Scaling Digital Innovation in Emerging Economies

The impact of GSMA grant funding on start-ups in low- and middle-income countries

GSMA

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 MNOs 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. We invite you to find out more at gsma.com

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GSMA Innovation Fund

The GSMA Innovation Fund supports innovative digital solutions with positive socio-economic impact in low- and middle-income countries. We believe digital solutions have the power to sustainably reduce inequalities within our world by connecting everyone and everything to a better future.

For more information, please visit:
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The Hungry Lab

The Hungry Lab is a global education, incubation, and research platform for impactful ventures at the nexus of FrontierTech, Regenerative Economy and UN Sustainable Development Goals (SDGs) in emerging economies. They provide insights, curriculum, innovation training and startup incubation support to universities, corporates, accelerators, investors, research organizations and international development agencies.


ঢাকা
ওয়াসা
ওয়াসা
Drinkwell
NO WATER

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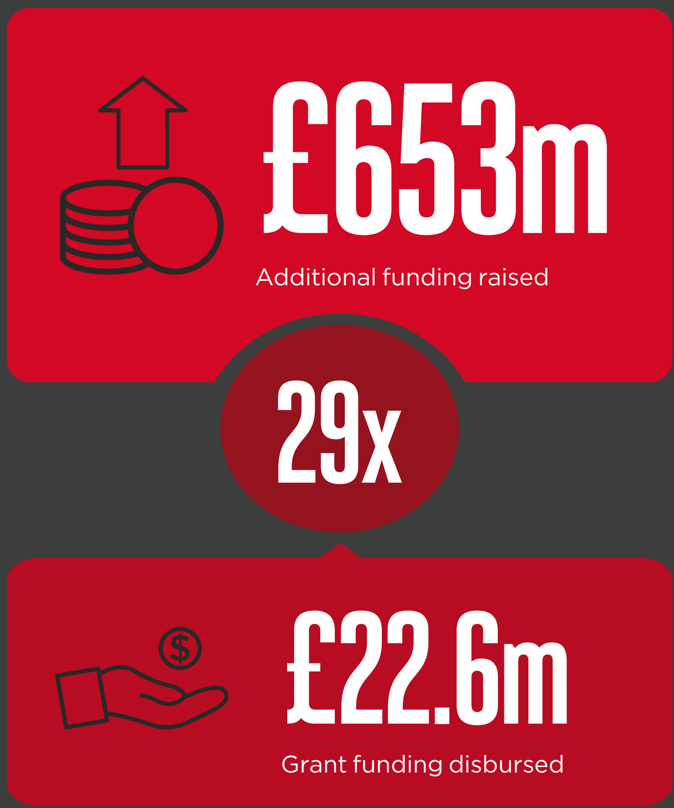


For over a decade, the GSMA Mobile for Development programme has been singularly positioned at the intersection of the mobile ecosystem and the development sector, stimulating digital innovation that can deliver both sustainable businesses and large-scale socio-economic impact for the underserved.

One of the programmes fostering digital innovation is the GSMA Innovation Fund, which provides equity-free grant funding and technical assistance as a means to de-risk innovation and attract follow-on funding. By working in partnership with donors such as ourselves at the UK's Foreign, Commonwealth and Development Office (FCDO) as well as Australia's Department for Foreign Affairs and Trade (DFAT), and the Swedish International Development Cooperation Agency (Sida), the GSMA Innovation Fund model leverages public sector funding to stimulate digital innovation and attract private capital. Indeed, our relationship with the GSMA is an important part of the FCDO's wider efforts to test and scale high-potential technologies and business models for inclusive socioeconomic and climate impact. Helping MSMEs to bridge the finance gap between seed and commercial fundraising has never been so important. Our work with the GSMA on this agenda is core to our ambition to be a catalytic donor in partnership with British International Investment, the UK's development finance institution.

As of July 2022, the GSMA Innovation Fund has disbursed over £22m in grant funding to over 100 organisations, facilitated over 80 partnerships between these organisations and Mobile Network Operators (MNOs), and the combined reach has delivered life-enhancing solutions to 37 million beneficiaries. In addition, the portfolio organisations have attracted over £650 million in additional investments.

Both the GSMA and the UK FCDO thank the innovative founders and their teams working to develop sustainable business models that drive socio-economic impact, whilst sharing their insights based on their collective learning and experience.

These innovators face a real challenge balancing positive socio-economic and environmental impact with the need for a sustaining their business models in complex economic and political contexts. This is why it is increasingly important that these innovators receive support from investors, who provide the crucial capital to help these start-ups to scale and address the SDGs in a commercially sustainable manner.

David Woolnough,
Deputy Director Research, Technology and Innovation, FCDO

Executive summary

Since 2013, in partnership with the UK Foreign, Commonwealth & Development Office (FCDO) and other donors, the GSMA has supported more than 100 organisations with equity-free grant funding to test and scale innovative digital technologies and business models that boost local ecosystems, improve livelihoods and drive prosperity. Several of these innovative business models have scaled over the years, whether through expansion, additional follow-on funding or strategic partnerships.

This report reflects on the role of the GSMA in providing early-stage risk capital and support for early-stage digital start-ups. For the 21 start-ups featured in this report, their scaling journeys have generated important lessons about raising follow-on funding:

There are several pathways to scale. A start-up's journey to scale depends on their addressable market and the enablers and barriers within their ecosystem. Whether they are expanding their product/service offering, adding more functions to meet customer needs or replicating their solution in new markets, it is useful to measure scale with specific metrics and over time, at different stages of the journey.

The fundraising journey is a useful way to measure scale in low- and middle-income countries (LMICs). The ability to raise follow-on funding demonstrates that investors believe a solution has early traction and is based on a sustainable and scalable business model. It is also a strong indication that catalytic funding can help unlock further investment.

A combination of funding and technical assistance has supported start-ups on their journey to scale. The GSMA Mobile for Development team has provided start-ups with funding and technical assistance that has included navigating MNO ecosystems, networking and investor outreach and business and operational support.

Digital start-ups in LMICs face distinct challenges pioneering innovative business models in complex economic environments. Start-ups focused on impact-driven value creation in LMICs are often among the first to enter and develop a customer base in traditionally under-resourced sectors and markets. Success in such complex environments requires overcoming political instability, infrastructure challenges and a nascent digital ecosystem.

Partnerships can be the key to scaling. Financial support and sector traits aside, successful scaling can be the result of a start-up's ability to pivot their business model and establish strategic partnerships. These partnerships can provide value to both partners, as MNOs have reached the level of scale start-ups require while start-ups have the local innovation that MNOs need.

1 Introduction

1.1 Objectives

This report begins by outlining different pathways to scale in low- and middle-income countries and how scale should be measured. Five important factors influencing scale are highlighted, and special attention is given to understanding the gender financing gap for digital start-ups.

Chapter 2 analyses the journeys to scale of 21 start-ups supported by the Digital Utilities Innovation Fund (previously known as the Mobile for Development Utilities Innovation Fund) from 2013 to 2020, the Ecosystem Accelerator Innovation Fund from 2016 to 2020 and one round of the Mobile for Humanitarian Innovation Fund from 2018 to 2019. The findings of this report focus on the experience of these selected start-ups and do not reflect all start-ups and organisations in the GSMA Mobile for Development portfolio.

Chapter 3 reveals the lessons that start-up founders learned while scaling their solutions. This includes the sectoral enablers and barriers they encountered and the investors who supported them at different stages.

Finally, the report shares recommendations for key ecosystem stakeholders, including start-ups, investors, funding organisations, accelerators and tech hubs. For start-ups in LMICs to have financial and social impact at scale, all these stakeholders will need to intensify and align their efforts and collaborate.

The research methodology included desk research and key informant interviews (KIIs) accompanied by analysis and synthesis. The desk research covered an array of publicly available start-up and investor databases, public articles, existing literature, trade publications and past GSMA reports. KIIs were conducted with GSMA staff responsible for managing the grants, as well as selected start-ups and industry-leading experts from relevant start-up and investment markets in LMICs. Where possible, profile data was supplemented with publicly available information from Crunchbase, PitchBook, the companies' own websites, press releases, news articles and other sources.

1.2 Definitions

In this report, the following definitions apply:

Start-up: an organisation developing a business model that is repeatable and scalable. This distinguishes start-ups from other companies, which are assumed to already have a repeatable and scalable business model.[1] As a result, the type of investment and support that a start-up requires is different from other organisations.

Scalability: a company's ability to rapidly grow its business without encountering resource constraints.

Seed stage start-up: at this stage, a new venture has moved beyond the ideation stage and begins seeking funding support for their concept or product from friends, family and angel investors.[2] This stage often involves finalising the product or service offering and gathering market data.

Early-stage start-up: at this stage (before raising Series A funding), the start-up has a potentially scalable idea for a product or service targeting a market that is poised to generate value.[3] An early-stage start-up has a prototype or minimum viable product (MVP) and might be generating revenue but is not yet profitable.

Market leader: a company with the largest market share in an industry that can often use its dominance to affect the competitive landscape and direction the market takes. It may also surpass its competitors in brand loyalty, perceived value, distribution coverage and profit.[4]

Non-equity funding: all forms of funding where the investor or funder does not have any ownership or shares in the start-up. Examples include catalytic grant funding and traditional debt or loans (not to be confused with convertible notes that are commonly converted into equity).

1. As defined by Steve Blank, US entrepreneur, and adjunct professor of entrepreneurship at Stanford University.
2. Launchopedia by FundingSage. (n.d.). "Seed Stage – Startup Funding Life Cycle".
3. Adhanan, E.T. (n.d.). "What are the three stages of a start-up?" Silicon Valley Bank.
4. Chen, J. (31 May 2022). "Unicorn: What it Means in Investing, with Examples". *Investopedia*.

Equity funding: all forms of funding where the investor or funder takes an ownership or equity share (preferred and/or common shares) of the start-up in exchange for funding, such as angel investment (including convertible debt) and venture capital (VC) investment.

Start-up ecosystem: the start-up ecosystem consists of start-ups, corporates, funding providers (including donors, venture capitalists, angel investors and others), universities and tech hubs, such as incubators and accelerators.

1.3 Understanding scale in LMICs

Pathways to scale

Each of the scaling journeys in this report tells the story of how an **innovation** (an idea that solves a problem and brings new value) balances the challenges of **expanding**, **adapting**, **replicating** and **sustaining** to achieve maximum socio-economic impact. These pathways to scale are illustrated in Figure 1.

Given that there is more than one way to scale, there should be more than one way to measure scale, particularly since **the addressable market and context differ for each start-up**. Therefore, it is advisable to understand the contextual constraints in which start-ups operate, as this will impact their ability to scale.

Measuring scale

The Wheeler Institute report, *Africa Fintech: Scale Prevalence*,[5] took the first step towards implementing a data-centric approach to the challenges of scale and investigating the factors impacting scale. This extensive report examined 716 FinTechs across Africa and found that, according to the definition used by the Wheeler Institute, only 37 or just over 5% had scaled.

The Wheeler Institute defines scale using four metrics: **number of end users, annual revenue, number of employees and cumulative funds raised**. Their report measured scale **prevalence** in absolute figures (such as total funding) rather than measuring the **scalability** of individual start-ups based on relative performance (such as a start-up's fundraising journey over time).

When analysing the scaling journeys of a smaller sample of start-ups, as in this report, it is more useful to consider funds raised over time rather than a cumulative fundraising total. This is because analysing a start-up's scaling journey over time provides the opportunity to glean insights from each step.

To measure scale in LMIC start-ups, it is helpful to delve more deeply into the four metrics outlined by the Wheeler Institute. This report focuses on just one of these metrics – cumulative funds raised – and studies it by **tracking the fundraising journeys** of selected start-ups in LMICs across Africa and Southeast Asia, and in several sectors.

Fundamentals of scaling

Regardless of the stage in a start-up's journey, there are five important factors that influence a start-up's scaling journey in LMICs.

1. **Business model scalability:** the pace and capacity for scale depends on a start-up's business model and targeted user segments. A company whose business model is unable to scale quickly will likely be outpaced by its competitors, while a business model that scales efficiently will be able to grow rapidly and become a market leader in its industry.

2. **Use of funds is just as important as raising funds:** raising funds is not a guarantee of success, as many start-ups still fail after raising funding. It is important to evaluate how capital was deployed to better understand how funds were used.

