment amounts and intervals. For example, many of the start-ups' targeted users reported wanting a device with a larger screen and better features, especially among more advanced users.
- **Understand the context**, including which device is most appropriate, for example, in areas with unreliable electricity.
- **Ensure the proposition is attractive for handset suppliers:** Original Equipment Manufacturers (OEMs) tend to prefer to work with the MNOs for a range of reasons, including their credit worthiness and existing partnerships with OEMs, which makes the purchasing of devices an easier process. MNOs can also meet the OEMs' minimum stock requirements to have a valid business case. By contrast, start-ups are often unable to place large orders on their own.
- **Integrate with mobile money payments**, as this is necessary to facilitate customer repayments for the device.
- **Consider locking technology** which allows providers to lock the devices of customers who default on device repayments, inhibiting their use until payment is made. This makes device financing less risky for providers, but it needs to be integrated in a device from the start and clearly explained to customers.
- **Establish a client relationship management (CRM) system** since this is critical for managing payment collection, reconciling accounts and accessing real-time payment information about users.
- **Consider digital skills training**, which equips customers, especially first-time smartphone users, with the knowledge of relevant mobile internet enabled services and ability to use internet-enabled devices.
- **Consider bundling of services**, as this can provide added value for users and boost device sales. This includes providing data bundles to customers or offering them as an incentive for more reliable paying customers.

Lesson 6: Achieving scale requires thinking ahead about potential opportunities and barriers

Through data and insights, start-ups can test current assumptions about users, markets and contexts to anticipate potential barriers and opportunities for scaling. This will help to determine which areas or activities to prioritise as the business grows. This might include checking the relevance of a value proposition in light of competition, investing early in areas of strength to stay ahead of the competition or determining whether a partnership, and what type, is necessary for scale.

Research and understand your users, potential partners and context

Investing early in customer insights and market data is important to enhance scalability and commercial sustainability. The more successful start-ups were those that made investments based on data-driven insights. For example, Orenda's choice of marketing approach was based on insights around targeting women as gatekeepers of edtech solutions for their children. Africa 118's early, low-cost testing of different marketing channels guided their investment decisions on developing an agent network – a creative approach that led to higher customer acquisition than digital marketing channels. Similarly, a digital skills needs assessment of existing SHS customers preceded the development of WidEnergy's digital skills training module. An insight from WidEnergy's PAYG device financing is the importance of assessing potential suppliers from the start. This can, for example, involve finding the right partner to provide locking technology locally and assessing them not just on cost, but also reliability. However, for start-ups, it is not always possible to have the right kinds of insights and data from the start, and collaboration with partners might be required to overcome this challenge.

It is important for start-ups to regularly test their own assumptions, as this can help clarify when and what changes need to be made. For example, testing assumptions that users will be willing to pay for digital education products would have clarified for Orenda the right approach to the willingness-to-pay barrier. Moreover, start-ups should reassess their internal capacity and resources as the business grows. This might involve investing in CRM systems like WidEnergy did when they realised they needed

an effective way to manage growth and collect customer payments.

Establish the right commercial partnerships for scaling

When pursuing a B2B model through one or more commercial arrangements, it is critical that start-ups find a partner that shares their vision and purpose and understands their business needs. Start-ups need to understand the value a partner could offer, as this will help to tailor the product offering to the commercial partner's strategy and formulate value propositions that meet their needs. For example, for Africa 118, MNOs were identified as a potential partner following engagement with the GSMA through the Innovation Fund. The GSMA played a key role in facilitating Africa 118's partnership with Ethio telecom, which saw Africa 118 become one of the first Ethiopian e-commerce platforms to integrate with the telebirr mobile payment app. Prior to this, payment could only be made via traditional online payment processing systems, such as Mastercard or PayPal. Another important lesson is that, for digital inclusion projects, relying on a single device or technology supplier could have a negative impact on objectives and timelines. For example, having a secondary supplier in place that has already met the start-up's due diligence requirements, could have helped WidEnergy avoid the delays they experienced in the supply of smartphones.

As the evidence from most of the Fund start-ups indicates, these early-stage start-ups may not always have the data, insights or capabilities to demonstrate the commercial opportunity of their solution to an MNO or other commercial partners. This underscores the need for investment and additional support for start-ups working to close the gap in mobile internet use.

Getting the timing right: Establishing the right commercial opportunities with the right partner(s) not only requires insights, but also getting the timing right. Planning and exploring a detailed roadmap for partnerships is important for scaling. This can include determining which types of partnerships may be needed at different stages of the scaling journey or where there is a need to demonstrate product performance standards before pursuing commercial agreements.