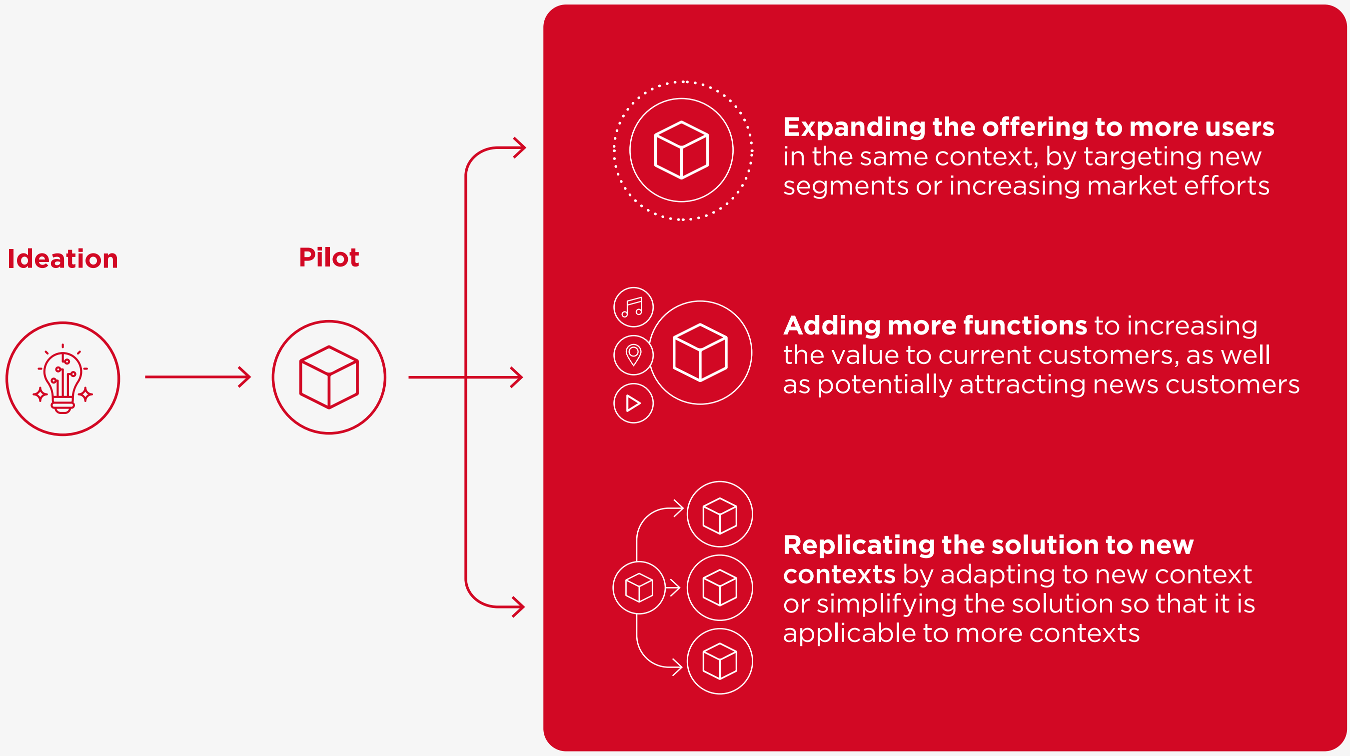
3. **Ecosystem enablers:** the potential to scale depends on several enabling factors, including economic readiness, regulation, digital infrastructure, digital talent and available investment and support. Although it is difficult to calculate, regulation will likely become more complex as efforts ramp up to regulate tech start-ups. More information about these enablers in the ASEAN context can be found here.

4. **Applying a gender lens:** it is crucial to understand where and why gender financing gaps occur, and this involves looking at the gender disparities in workload and household burdens and other socio-economic gaps,

5. Wheeler Institute for Business and Development. (2021). *Africa Fintech: Scale Prevalence*. London Business School.

Figure 1

Pathways to scale



Source: GSMA 2022

Note: the possible pathways listed above are not exhaustive.

discriminatory policies and cultural factors that inhibit women founders.

5. **Use relevant KPIs at the right stage:** tech start-ups are expected to grow rapidly, which means the metrics for measuring success will change as the start-up scales. Therefore, different key performance indicators (KPIs) should be prioritised by start-ups at each stage of their scaling journey.

1.4 Considering the gender financing gap

Global funding trends for female founders

Given that this report examines the fundraising journey over time, it is important to recognise that start-ups run by men receive more funding than start-ups run by women. This is known as the "gender financing gap" and is illustrated in Figure 2. The fundraising challenges that a founder faces will affect their overall ability to scale and ultimately impact their revenue, number of employees and end users.

It is crucial for funding institutions and investors to understand the global and local context of the gender financing gap, as this will help them identify where to focus their financial and technical support. It is also important for start-up founders to understand this financing gap to better prepare for their fundraising journey and identify the best types of financing and funders. Armed with an understanding of the gender financing gap, female founders can leverage their communities and support networks to identify the right funders to approach.

Venture capital funding for female founders

Venture capital funding has rapidly increased overall in recent years, but not at the same pace for female founders. According to The Big Deal,[6] **less than 1% of funding** in **Africa went to start-ups founded by a woman or all-women teams**. The primary source of capital for these ventures is **angel investment**. According to Deal Street Asia's latest report, **female founders and co-founders in**

6. Cuvellier, M. (25 January 2022). "This is a man's man's man's world". *Africa: The Big Deal*.

Figure 2

The gender financing gap

$109.36 billion
in venture capital raised globally by male start-up founders in 2018

$2.86 billion
in venture raised capital globally by female start-up founders in 2018

However, **women raised almost twice as much VC funding** in the first nine months of 2021 as they did in 2020 or 2019.

Much of the investment increase was concentrated in

Tech | **Health care** | **Retail**

	2019		2021
Percentage of general partners at VC firms who are women	12%	↑	15%
Active female angel investors in the global marketing	740	↑	1,000

Southeast Asia received $4.43 billion in funding in 2021, accounting for 17.2% of all private capital raised that year (an increase from 16.5% in 2020).[7] As of 2020, only 20% of venture-backed start-ups in ASEAN have at least one female founder.[8]

Understanding the gender financing gap

To properly assess the gender financing gap and take steps to close it, statistics are not enough. The reasons for the gender financing gap need to be understood by looking at the **nuances and barriers at the root of the problem**. This will be highlighted later in a case study of Sehat Kahani, a HealthTech start-up in Pakistan with two female co-founders.

Reasons for the gender financing gap include:

— **Gender bias:** It is well-documented that women entrepreneurs often face gender bias from investors, who are more likely to invest in a company if they share similar characteristics (such as gender or age). Global banking giant HSBC estimated that a third of female entrepreneurs globally face gender bias when raising funds.[9] Additionally, women in many LMIC markets are often not encouraged to pursue entrepreneurship as a career path, which can lead them to start their businesses with less capital and fewer resources.

— **Perceptions of different risk profiles:** A Harvard Business Review article noted that women are still perceived as more risk averse than men, which puts them at a disadvantage when they approach investors.[10] Another

7. Deal Street Asia. (8 March 2022). *Female Founders in Southeast Asia 2021*.
8. Akhil V. (8 December 2021). "Sequoia India selects first cohort of women-led startups for Sequoia Spark Fellowship". *CNBC*.
9. Taylor, C. (3 October 2019). "A third of the world's female entrepreneurs face gender bias from investors, HSBC claims". *CNBC*.

article[11] looked at how men and women process risk and reward differently in their decision-making,[12] stating that men are perceived to take more risks under stress than women. The article concludes that women are still at a disadvantage as a result of this perception and bias.

— **Similarity breeds connection:** Homophily, the tendency for people to seek out or be attracted to those similar to themselves, also contributes to the gender gap. In a joint World Economic Forum and Wharton School programme, management professor Ethan Mollick stated: *"People like people like themselves. VCs tend to be mostly male; they have friend networks that are mostly male. As a result, you have a very strong network of men who talk to each other, and it's very hard for a woman to get access to these people."* [13]

The **ability to raise funding**, especially commercial funding, is a very **useful measurement of scale** for start-ups in LMICs. It demonstrates that investors are convinced a solution has early traction and is based on a sustainable and scalable business model. This is explored in the following section.

10. Sundheim, D. (27 February 2013). "Do Women Take as Many Risks as Men? *Harvard Business Review*.
11. Mather, M and Lighthall, NR (January 31 2012) "Risk and Reward Are Processed Differently in Decisions Made Under Stress".
12. Mather, M. and Lighthall, N. (31 January 2012). "Risk and Reward are Processed Differently in Decisions Made Under Stress". *Journal of Current Directions in Psychological Science*.
13. Mollick, E. (14 December 2015). "Why are there More Male Entrepreneurs than Female Ones?" *Knowledge at Wharton*.

2 The fundraising journeys of start-ups in the GSMA Innovation Fund portfolio

2.1. Fundraising journeys of start-ups

The following snapshots of 21 start-ups in the GSMA portfolio are grouped by sector and focus on one metric – **fundraising** – which is evaluated over time.

AGRITECH (INCLUDING AQUAPONICS)

SECTOR
AgriTech
Founded 2015
Ghana

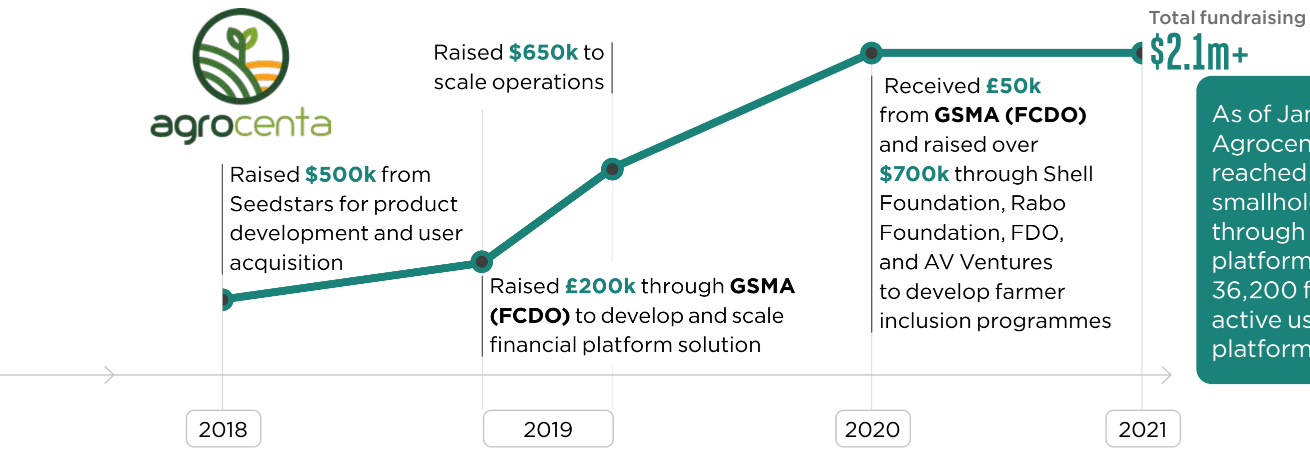
PROFILE
Online sales platform providing smallholder farmers with market information, storage and delivery solutions and access to finance services

KEY PRODUCTS
CropChain / LendIt

FOUNDER(S)
Francis Obirikorang
Michael K. Ocansey

BUSINESS MODEL
SaaS (Software as a Service)

GENDER IMPACT
Two female employees out of 11 employees; women make up 50% of the smallholder farmer population



As of January 2020, Agrocenta has reached over 3,500 smallholder farmers through the AgroPay platform and over 36,200 farmers are active users on the platform.

SECTOR
AgriTech (aquaponics)
Founded 2013
Indonesia

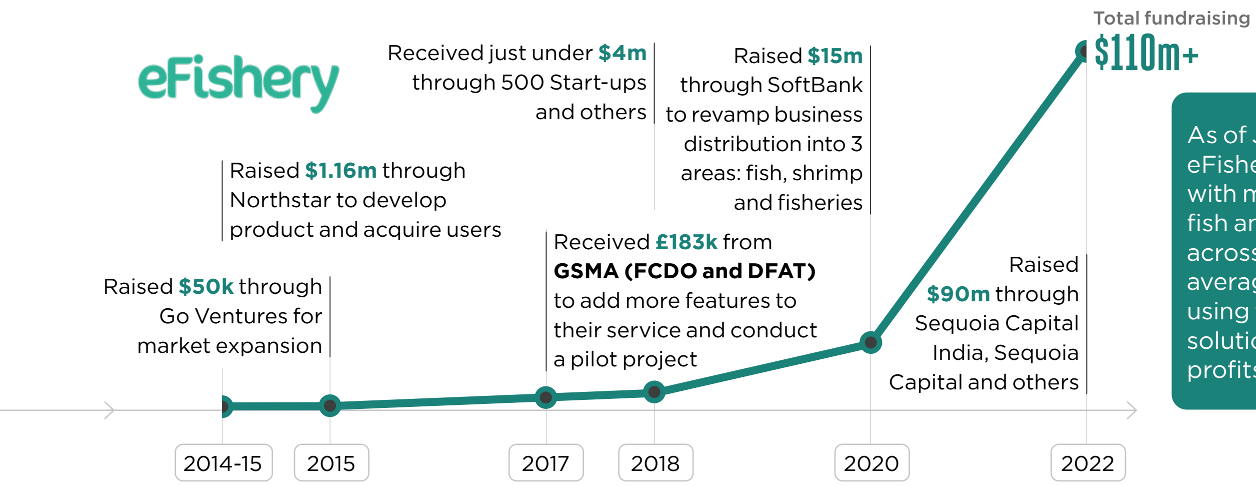
PROFILE
IoT-based aquaculture company serving fish and shrimp farmers to reduce inequalities

KEY PRODUCTS
Fish farming software platform and ecosystem for fish and shrimp cultivators, buyers and consumers

FOUNDER(S)
Gibran Huzaifah
Chrisna Aditya

BUSINESS MODEL
B2C SaaS

GENDER IMPACT
Farmers in Indonesia's aquaculture market are 94.3% male and 5.7% female



As of January 2020, eFishery has worked with more than 23,000 fish and shrimp ponds across Indonesia. On average, fish farmers using the eFishery solution have increased profits by over 20%.

SECTOR
AgriTech
Founded 2013
Kenya

FOUNDER(S)
Samir Ibrahim

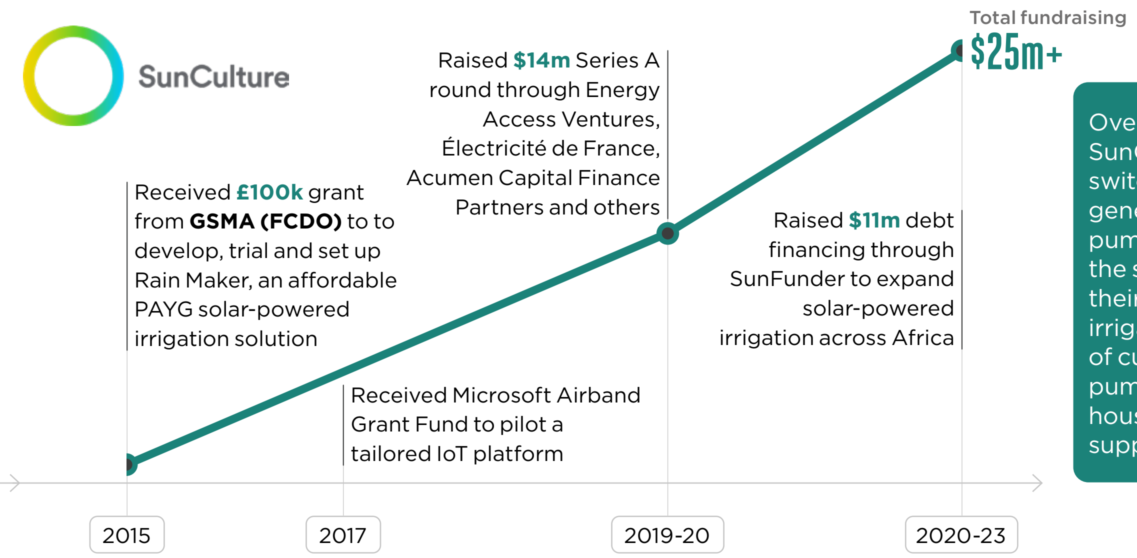
PROFILE
Provides solar-powered drip irrigation systems to support farmers' growth in an accessible, energy-efficient and sustainable way

BUSINESS MODEL
Pay-As-You-Go (PAYG)

KEY PRODUCTS
ClimateSmart Direct, ClimateSmart Battery + TV, RAinMaker2C Kubwa, RainMaker2 with ClimateSmart Battery

GENDER IMPACT
50% female employees

SunCulture



Over 26% of SunCulture's customers switched from diesel-generated water pumps to using the solar pump as their main source of irrigation, while 70% of customers use the pump to get their household water supply.

SECTOR
AgriTech
Founded 2013
Kenya

FOUNDER(S)
Peter Njonjo
Grant Brooke

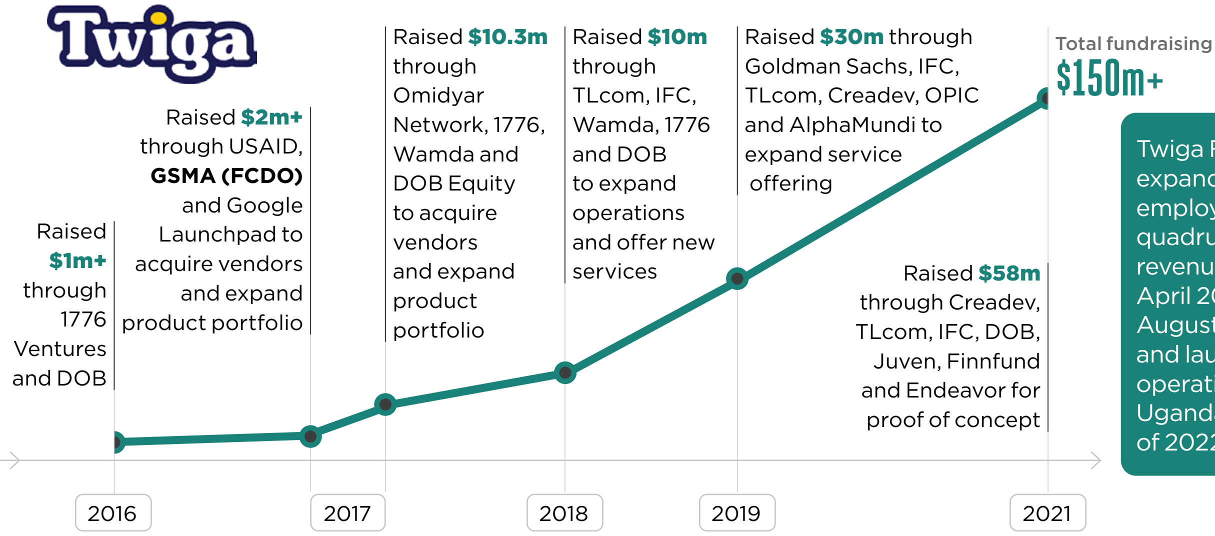
PROFILE
Mobile-based B2B platform that simplifies the supply chain between fresh food producers, FMCG manufacaturers and retailers

BUSINESS MODEL
Leverages technology to match suppliers (farmers) to buyers (vendors) and manages product flows and inventory as the intermediary scales

KEY PRODUCTS
Soko Yetu App
Sokolytics

GENDER IMPACT
Twiga Foods empowers a network of mostly female vendors to increase sales and profits, and it has internal initiatives to enhance female employees' career paths

Twiga



Twiga Foods expanded to 1,000 employees in 2021, quadrupled its revenues between April 2020 and August 2021, and launched operations in Uganda at the end of 2022.

CIVICTECH

SECTOR
CivicTech
Founded 2014
Indonesia

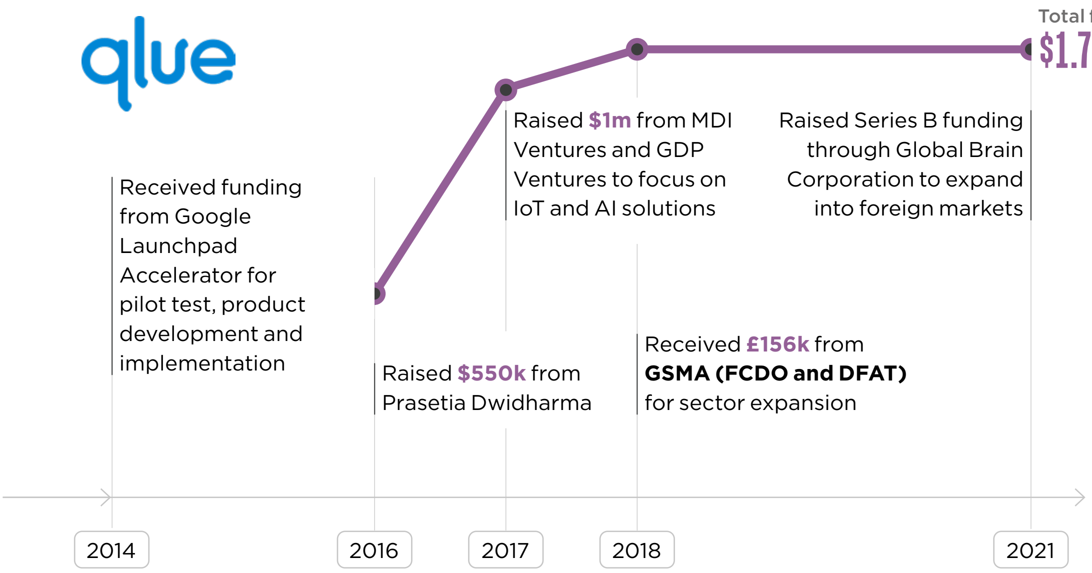
PROFILE
Hardware and software smart-city solution for governments and citizens

KEY PRODUCTS
Smart enterprise for governments; smart city app for citizens

FOUNDER(S)
Rama Raditya

BUSINESS MODEL
B2G SaaS – licensing for governments

GENDER IMPACT
Female company president



As of January 2020, Qlue has channelled more than 1 million reports from over 640,000 registered app users across Indonesia.

SECTOR
CivicTech
Founded 2014
Senegal

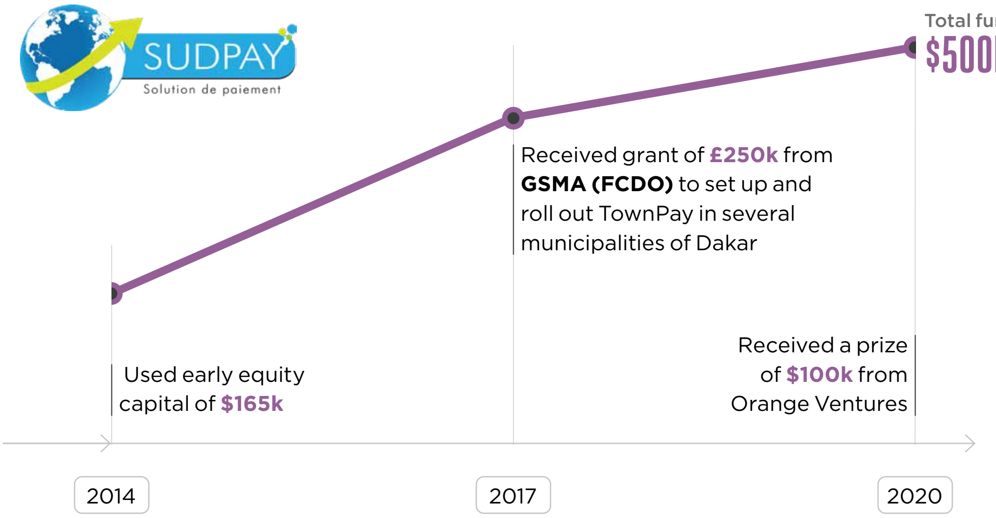
PROFILE
Providing mobile and ticketing services that allow authorities to track tax payments from MSMEs

KEY PRODUCTS
TownPay
TTS-Trans
TTS-Event
TTS-Market

FOUNDER(S)
Samba Sow
Pathé Faye

BUSINESS MODEL
B2B and B2G SaaS

GENDER IMPACT
During the GSMA grant period, one-third of registered users were women



As of January 2020, nine municipalities have signed up for the service. More than 24,000 merchants have been enrolled since April 2018 and more than half have already paid their taxes using the solution since tax collection started in late June 2018.

SECTOR

EdTech
Founded 2011
Côte d'Ivoire
Kenya

FOUNDER(S)

Wambura Kimunyu

PROFILE

EdTech providing curriculum in all subjects for primary and secondary learners on any device

BUSINESS MODEL

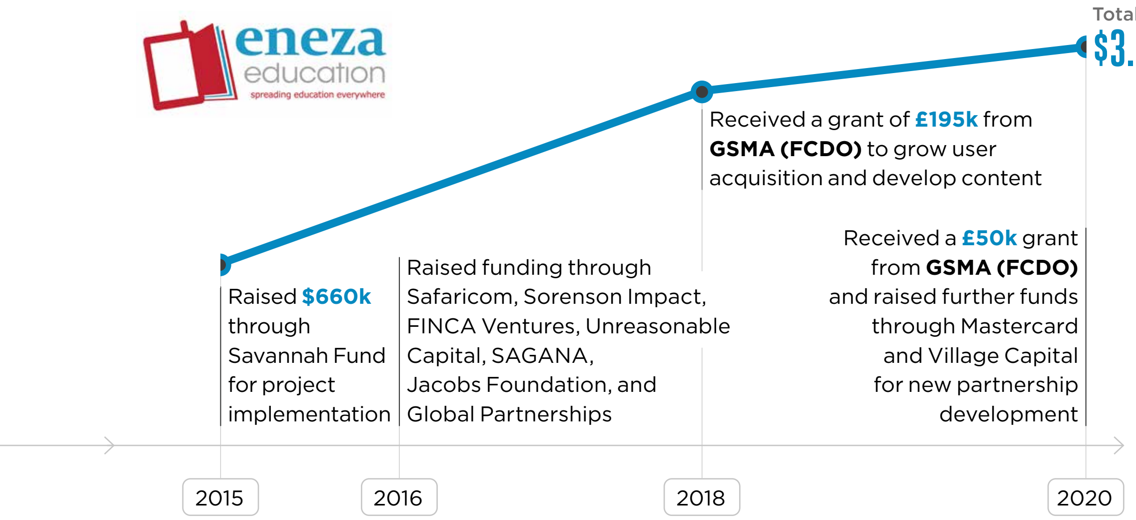
B2C SaaS – daily, weekly, monthly and quarterly fees; expanding into B2B and B2G annual agreements

KEY PRODUCTS

e-learning platform; Virtual tutor via SMS and web

GENDER IMPACT

Female founder and female CFO



As of March 2020, Eneza had increased the number of users on the platform in Côte d'Ivoire to 27,545. The start-up has successfully integrated literary education with IVR and improved the service through distance learning via SMS.

SECTOR

EdTech
Founded 2014
Indonesia

PROFILE

EdTech platform to pair students with tutors + educational materials

KEY PRODUCTS

Kurus Ruangguru / Dafr Lulu 12 / Roboguru / Brain Academy / Skills Academy

FOUNDER(S)

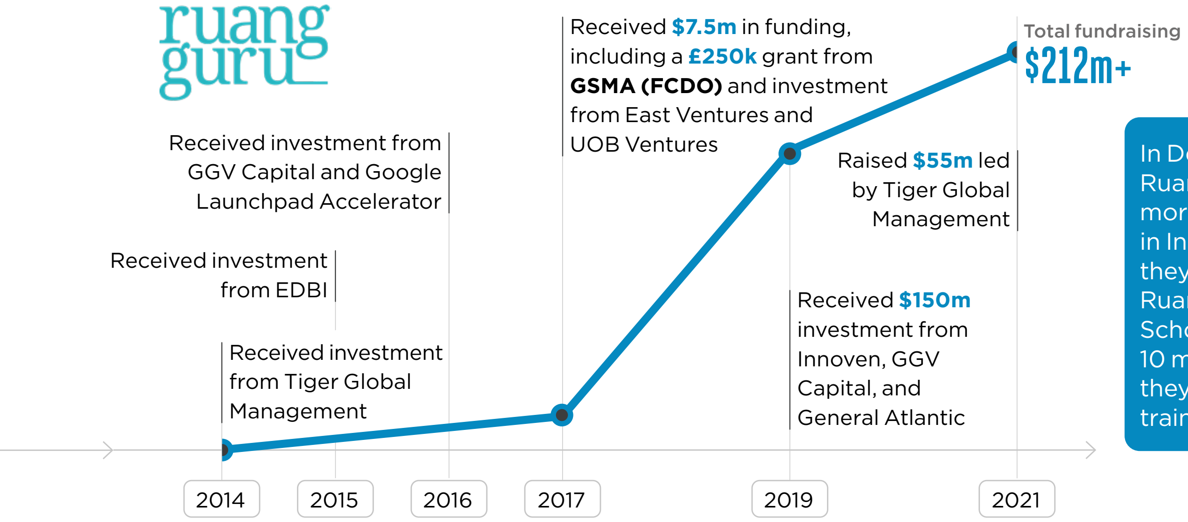
Adamas Belva Syah Devara
Mohammed Usman

BUSINESS MODEL

B2C course packages
SaaS + revenue share

GENDER IMPACT

More than 30% of their users are female



In December 2020, Ruangguru had served more than 22 million users in Indonesia. In 2020 they also launched the Ruangguru Free Online School, used by more than 10 million students, and they opened 250 teacher training modules.