For example, Navana Tech's business model for business clients was dependent on a highly accurate artificial intelligence (AI) model for multiple languages that clients would be willing to pay for. Navana Tech's original approach was to seek a commercial agreement to implement its voice bot. However, clients were unwilling to pay for the bot until they were able to quantify the monetary benefits of using the technology. Navana Tech should have worked upfront with their clients to agree the commercial metrics that would need to be evidenced for clients to commit to adopting the solution commercially. The overarching lesson is that for highly tailored products such as a voice bot, it is important that start-ups are confident that clients are willing to pay and that they get the product to a fit-for-purpose state to make clients willing to enter a commercial agreement.

One start-up that got the timing of its commercial relationship right is Ensibuuko, which was better able to provide evidence of rural traction as a value proposition after demonstrating product viability, customer retention and positive user outcomes. For solutions requiring mass procurement of devices, such as PAYG smartphone schemes, it is important to trial the product and ensure it meets users' needs before ordering in large numbers.

Where the government is the potential customer of a start-up's solution, timing is also essential. Start-ups need to approach the right person in the relevant government department and do so at the right time, fitting with the government's annual plans and budget cycles. Typically, negotiations for a partnership with government are time-consuming and resource-intensive.

Conclusion

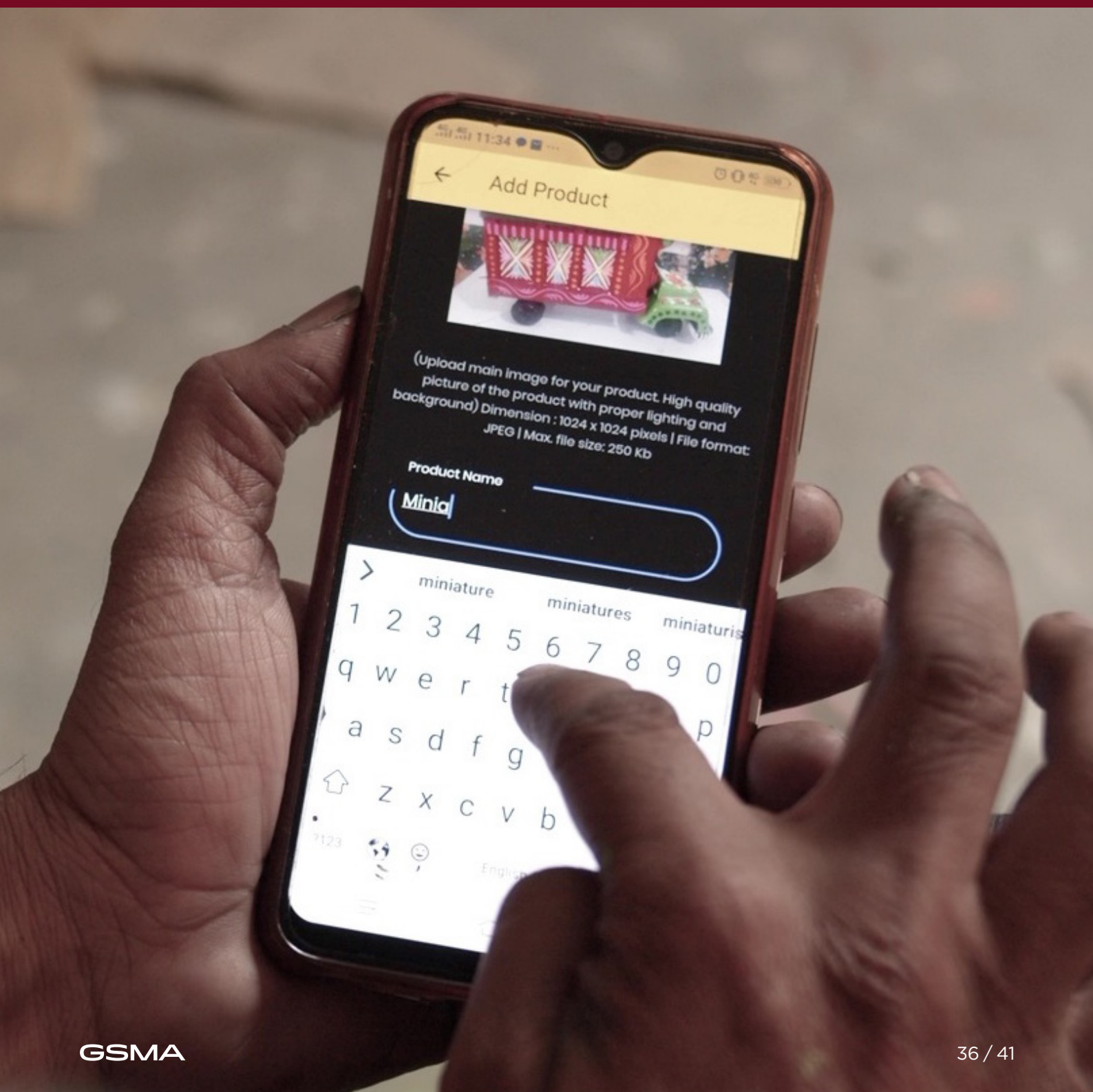


Reaching the underserved and addressing the barriers to mobile internet adoption and use is challenging. A one-size-fits-all approach – whether a single digital solution, approach or start-up working in isolation – cannot tackle the scale of the gap in mobile internet use. Innovations in both products and business models are needed, as are partnerships in the public and private sectors. For start-ups, collaborating with MNOs presents significant opportunities given the scale and reach of mobile in LMICs. For MNOs, collaborating with start-ups also presents significant opportunities given their potential to address the barriers and needs of specific customer segments.

Start-ups that are committed to addressing digital inclusion barriers for the underserved face a range of challenges, including a lack

of internal capacity and relevant data and insights, that directly impact their commercial sustainability or ability to scale digital solutions for the underserved. Often, a lack of commercial sustainability means that start-ups must identify alternative ways to create value or run parallel business models (e.g. business-to-business-to-consumer (B2B2C) or business-to-government (B2G)). Without such partnerships, it is difficult to achieve the scale to ensure low-income users can gain access to affordable digital solutions that meet their needs. Start-ups must remain agile and continually look for synergy with potential partners, create new ways to demonstrate value and meet customer needs better. Innovations in digital technology can have a significant impact on digital inclusion, but reaching the scale required to be commercially viable takes time, strategic vision and tenacity.