ENERGY

SECTOR
Utilities (energy)
Founded 2010
Nepal

PROFILE
Solar-powered tech distributor (water pumps and grids)

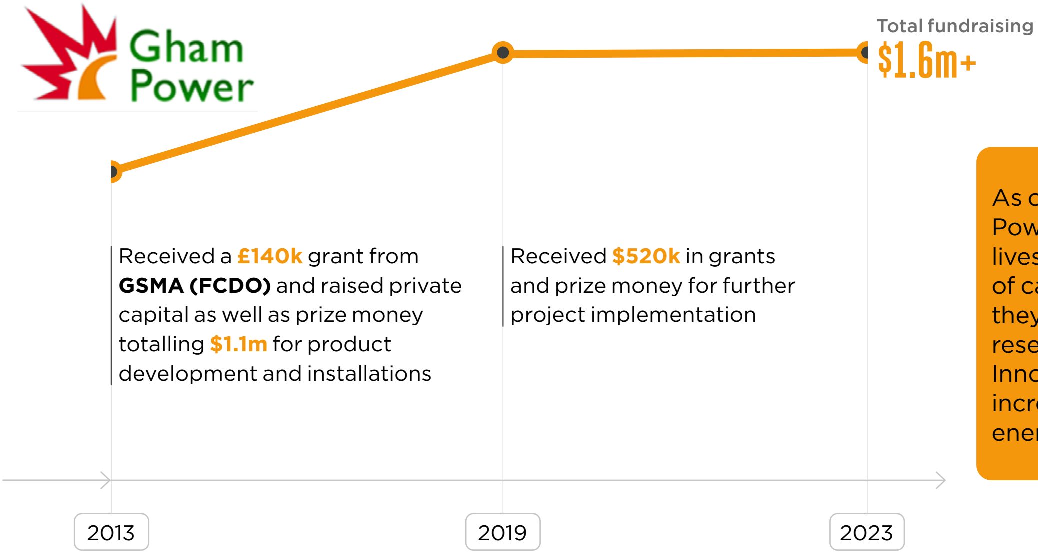
KEY PRODUCTS
Solar pump; SaaS-based platform

FOUNDER(S)
Sandeep Giri

BUSINESS MODEL
B2G/B2B hardware sales, moving to SaaS

GENDER IMPACT
10% female employees

Gham Power



As of December 2022, Gham Power has impacted 16,475 lives and curbed 2,830 tonnes of carbon dioxide. In 2022, they launched a multi-year research project with UK Innovate called GRIPS, to increase the reliability of clean energy supply.

SECTOR
Utilities (energy)
Founded 2015
Tanzania

PROFILE
Designs, manufactures, and distributes LPG gas canisters for clean cooking

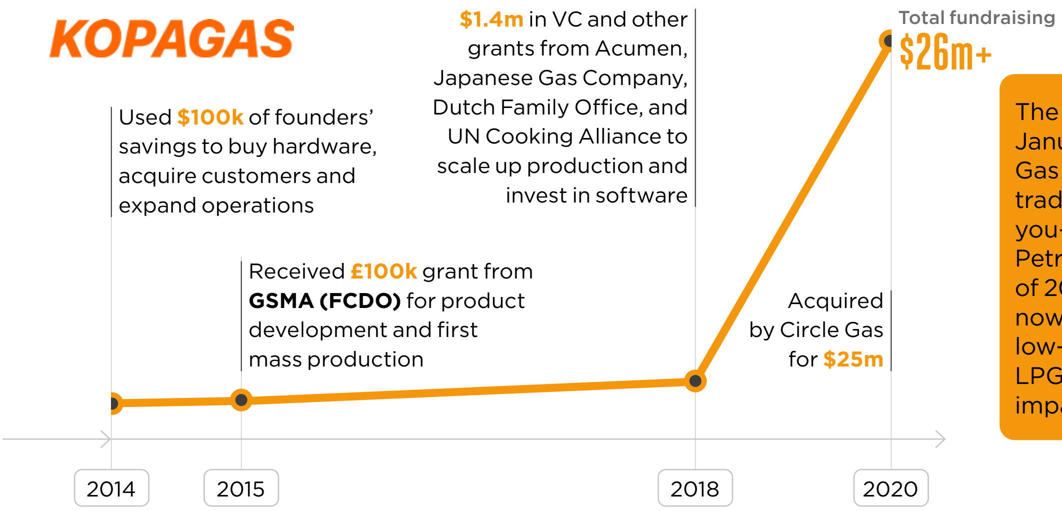
KEY PRODUCTS
Smart meter device on top of cylinder

FOUNDER(S)
Andron Mendes
Sebastian Rodriguez

BUSINESS MODEL
Direct-to-customer business models via smart meters and PAYG

GENDER IMPACT
Clean cooking solutions significantly benefit majority female users

KOPAGAS



The $25m acquisition in January 2020 gave Circle Gas access to KOPAGAS's trademarked Pay-as-you-go (PAYG) Liquefied Petroleum Gas (LPG). As of 2020, KOPAGAS has now connected 1,300 low-income households to LPG-fueled clean cooking, impacting 6,500 lives.

SECTOR
Utilities (energy)
Founded 2014
Nigeria

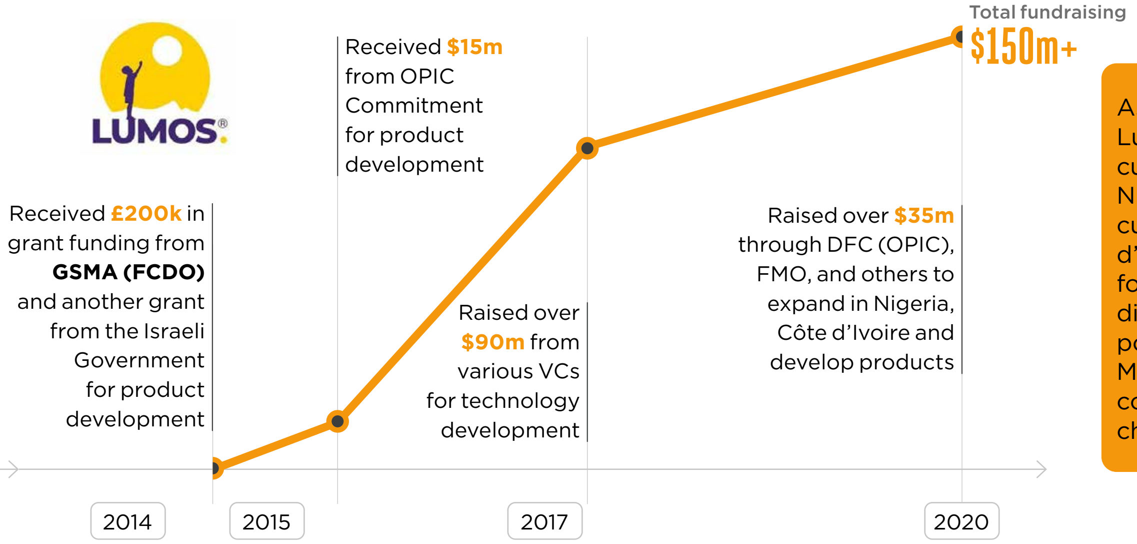
FOUNDER(S)
Davidi Vortman
Ron Margalit

PROFILE
Market-leading provider of high-quality solar home systems (SHS)

BUSINESS MODEL
Selling SHS to household consumers and PAYG for usage

KEY PRODUCTS
Lumos Eco
Lumos Prime – SHS (solar panels and battery)

GENDER IMPACT
Women in particular benefit from Lumos' reliable energy as less time and effort is needed for household tasks



As of early 2022, Lumos has 100,000 customers in Nigeria and 30,000 customers in Côte d'Ivoire. They have found benefits in diversifying product portfolios beyond MNOs through complementary channels.

SECTOR
Utilities (energy)
Founded 2014
Bangladesh

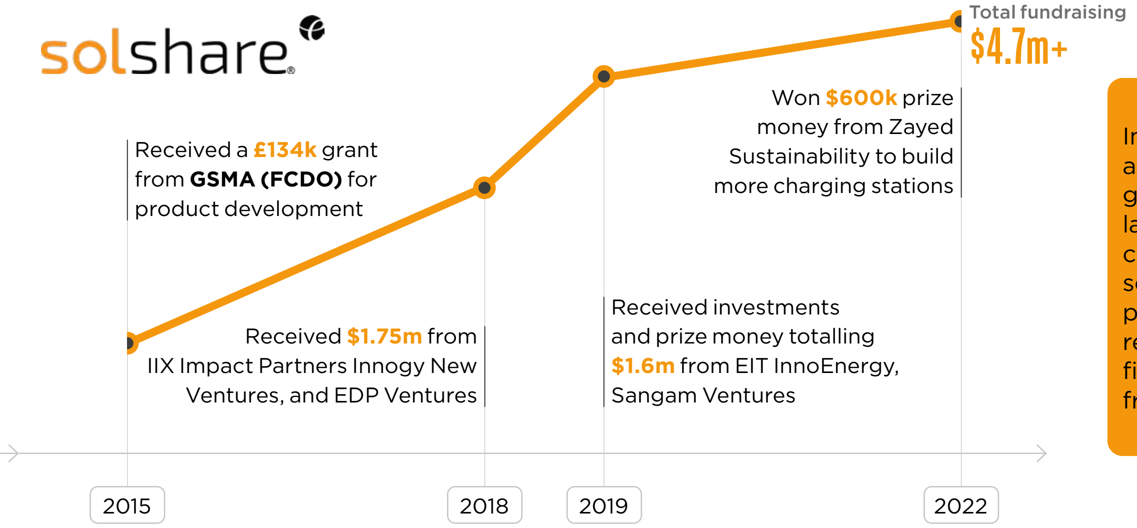
FOUNDER(S)
Daniel Ciganovic
Sebastian Groh

PROFILE
Peer-to-peer solar energy trading platforms based on distributed ledger technology

BUSINESS MODEL
B2C – SaaS; battery financing; remote battery monitoring; leasing with PAYG

GENDER IMPACT
38% women employees

KEY PRODUCTS
Peer-to-peer microgrids consist of the SOLbox (meter), the SOLapp (customer portfolio management) and the SOLweb (systems analysis)



In 2021, SolShare activated their 100th grid. EV charging launched with 6 EV charging stations solar rooftop project, and they received £300,000 financial support from FCDO.

SECTOR
Utilities (energy)
Founded 2013
Zambia

PROFILE
Providing energy and electricity for low-income/ rural homes in Zambia

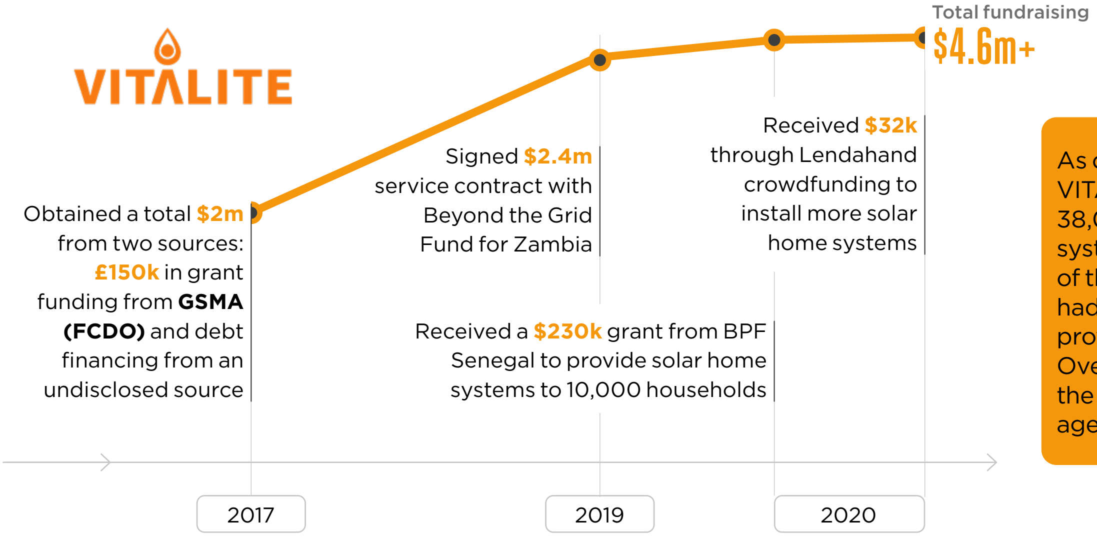
KEY PRODUCTS
SHS – includes everything from lighting to solar water pumps for agriculture

FOUNDER(S)
John Fay
Sam Bell
Mike Matokwani

BUSINESS MODEL
Fully integrated PAYG

GENDER IMPACT
Customer segments
- First-time smartphone users: 56/23 male/female
- Add-on services (PAYG customers): 39/47 male/female

VITALITE



As of October 2020, VITALITE has sold over 38,000 solar home systems. By the end of the grant VITALITE had a presence in nine provinces with 32 shops. Over the same period, the number of sales agents doubled to 500.

FINTECH

SECTOR
FinTech
Founded 2014
Uganda

PROFILE
Cloud-based core banking software for SACCOs, savings groups, farmers

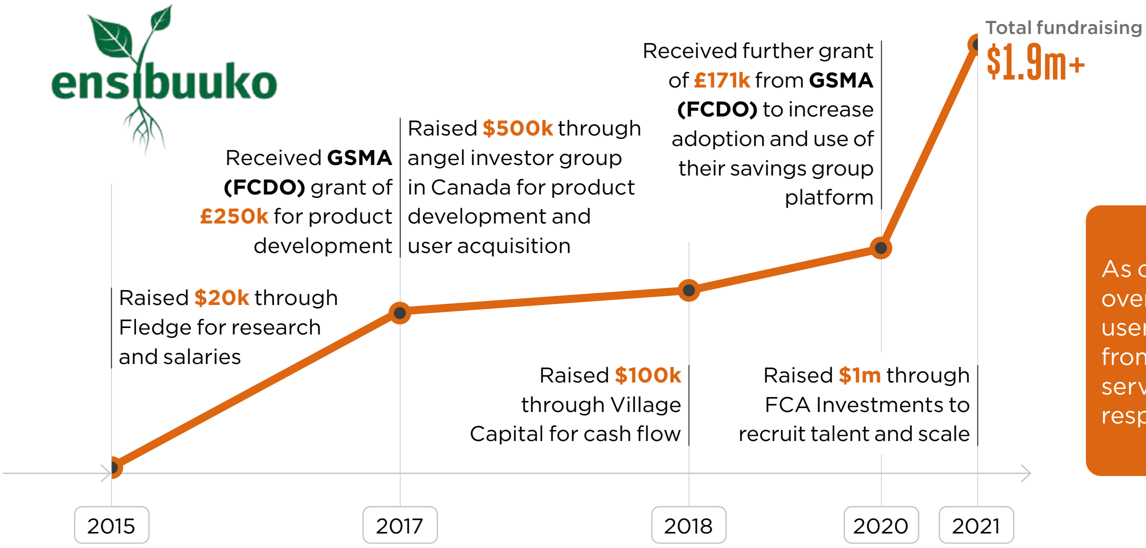
KEY PRODUCTS
Mobis (microfinance management platform); mobile money, crop Insurance

FOUNDER(S)
Gerald Otim
Opio Obwangamoi David

BUSINESS MODEL
B2B SaaS – annual license
Mobile money – commission
Crop insurance – commission

GENDER IMPACT
Ensibuuko digitalises community savings groups for rural customers, particularly women

ensibuuko



As of January 2020, over 230,900 end users have benefited from Ensibuuko's service through their respective SACCOs.

SECTOR
HealthTech
Founded 2016
Benin

PROFILE
Provides easy access to medical information by interconnecting in a universal medical ID directory platform

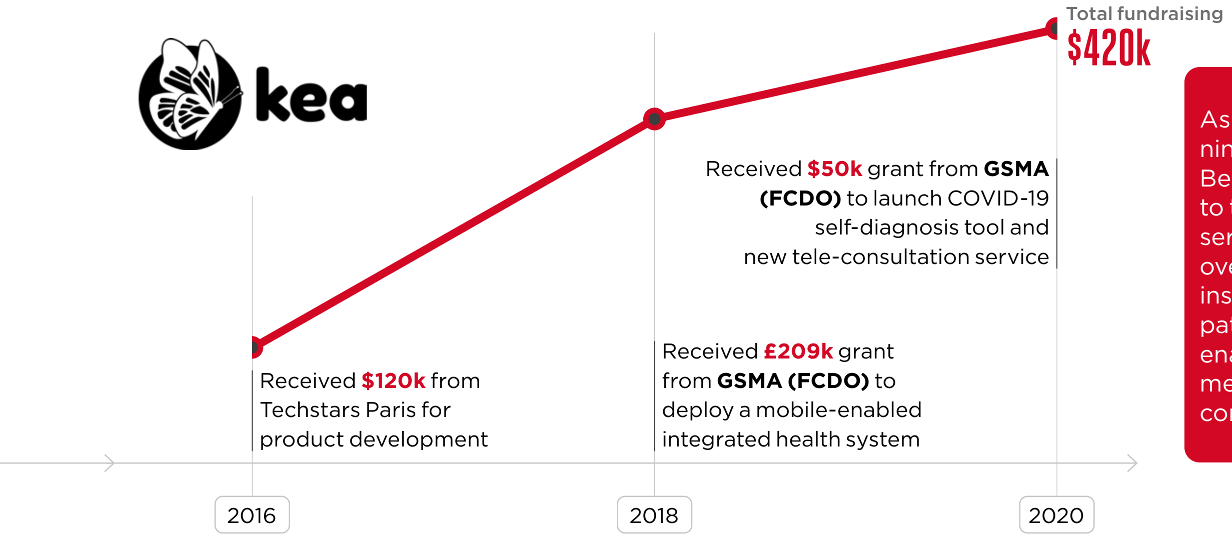
KEY PRODUCTS
Hospital Information System (HIS)

FOUNDER(S)
Dr. Vèna Arielle Ahouansou

BUSINESS MODEL
DBaaS (Database as a service)

GENDER IMPACT
Solo female founder; improved health outcomes for women

kea



As of January 2020, nine municipalities in Benin have signed up to the Kea Medicals service. This includes over 80 health institutions, 15,000 patients which enables over 4,500 medical monthly consultations.

SECTOR
HealthTech
Founded 2016
Sri Lanka

PROFILE
Teleconsultation health platform for businesses and consumers

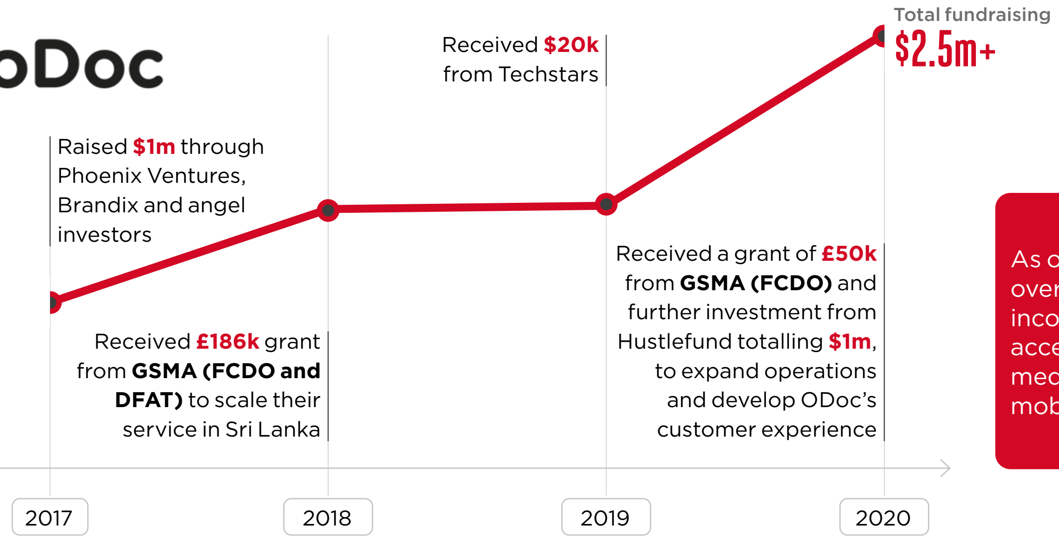
KEY PRODUCTS
oDoc app for patients to consult SLMC-registered doctors via video, audio or text

FOUNDER(S)
Heshan Fernando, Ashik Bari, Sohan Dharmaraja, Nare Bandaranayake, Janaka Wickramasinghe

BUSINESS MODEL
B2B SaaS with annual license + B2C SaaS on demand

GENDER IMPACT
60/40 male/female employees

oDoc



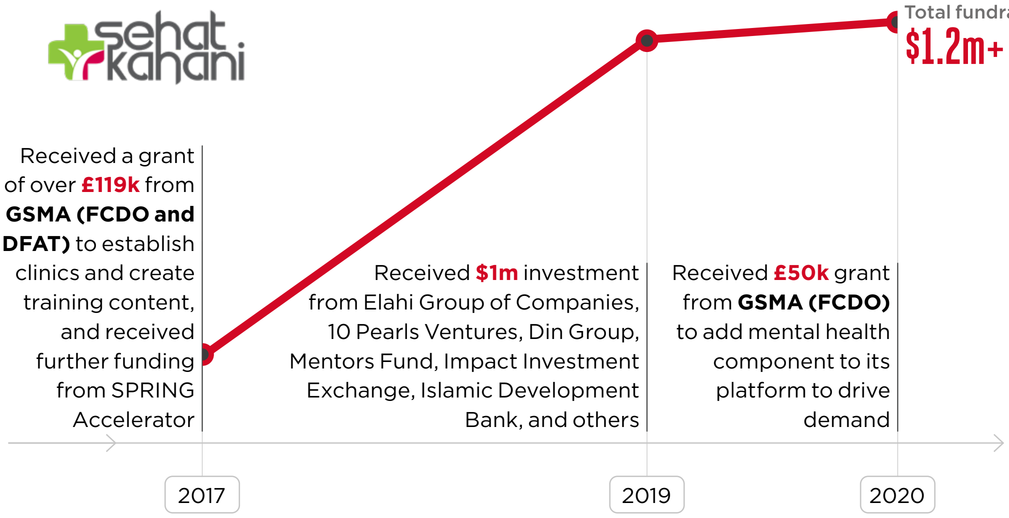
As of January 2020, over 120,000 low-income workers have access to oDoc's medical consultation mobile app.

SECTOR	PROFILE	KEY PRODUCTS
HealthTech Founded 2017 **Pakistan**	A telemedicine start-up enabling quick access to physicians through online consultations	E-health clinics and e-health app; mental health training and women's empowerment/capacity building

FOUNDER(S)
Dr. Sara Saeed
Dr. Iffat Zafar

BUSINESS MODEL
SaaS model for app; payments at physical clinics

GENDER IMPACT
An all-female health provider network; both co-founders are women; majority female patients



As of January 2020, Sehat Kahani's 26 e-health centres have facilitated over 120,000 successful consultations. Over 1,500 female physicians are serving on the platform and there are over 120,000 registered users using the e-health clinics and the mobile app.

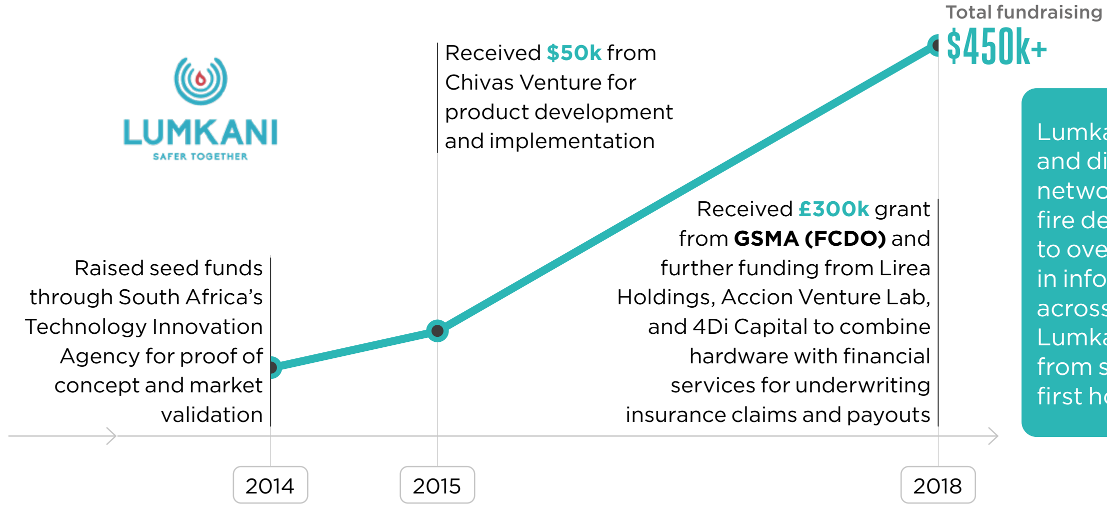
INSURTECH (FIRE SAFETY)

SECTOR	PROFILE	KEY PRODUCTS
InsurTech (fire safety) Founded 2014 **South Africa**	Provides IoT fire prevention devices to reduce shack fires in informal settlements, as well as home and funeral insurance	IoT fire prevention devices; micro-insurance; funeral cover policy

FOUNDER(S)
Francois Petousis
David Gluckman
Emily Vining

BUSINESS MODEL
B2C, monthly subscriptions

GENDER IMPACT
A female co-founder



Lumkani has developed and distributed their networked early warning fire detection system to over 40,000 homes in informal settlements across South Arica. Lumkani has limited fires from spreading beyond the first home in 94% of cases.

SECTOR
Utilities (water)
Founded 2015
Niger

FOUNDER(S)
Gregoire Landel

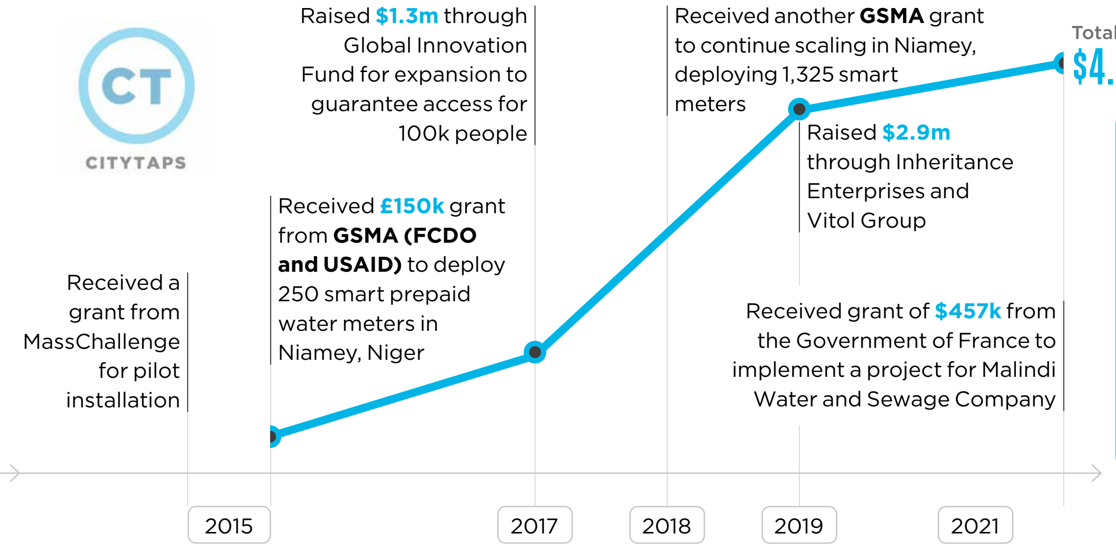
PROFILE
Utility service that provides smart and prepaid water meters and billing software

BUSINESS MODEL
B2G leases with utilities; PAYG for B2C

KEY PRODUCTS
CTSuite of smart water prepayment, monitoring and payments

GENDER IMPACT
Female CTO, and they actively try to recruit women staff

CITYTAPS



As of 2022, CityTaps has supplied over 10,000 smart PAYG water meters working with 14 utilities across seven markets, including Kenya, Namibia, Senegal, and Tanzania.