Appendix



Africa 118



Country: Ethiopia

Target market: Ethiopian MSMEs

Problem: Mobile users often have difficulty finding accurate information on local businesses and services. Less than 10% of Ethiopian businesses surveyed had an online presence, limiting the discoverability of their products or services.

Solution: A mobile Digital Starter Pack (DSP) for Ethiopian MSMEs to help them build a strong digital presence and grow their business.

Key partnerships: Ethio telecom, Safaricom, Centre for Accelerated Women's Economic Empowerment (CAWEE)

Impact: Through this project, more than 1,800 MSMEs have been connected to the internet, giving them an online presence, e-commerce and mobile payment integration, as well as in-person training on basic digital and business skills. At \$100 per year, the DSP is less than half the cost of available comparable solutions and Africa 118 offers the option to pay monthly to make this solution accessible to as many MSMEs as possible. In addition, through partners and a freemium model, less resource-rich MSMEs can access certain services for free. By providing MSMEs with an online presence, the number of customers interacting with the DSP to buy and pay for products topped 14,200 by the end of the Innovation Fund, confirming that the platform was effective at increasing the sale of products and services. Without the online visibility that the platform offers onboarded MSMEs, many business opportunities would have been missed.

Ensibuuko



Country: Uganda

Target market: Village Savings and Loan Associations (VSLAs) in rural communities

Problem: Savings groups need to use digital solutions to advance the financial inclusion of the communities they serve, but a lack of knowledge about relevant digital products and services and the digital skills to use them are major barriers for rural customers to adopt internet services.

Solution: A digital ledger platform that allows community banking schemes to automate their transaction and operations, along with tailored relevant and affordable digital and financial services such as credit, savings, insurance, mobile handsets, solar products, and agricultural offerings aimed at connecting the unbanked and underserved to the wider financial ecosystem.

Key partnerships: MTN, Airtel

Impact: Ensibuuko is addressing digital inclusion barriers by providing access to a financial app and the skills to use it, as well as other mobile internet-enabled services like WhatsApp and Google. As a result, 94% of Ensibuuko users are gaining access to such an app for the first time, with 96% unable to find a good alternative.

WidEnergy



Country: Zambia

Target market: Unconnected persons in rural and peri-urban parts of Zambia

Problem: Certain groups in Zambia are being left behind when it comes to smartphone adoption, due to a range of barriers including a lack of digital skills and the accessibility and affordability of smartphones and data. These barriers are especially high among women, rural and peri-urban populations.

Solution: Community-based distribution hubs for PAYG smartphones that will be pre-loaded with starter bundles. WidEnergy also launched community-based digital inclusion hubs to provide digital skills training to help customers learn how to use the internet and access essential digital services.