SECTOR
Utilities (water)
Founded 2013
Bangladesh

FOUNDER(S)
Minhaj Chowdhury

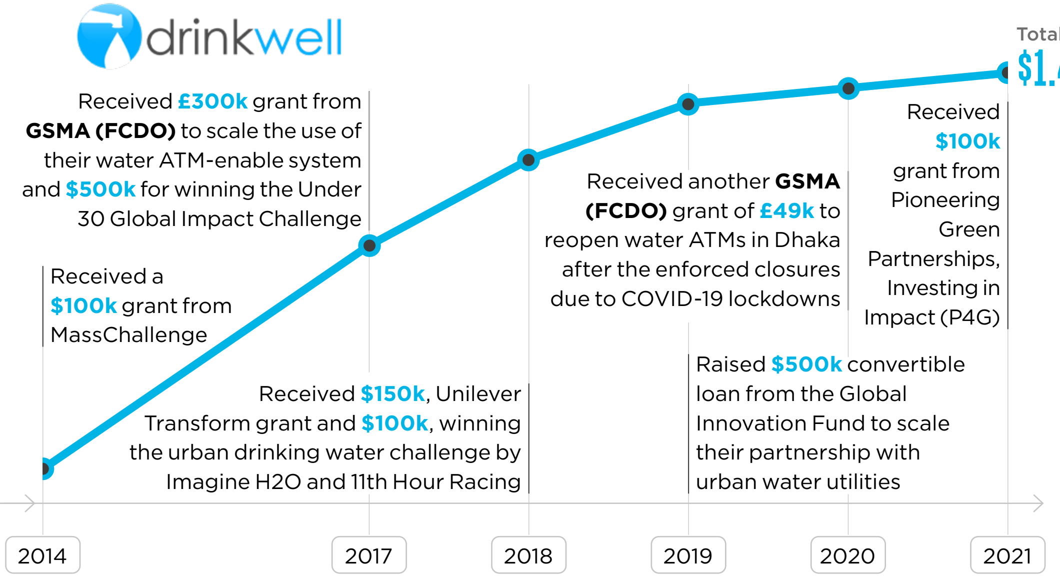
PROFILE
Water technology company helping utilities provide water services to customers beyond the pipe

BUSINESS MODEL
Revenue-share model in which utilities charge for usage at Drinkwell's installed water ATMs

KEY PRODUCTS
Water ATM using IoT and filtration technology, providing an end-to-end experience for customers

GENDER IMPACT
Access to water ATMs helps alleviate the burden of water collection for women and girls who bear the brunt of this labour

drinkwell



Beyond scaling in Dhaka to over 150 systems and growing its partnership with Dhaka WASA, Drinkwell received support from the World Bank and Imagine H2O to pilot its model in Chittagong. Drinkwell secured a commitment of 100+ community-scale water ATMs with the utility.

SECTOR
Utilities (water)
Founded 2015
Mali

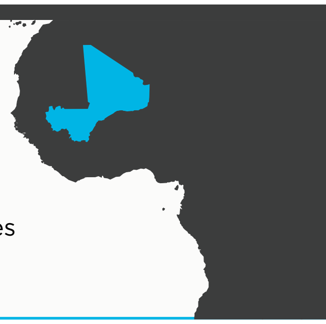
FOUNDER(S)
Mikael Dupuis

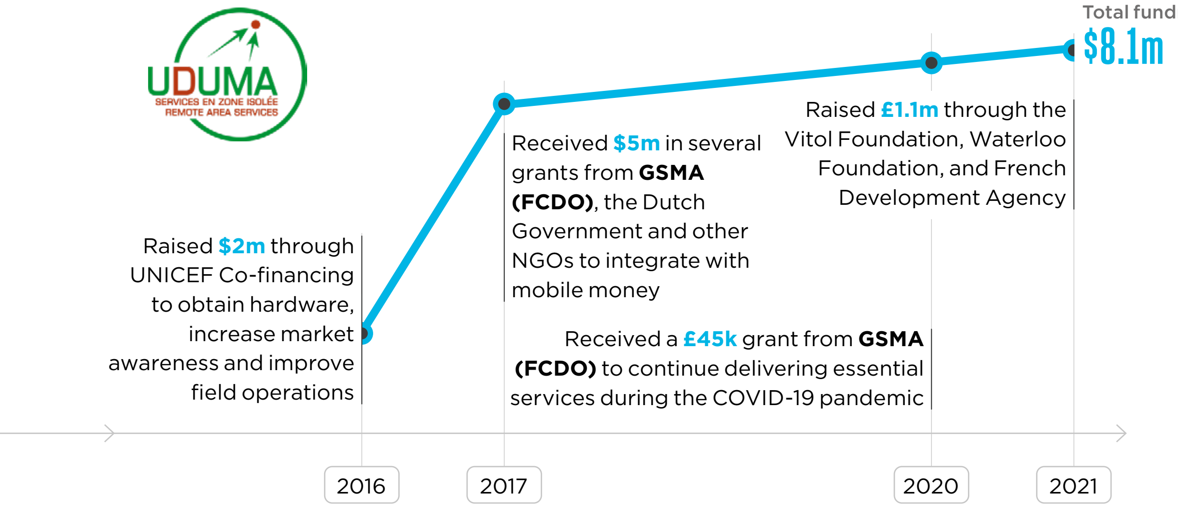
PROFILE
A unit of Odial Solutions Group, Uduma provides water distribution points for rural communities in Africa

BUSINESS MODEL
PAYG, Pay-As-You-Fetch (PAYF) for water distribution points (e.g., hand pumps, collection points)

KEY PRODUCTS
Water distribution points, water meters, cashless water and payment system

GENDER IMPACT
Water distribution points alleviates the burden of manually fetching water for women





As of February 2020, Uduma established 244 water points in Burkina Faso and 30 water points in Mali. Through this pilot, Uduma was able to impact over 13,400 consumers with improved water services.

2.2. The catalytic role of the GSMA

2.2.1. Grant funding

As mentioned earlier, one of the fundamentals of scaling is that the use of funds is just as important as raising funds. Figure 3 shows the various ways the 21 featured portfolio start-ups used their grant funding.

2.2.2 Beyond funding: technical assistance, partnerships, and events

The catalytic funding and support provided by the GSMA has helped start-ups de-risk their projects and use these resources to build, test and iterate new business models, which ultimately unlocked additional funding. Now, there are early indications of scale, such as paying customers and product adoption. Support from the GSMA has also helped start-ups craft a better value proposition for the market and potential partnerships with MNOs and other key stakeholders.

To help start-ups build the knowledge, experience and relationships critical to growth and future funding, the GSMA paired financial backing is paired with other types of assistance, such as advisory support and mentorship. This support was tailored to the start-up's unique circumstances and market requirements. In general, GSMA technical assistance falls into three categories:

1. Navigating MNO business ecosystems and establishing MNO partnerships

Once start-ups understand the value of collaborating with an MNO, they can begin pursuing a partnership. Securing a partnership is a powerful indication that a start-up has a strong value proposition for the market and the ability to attract additional funding, which creates a positive network effect. Strategic partnerships can boost the reputation of a start-up among funders and investors, and potential partners will evaluate a start-up based on previous funding, creating a virtuous cycle of growth.

Partnerships with MNOs allow better market access, which in turn enable start-ups to generate more revenue from their core business. In some cases (such as Qlue and Telkom Indonesia), MNOs have also invested directly in their start-up partner. Table 1 describes the MNO partnerships forged with the start-ups in this report.

Securing an MNO partnership is not easily accomplished. One challenge is the time it takes to establish successful relationships due to high levels of bureaucracy at MNOs. There are also often conflicting visions and strategies, as MNOs may consider a start-up's approach too risky. While it can be difficult to engage with MNOs, and it is not always clear where the synergies are, it is evident that securing a partnership is an important enabler of scale as it gives start-ups access to a large customer base, universal communication channels and relevant payment infrastructure. These and other benefits are explored in this report.

2. Networking and investor outreach

One activity that has been particularly valuable for start-ups is the hosting of live events. Convening portfolio start-ups and MNOs in joint planning exercises and workshops allows them to deepen and strengthen connections that lead to follow-up discussions and potential investment or partnerships. These in-person events also help to build trust and credibility, as demonstrated in the following examples.

— **Sehat Kahani** shared that the GSMA grant helped them access additional funding by networking with several partners and access opportunities they had previously been unaware of. The GSMA-funded project was an endorsement of their work, which gave them credibility with other investors and international organisations.

— **Agrocenta** noted that the GSMA grant helped them unlock additional funding from the Alliance for a Green Revolution in Africa (AGRA) to grow their AgroPay platform.

— The **eFishery** team said the GSMA seed funding helped them gain traction and develop a more robust solution, and GSMA's endorsement helped attract new investors. In 2020, the team announced their Series B round of funding.

Figure 3

How GSMA portfolio start-ups used their grant funding

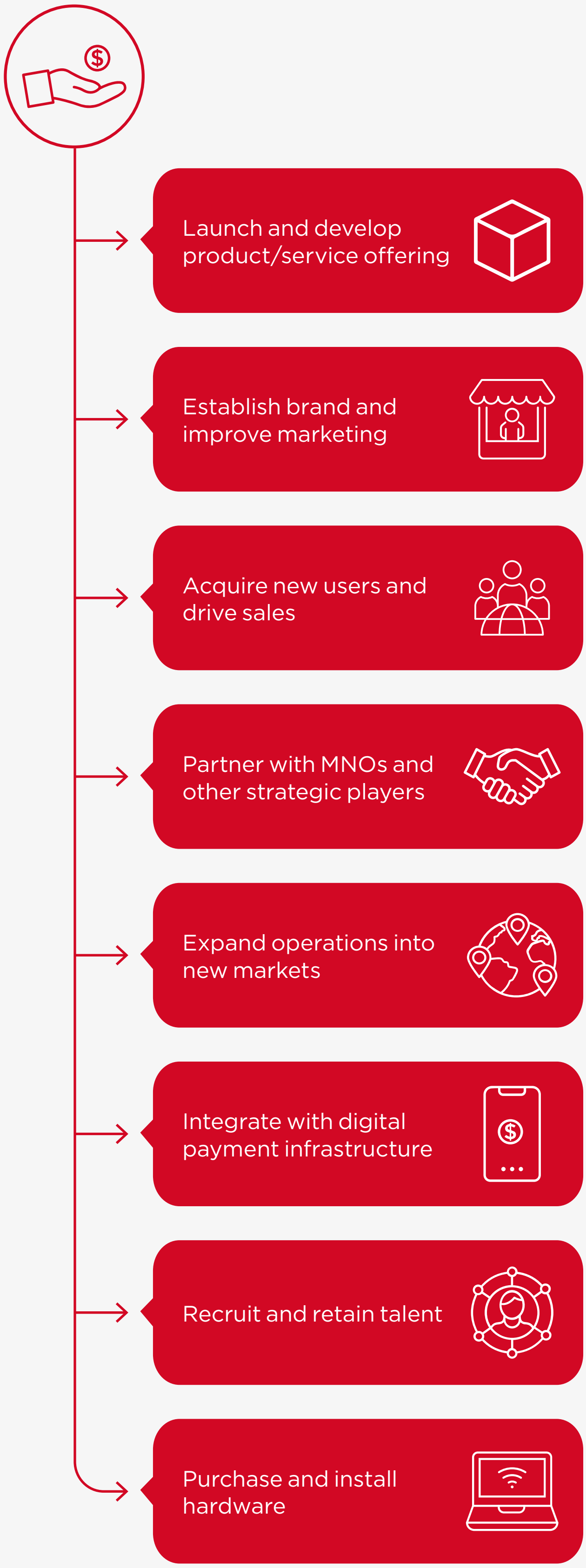


Table 1

MNO partnerships with GSMA portfolio start-ups

Start-up	Description	MNO partnership
Drinkwell	Provides safe drinking water via mobile-enabled water ATMs	Drinkwell uses MNO **Robi's** service to remotely monitor staff using SIM-enabled location tracking services. Reported errors with the water ATMs are then assigned to service engineers in the vicinity, rather than calling each one to check their availability and proximity to the ATM. This has reduced response times by approximately 20 minutes.
eFishery	Provides IoT-based smart fish feeding machines for commercial aquaculture	eFishery partnered with Indonesia's largest MNO, **Telkomsel**, through the Telkomsel Innovation Center (TINC). Through the TINC, Telkomsel and eFishery are developing narrowband-IoT (NB-IoT) devices for the aquaculture sector. Each smart feeder requires a SIM card and internet access to perform all its functions.
Ensibuuko	Mobile money and cloud solution that helps SACCOs mobilise and manage savings to offer credit efficiently	Ensibuuko has a partnership with **Airtel Uganda** and **MTN Uganda**. Airtel provides a discounted mobile data package to Ensibuuko's SACCOs/VSLAs to ensure their Mobis cloud platform is always connected to the internet. Ensibuuko also integrated with Airtel's mobile money API to allow their users to make payments and withdrawals using their mobile money accounts. In 2018, Ensibuuko partnered with MTN Uganda Mobile Money to allow SACCO/VSLA managers to disburse loans to members and enable users to make loan repayments through the Mobis platform. By leveraging mobile money, Ensibuuko has reduced the time it takes users to make a deposit to their SACCO/VSLA by up to 50%.
Gham Power	Solar start-up that installs and maintains solar microgrids and commercial off-grid systems	**Ncell** supported Gham Power by investing in the installation of new telecom towers with 2G connectivity near microgrid installations in Harkapur and Chyasmitar. Ncell signed a power purchase agreement (PPA) with Gham Power for the microgrid to supply energy to two telecom towers in these communities. This PPA between an off-grid energy service provider and a telecom operator was the first of its kind in Nepal.
Lumos	Mobile-enabled solar home systems providing PAYG solar	MTN Mobile Electricity, an **MTN** and Lumos co-branded service, offers off-grid customers in Nigeria energy-as-a-service via solar home systems. This PAYG model is enabled by using airtime credit and GSM-based machine-to-machine (M2M) connectivity to remotely control and monitor SHS usage, billing and performance.
Ruangguru	EdTech platform pairing students and teachers with content tailored to the national curriculum	In 2017, Ruangguru partnered with **Telkom Indonesia**. Telkom agents promote Ruangguru products through the operator's marketing channels (call centres and door-to-door sales). Ruangguru then partnered with Telkomsel's prepaid youth brand, Loop, to launch a campaign giving users 1GB of data and 2GB of free data to access Ruangguru's educational content on the web and mobile. Ruangguru has also begun feeding their content into Telkomsel Loop's educational portal, Ensikloopedia.

Figure 4

Leveraging MNO assets to expand into other countries: Eneza Education

In 2011, EdTech start-up Eneza Education launched in Kenya, using familiar and low-cost APIs to build an online education ecosystem. Eneza uses USSD and SMS technology, which are available to students using basic mobile phones.

Using MNO messaging APIs to leverage these low-cost technologies helped Eneza expand into five African countries. These partnerships are a win-win for Eneza and MNOs, which can use existing mobile technology that can give them a wide reach, enabling faster market launches compared to other, more complex mobile technology services.

Timeline of Eneza Education's expansion into five African countries

2016

In 2016, Eneza partnered with Safaricom in **Kenya**, launching their service Shupavu291.

2017

Through a partnership with MTN, Eneza launched operations in **Ghana** and partnered with Airtel Tigo later that year.

2017

The GSMA supported Eneza Education to develop another partnership with Safaricom in Kenya (their initial partnership with Safaricom was established before the GSMA grant).

2018

Eneza Education (iEduk) signed a contract with Orange Group and signed a revenue-sharing agreement with Orange **Côte d'Ivoire**. Orange opened their SMS and billing APIs to allow iEduk users to access and pay for content using prepaid mobile phone credit.

2018

Eneza received a grant from the GSMA to expand their solution to Côte d'Ivoire, improving platform quality, raising awareness through a rewards system and creating content and an interactive voice response (IVR) channel. The GSMA also assisted Eneza in their engagement with MTN Côte d'Ivoire.

2020

By the end of the GSMA grant in March 2020, Eneza had increased the number of users on their platform, successfully integrated literacy education with IVR and improved the service with distance learning via SMS. Eneza also launched their service in **Rwanda** in 2020 in partnership with MTN and Airtel Tigo.

2020

The GSMA provided additional funding to support Eneza's students during the COVID-19 pandemic. During this time, Moov partnered with Eneza to allow free access to Eneza services for students in Côte d'Ivoire. Safaricom also ensured free access to Kenyan users during this period (March–November 2020).

2022

Eneza partnered with Africell in **Sierra Leone**, their fifth market. Africell and Eneza Education are piloting TeachMi, a digital tool that expands access to primary and secondary students in Sierra Leone.

— **Eneza Education** indicated that the GSMA's catalytic grant not only provided the financial impetus to develop their product and grow their business, but also the credibility and global brand association they needed to attract other investors.

— **oDoc's** team said that the GSMA grant helped them build credibility and that being associated with the GSMA brand helped open discussions with institutional investors ahead of their Series A funding round. The GSMA also supported them with due diligence questions from potential funders.

In interviews, start-ups reported gaining **valuable knowledge and experience from the grants,** which they can transfer to the next stages of their projects and future initiatives. These lessons came from informal exchange, sense checking and ad hoc mentoring from the GSMA team, as well as exchanges with other start-ups at bootcamps and clinics.

3. Business and operational support

The GSMA has provided a range of assistance to improve start-ups' products, business models and communication strategies, and make them more innovative and relevant to the market. Examples include project management, product development, business modelling, providing statistics, as well as advising start-ups on regulations, go-to-market strategy, connecting and assisting in negotiation with MNOs and reviewing pitch decks for external fundraising.

Due diligence conducted in the pre-grant stage and subsequent support from the GSMA have helped the start-ups prepare to scale. Particularly important was the GSMA's emphasis on creating a financially sustainable and/or scalable business model and monitoring it by tracking KPIs – both of which are key to raising additional funds and demonstrating commercial viability to potential buyers and partners.

In addition to grant funding, the GSMA provided tailored technical assistance to help start-ups develop their business models. Examples of this assistance included:

— **Marketing:** Several start-ups received support from an external expert to help them market their service effectively (improved branding, marketing tools, etc.).

"Before (using AgroCenta) we didn't know much of the farming practices that are right for us. Things like a fertilizer application, harvest and storage were very difficult for us and more importantly how to have sold out our produce was a major challenge."

Joshua Atanga, Farmer from Northern Ghana

Photo: Agrocenta's farmer customers)
Source: ACDIVoca

— **Technical support:** Several start-ups received advice on mobile technologies, such as IoT. For example, support was provided to aquaponics start-up eFishery in Indonesia to conduct an NB-IoT pilot project with MNO Telkomsel.

— **Management support:** Where necessary, support included strategy reviews, technical and product roadmap discussions, advice for team management, priority setting and leadership, as well as advising senior management on how to better understand their team's strengths to identify blind spots and improve alignment.

— **Capacity building:** Insights from across the Mobile for Development programme, such as MNO-start-up collaboration and mobile money integration, were provided through a variety of capacity building sessions, including webinars, online clinics, grantee workshops and bootcamps. This capacity building has helped start-ups better understand and articulate their value proposition to MNOs and other investors.

3 Fundraising insights

The insights in this section are related solely to the 21 start-ups in this report. This section begins by outlining the contextual enablers and barriers for portfolio start-ups, then discusses the lessons they learned from raising follow-on funding, illustrated by two case studies.

3.1 Ecosystem enablers and barriers for GSMA portfolio start-ups

When considering the fundraising journeys of the start-ups, it is important to understand the context in which they operate, specifically, the unique challenges for each sector and the impact of the COVID-19 pandemic on their operations. Figure 5 summarises the key enablers and barriers for the 21 start-ups divided by sector.

Several portfolio start-ups **were early movers in developing a customer base in traditionally under-resourced sectors and markets** (such as Mali and Benin), as they continue to balance impact-driven value creation with commercial interests. These start-ups focus on serving historically underprivileged consumer segments, such as rural communities. To operate successfully in such challenging environments, start-ups must overcome political instability, infrastructure issues (such as unreliable power grids and connectivity) and nascent local digital ecosystems.

They also face **other challenges** inherent to being a first mover in an emerging market, including:

- **Creating consumer awareness:** Increasing consumer awareness of, and demand for, a new digital innovation can be challenging, such as SolShare's smart peer-to-peer solar-sharing grids or the PAYG apps for utilities used by KopaGas (acquired by Circle Gas). More effort was required to help certain consumer segments understand the need to pay for certain solutions and services.

- **Dealing with negative investor bias:** Investor and public sector bias towards funding innovative start-up projects in untapped sectors is common. There is a wide disparity in investor appetite depending on the sector. For example, FinTech start-ups have found it easier to partner with large banks due to the accelerated digitisation of financial services. In contrast, digital utilities start-ups often face difficulties securing VC funding due to perceived market, product and consumer segment risks.

- **Convincing MNO partners:** Persuading MNOs to partner in an unproven commercial segment (e.g., sanitation) can be a difficult task, as MNOs are more accustomed to partnerships with proven start-ups in more established sectors, such as FinTech, and in more mature markets.

- **Persuading public sector partners:** Convincing local regulatory and governmental bodies to contribute resources often requires a shift in mindset. Before adopting new technologies, public sector bodies need to overcome resistance to change and a lack of digital sophistication.

> **"I work under the sun. If there were electricity, there will be a fan and a fridge. After work, I can get a glass of cold water with my kids. After coming back from hard sun, I can turn on the fan and be peaceful."**
>
> **Moksed Pramanik**, Farmer

Photo: Solshare lets villagers create mini power grids for their neighbours – Fast Company – SolShare

- **Managing supply chain issues:** Hardware start-ups, as well as hardware/software hybrid start-ups, are particularly affected by the longer lead times due to supply chain disruptions and importation issues. Across sectors, the start-up investment climate heavily favours purely digital start-ups over start-ups with hardware components, given the additional risk exposure.

- **Operating in nascent markets:** The size of the domestic market and maturity of the local venture capital scene have a direct impact on a start-up's ability to raise funding. In less-developed markets, the business viability of a new entrant is weaker and less likely to attract investor attention. Similarly, in a market with a less mature start-up ecosystem there are fewer venture capitalists, which reduces the potential for a start-up to raise funds.

Figure 5

Ecosystem enablers and barriers for portfolio start-ups, by sector

	AgriTech	ClimateTech	FinTech	EdTech	HealthTech	Utilities
ENABLERS	• Increasing stakeholder participation in digital solutions across the value chain, including farmers • Strong growth in investment interest • Rise of homegrown start-ups in key markets (e.g., Kenya, Ghana) • Supported by strong digital and mobile payments, enabling the growth of AgriTech digital marketplaces • Ample opportunities for start-up solutions to fill critical market gaps	• Rise in demand creating greater interest from funders • More ESG-related funds and climate-focused start-up funds and launchpads • Rise in start-ups entering this space • Greater application of emerging technology and digital solutions for addressing climate-related challenges	• FinTech continues to dominate • Continued growth due to greater mobile and internet penetration • Greater adoption of mobile payments and financial and banking services • Often serves as integrated, facilitating technology for other solutions in AgriTech, EdTech and digital utilities due to payment requirements • Rise in FinTech scale-ups and corresponding M&A activity	• COVID-19 accelerated demand and acceptance of e-learning and virtual education solutions • Significant jump in investor interest across all sub-segments • EdTech is no longer a niche investor category • Demand has grown from schools to broader opportunities in skill-building and training in the workforce	• COVID-19 increased demand for telehealth solutions • Overall push towards efficient digital healthcare solutions and growing consumer demand for HealthTech integrated in everyday technology (e.g., wearables and at-home diagnostics) • Ageing populations	• Growing connectivity and data coverage in previously underserved markets • Growth of PAYG solutions with wider consumer adoption • Greater push towards digitisation among forward-thinking public sector authorities in certain markets (e.g., Dhaka, Bangladesh) • Favourable government policies in certain markets (e.g., India's nationwide Swachh Bharat campaign)
BARRIERS	• Landscape more conducive to digital start-ups scaling faster than hardware AgriTech start-ups • Different policies and payment infrastructure across markets create barriers and delays	• Widespread adoption and awareness still an issue • Underdevel-oped local investor base leads to higher risk perception among foreign investors • Infrastructure and policy barriers create disincentives and increase risk • Africa has only 0.2% of global Climate-Tech investment deals	• Disparate regulatory policies and compliance requirements across 54 countries in Africa • Significant potential for digital currencies to disrupt existing, conventional FinTech solutions and services • Expensive FinTech talent	• Return to school and in-person learning may slow the growth seen during the COVID-19 pandemic • Cost of data in certain markets • Regulatory issues, such as banning private for-profit online tutoring in China • Differing consumer mindsets around e-learning inhibit fast expansion in various African markets	• Hardware HealthTech start-ups face COVID-19 challenges, such as supply chain disruptions and labour shortages, as well as price increases of hardware components • Greater upfront capital requirements face higher cost of borrowing	• Lack of comparative investor interest • Scaling challenges due to external factors, such as infrastructure and regulatory challenges, especially with hardware start-ups • Partnership challenges with public sector agencies in certain under-resourced markets (e.g., Mali)

Source: Team synthesis and analysis from desk research, validated by interviews

- **Building the ecosystem:** Connecting existing, fragmented and isolated market players in a community to build a collaborative ecosystem requires significant time and effort. This is especially true in markets where entrenched local players view new market entrants as competition rather than potential partners.

Many of the barriers for first movers relate to perceptions of viability and risk as an unproven start-up. This underscores the need to support seed and early-stage start-ups in establishing credibility, industry authority and social proof. These challenges are also opportunities for first movers to establish themselves as a preferred provider in the community, given their advantage in understanding local needs, honing product-market fit and overcoming initial hurdles.

COVID-19 intensified differences between start-up sectors, markets and solutions

The impact of the COVID-19 pandemic has been mixed, with the transition to digital solutions contributing to accelerated growth in digital health and education while significantly threatening the growth outlook for hardware dependent start-ups that must navigate the additional challenges of inflation and supply chain disruptions.

- COVID-19 has significantly **accelerated the growth of digital business models that provide a platform for remote services**, such as Sehat Kahani's telehealth solution and Eneza Education's virtual learning services.

- COVID-19 created **greater challenges for start-ups with hardware components** and service delivery requiring in-person fulfilment. Certain geographies have also been significantly more impacted by local or regional lockdowns and health challenges, leading to employee churn and loss of customers.