Key partnerships: Mara Phones

Impact: WidEnergy's free trainings have reached underserved groups such as women and persons with disabilities. Additional income opportunities were created for youth through sales commissions and skills training, unlocking future opportunities for them both within and outside WidEnergy. Furthermore, 40% of WidEnergy's sales agents are women and 36% of new smartphone owners are women.

Zonful Energy



Country: Zimbabwe

Target market: Unconnected persons in rural and peri-urban parts of Zimbabwe

Problem: In Zimbabwe, at least 43.5% of the population, or 7.6 million people, do not currently use the internet.

Solution: Smartphone and data bundles on a PAYG basis and translation of the GSMA Mobile Internet Skills Training Toolkit (MISTT) into local languages.

Key partnerships: Econet

Impact: Zonful Energy has sold devices to more than 2,000 first-time smartphone owners, 56% of which are women. Zonful Energy's agent commissions are based on customer repayments, which has motivated agents to follow up on defaulting customers. Of the 2,000 devices sold, more than 1,000 customers fully repaid their phones during the grant period.

Orenda



Country: Pakistan

Target market: Children living outside the major cities of Pakistan

Problem: Pakistan has the second highest number of out-of-school children in the world. Both enrolment and performance decrease as children move from the primary grades to the higher secondary grades. There is a lack of access to digital tools and resources for schools, students and teachers to develop their capacities.

Solution: A tailored curriculum and Taleemabad app developed for KaiOS phones and the launch of an ERP solution for low-fee schools.

Key partnerships: Telenor and Government of Pakistan

Impact: The solution has reached more than 215,000 users, especially from the middle class, and enabled savings for parents whose children are registered on Taleemabad App. Through Orenda's solution, teachers can meet parents' demand for more at-home learning material. This provides significant value for parents and learners, as 94% of users had no prior access to a similar solution and 95% reporting that they have no good alternative.

Vceela



Country: Pakistan

Target market: Artisans and buyers in Pakistan

Problem: The vast majority of artisans in Pakistan, most of whom live in rural areas, are not connected digitally, making them more vulnerable to exploitation from intermediaries.

Solution: A mobile app and web portal with e-commerce and payment integration, as well as a raw materials app.

Key partnerships: Telenor and JazzCash (the financial services arm of Jazz)

Impact: Vceela's innovation enables artisans in Pakistan's rural communities to gain access to the global market, helping to bridge the digital gap that often leaves artisans vulnerable to exploitation. The technology allows the artisans, most of whom are women, to source raw materials, market and sell their products, collect payments and receive microfinance more easily. More than 60,000 sellers and buyers interacted actively and directly with Vceela products/services during the grant period, 84% of which were women.

Knowledge Platform



Country: Pakistan

Target market: Schools and students in Pakistan, especially 5-15 years old

Problem: In Pakistan, quality education is only affordable for the middle and upper classes, which has left millions of students out of school. While online learning resources are available, most people in Pakistan cannot afford to buy a smartphone, tablet or the internet necessary to take advantage of online education.

Solution: Roll-out of mobile educational devices through a smartphone/tablet financing scheme to underserved communities, enabling users to pay in instalments.

Key partnerships: Jazz

Impact: Knowledge Platform's solution has reached more than 1,000 schools in cities and towns across Pakistan. More than 167,000 users were using the start-up's app at the time of reporting, 45% of which are women. Knowledge Platform's Learn Smart Classroom platform provides support for both teaching and learning, with more than 400 lessons produced so far (disaggregated by subject i.e. Science, Math, English).

Navana Tech



Country: India

Target market: Low-literate persons in rural and peri-urban areas of India

Problem: Smartphone apps are text-dependent and primarily in English, creating accessibility and usability challenges for low-literate, local language-speakers. Challenges are amplified in apps where money is involved, such as e-commerce and financial services, and are perceived as high risk by local language-speakers. Because of this, there is a noticeable difference in app drop-off and user retention rates between urban and rural users.

Solution: A conversational AI voice bot that enables digital actions through two-way communication in five Indian languages (Hindi, Gujarati, Tamil, Assamese and Punjabi). Once accurately trained for different content and languages, the voice bot could be integrated in financial services and e-commerce apps, which would make them much more widely accessible for those who would previously have been unable to use them due to the language barrier or a lack of digital skills.

Key partnerships: Digital Green, Waycool

Impact: If Navana Tech's AI voice bot can demonstrate sufficiently high levels of user accuracy at lower than market cost, it has the potential to help local language speakers confidently use mobile apps by offering it in their language with no typing or reading requirements.

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