- Markets with lower digital penetration rates experienced **more disruptions to collaboration and service provision.** This especially affected start-ups that were dependent on public-sector communication, as personnel who were essential for the start-up to perform operations were absent for long periods. Many government departments also had difficulty transitioning to remote work, which contributed to delays.

The COVID-19 pandemic had generally **adverse effects on fundraising**, as investors were hesitant to invest in riskier early-stage start-ups. However, several portfolio start-ups whose solutions contributed to the COVID-19 response were able to grow as a result:

- Sehat Kahani partnered with the Pakistan government, which leveraged Sehat Kahani's e-health platform for COVID-19 messaging, resulting in business growth both in terms of customers and revenue.

- oDoc expanded the reach of their e-health service, not only in Sri Lanka (with an additional MNO partnership) but also in the Maldives. The relevance of their business model helped them raise additional funds in early 2021.

- Qlue's performance was propelled to success through a partnership with government for COVID-19 reporting.

3.2 Catalytic funding unlocks further investment

Despite the challenging context in which these start-ups operate, the GSMA's catalytic grants helped to kickstart their fundraising journeys (see Figure 6).

Insights from raising additional funding

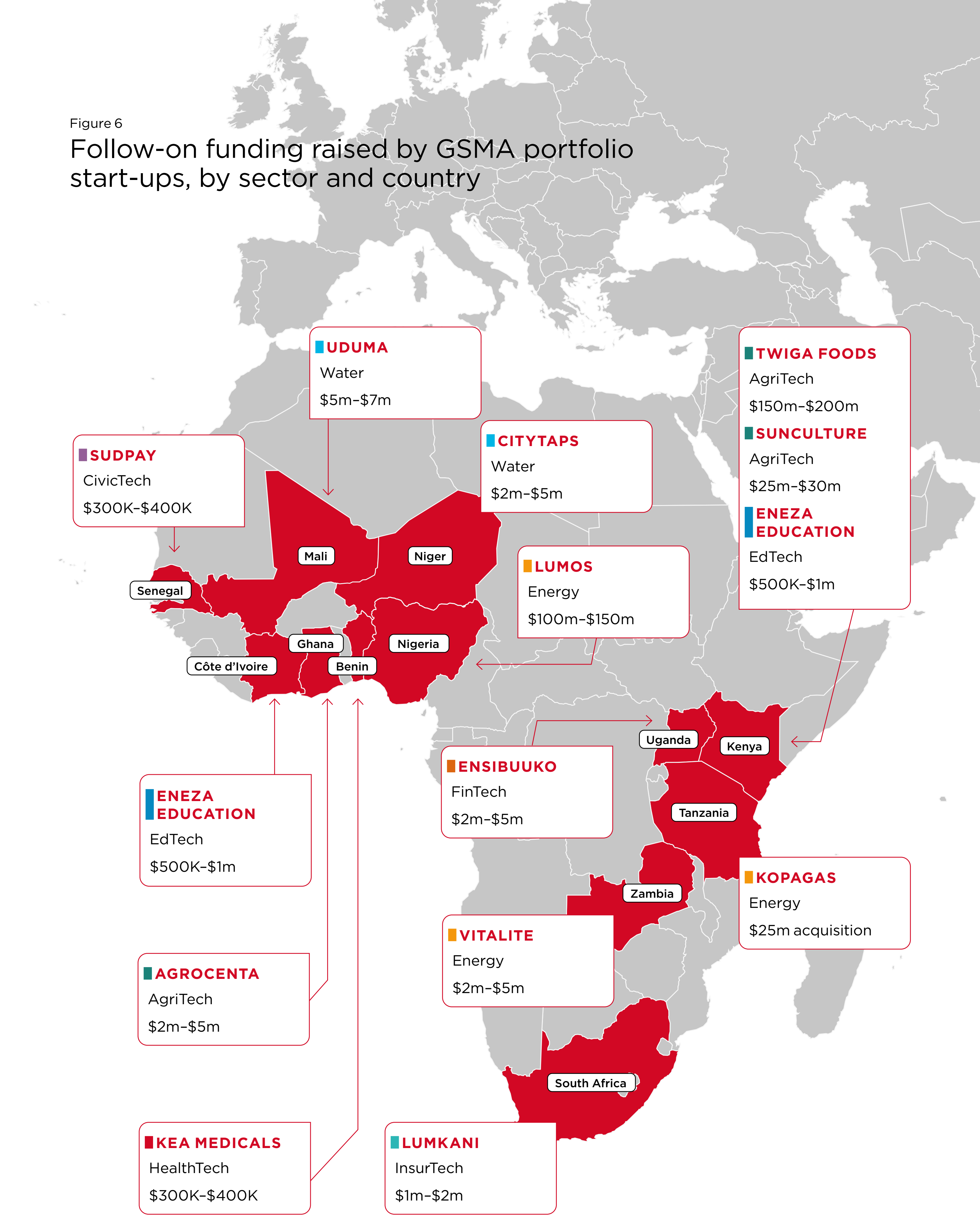
These insights are specific to the portfolio start-ups featured in this report.

1. **EdTech and AgriTech are top performers.** EdTech (Ruangguru) and AgriTech start-ups (Twiga Foods and eFishery) raised the most follow-on funding, cementing their status as market leaders. Cumulatively, AgriTech start-ups in the GSMA portfolio have raised more than $280 million and accounted for three of the top five funding amounts. This reflects the market demand and potential impact of the digitisation of the supply chain to empower smallholder consumers in primary industries, such as agriculture. Meanwhile, the funding raised by EdTech portfolio start-ups is heavily skewed by Ruangguru's large deals, but EdTech solutions like Eneza Education are scaling into new markets.

2. **Established ecosystems like Indonesia and Kenya attracted the most follow-on funding.** Indonesian and Kenyan start-ups represent four of the five top performers in this study. This

Figure 6

Follow-on funding raised by GSMA portfolio start-ups, by sector and country




SEHAT KAHANI
HealthTech
$1m-$2m
GHAM POWER
Energy
$1m-$2m
Pakistan
Nepal
Bangladesh
DRINKWELL
Water
$5m-$7m
SOLSHARE
Energy
$2m-$5m
Sri Lanka
ODOC
HealthTech
$2m-$5m
Indonesia
RUANGGURU
EdTech
$200m-$300m
EFISHERY
AgriTech
$100m-$150m
QLUE
CivicTech
$5m + (not including latest Series B round – undisclosed)

corresponds with the continued growth and overall economic outlook, the acceleration of the start-up ecosystem and enabling business environments for start-up investors in both countries. Kenya and Indonesia also share similar characteristics in terms of high rates of digital penetration, consumer technology adoption, mobile payments and a critical mass of tech talent.

3. **Female ownership of start-ups mirrors global sectoral trends.** Data on start-ups founded by women mirrors the global trends highlighted in Section 1.4, with female-founded companies having higher representation in EdTech and HealthTech. It is worth mentioning that in male-dominated sectors like energy, water and sanitation, Lumos in Côte d'Ivoire has a female CEO. It is also noteworthy that female-founded companies Sehat Kahani in Pakistan and Kea Medicals in Benin operate in countries where start-up ecosystems are nascent, women are underrepresented in start-ups and investor landscapes are less mature than those in neighbouring countries.

(Photo: Ruangguru-Tech in Asia)

"Before using Ruangguru, I was very much lacking in lessons. But after subscribing to Ruangguru, I can better understand the material being taught."

Faturrahman Pelajar, Student

Investors included global names in VC for Series A investments and above, such as 500 Start-ups, TechStars, SoftBank and Sequoia Capital (India), as well as **recognised impact funds**, including Acumen, SeedStars and Mastercard Foundation and **corporate VC arms** (CVCs), such as UOB Venture Management and Google Launchpad Accelerator. The funding data shows that high-profile VCs and CVCs prefer investing in fast-growing sectors and more advanced markets, compared to less popular sectors in under-resourced countries.

Several early investors participated in subsequent funding rounds. Examples of repeat investors for the top-three funded start-ups include East Ventures (Ruangguru), 1776 Ventures (Twiga Foods) and Wavemaker Partners (eFishery). Although they began with only one or two early-stage investors, all three companies secured more investors in each successive round. This highlights the importance of finding the right investors early on and regarding those initial investors as long-term partners that can connect start-ups with their business networks. Securing investment from reputable investors can also give future investors more confidence in a start-up's business model and potential to scale.

Insights on the types of funding and funders for the 21 start-ups:

1. The **US was the leading investor** in the 21 portfolio start-ups in terms of number of deals, reflecting broader tech start-up investment trends in Africa and Southeast Asia. US investors helped African start-ups set a record year in 2021,[14] with VC and corporate investments accounting for most funding opportunities. VC firm Sequoia Capital (with presence in the US, India and Southeast Asia) is optimistic about the long-term prospects of start-ups in Southeast Asia.[15] This confidence is reflected in the GSMA portfolio, as Sequoia invested in eFishery's Series C round.

2. It is noteworthy **that the start-ups that received the most VC funding are alumni of the Google Launchpad Accelerator**. Portfolio start-ups that went through an accelerator programme were more successful at attracting VC funding.

3. **Tech start-up accelerators play a crucial role in the ecosystems of LMICs and serve various purposes:** to support and build local entrepreneurial capacity, strengthen start-up networks, encourage capital investments and facilitate market connections. Google Launchpad Accelerator, which provides access to Google's people, network and advanced technologies, provided grants to Ruangguru, Twiga Foods and Qlue. Spring Accelerator, which offered nine months of technical expertise to start-ups in East Africa and South Asia, supported DrinkWell and Ensibuuko.

14. Gebre, S. (31 December 2021). "U.S. Investors Revisit Africa, Helping Startups Cap Record Year". *Bloomberg*.
15. Tong, G.C. (16 June 2022). "Sequoia says it is optimistic about Southeast Asia's start-ups despite challenging market". CNBC.

Village Capital, which runs accelerator programmes for impact start-ups (such as investor readiness), supported DrinkWell, Ensibuuko and Eneza Education. All this highlights the importance of effective incubation in the early stages of a start-up's scaling journey, as well as identifying the right type of investor early in the fundraising journey, especially those that offer more than just monetary support.

4. **Start-ups in sectors that take longer to scale, such as energy, water and sanitation, relied more heavily on development agency funding** and programmes more focused on impact, such as MassChallenge and Village Capital. This is where impact investors and development finance institutions (DFIs) such as the International Finance Corporation (IFC) and British International Investment (BII) can play a pivotal role in supporting the development of innovative solutions in sectors that do not easily attract VC funding. For example, BII invested in GSMA portfolio start-ups M-Kopa, PEG and Lumos, supporting the growth of innovative energy solutions in underserved African markets.

5. Not all start-ups chose to pursue traditional equity funding, and instead looked for **alternative sources of seed capital**. For example, most of

Figure 7

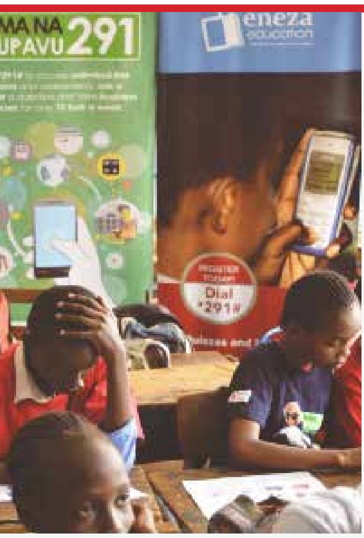
Crowding-in of funding for the 21 start-ups (excluding undisclosed investors and funders)

43 funders | **Grants and prize money, excluding GSMA**

AFD Agence Française de Développement
Google Developers Launchpad Accelerator
mastercard foundation
Safe Water Network
seedstars
SPRING
thewaterloofoundation
TRANSFORM
UKaid from the British people
UNCDF Microfinance • Capital Development
USAID From the American People
VillageCapital
Vitol Foundation

118 investors | **Equity, debt and convertible notes**

500 startups
1776 Ventures
ACCION Venture Lab
Acumen Capital Partners
alphamundi
dob equity
EDI Energy. Distributed & Integrated.
endeavor Catalyst
Global Innovation Fund
GreenTec Capital Partners
Hustle Fund
IFC
MDI Metra Digital Inovasi by Telkom Indonesia
Omidyar Network
Orange Ventures
Rabo Foundation
Safaricom
savannahfund
SEQUOIA
Shell Foundation
SoftBank Vision Fund
SUNFUNDER
techstars_
The World Bank
TLCOMCAPITAL
UV Unpopular Ventures
UOB Venture Management
VENTURRA
wamda capital



“I love the revision lessons because they were very helpful as they make you understand a topic. I got 410/500 marks in this year’s [exam] and I am hoping to join a good National school either Alliance girls or Kenya High. I would like to be a Neurosurgeon when I grow up.”

Photo: Students served by Eneza Education

Blessing, Student from Hills Springs Academy

“My cows weren’t getting enough water; milk production is affected by water intake... but when we got the water connected, they were getting enough water and milk production increased.”

Photo: SunCulture

Jamleck Gochobi, Farmer

DrinkWell’s funding came from a variety of non-equity grants and innovation challenges. Lumkani and Gham Power received prize and award money while Vitalite obtained funding through crowdfunding. It is worth mentioning that Vitalite and Gham Power operate in under-resourced start-up markets – Zambia and Nepal, respectively – where scarce funding compels start-ups to rely on alternative funding mechanisms. Furthermore, in markets with less mature investors, a significant amount of **seed to early-stage funding came from individual angel investors** rather than investment firms or established accelerators. One example is the Sri Lankan HealthTech start-up oDoc. This demonstrates the importance of investigating various types of funding, especially donor funding in markets with smaller investment ecosystems.

6. **Debt financing emerged as a popular option for AgriTech start-ups**. Four of the top five funded companies (Twiga Foods, eFishery, Lumos, SunCulture) received debt financing, while capital-intensive utilities start-up Lumos received debt financing in 2015 and continued to raise more as they grew. In comparison, digital AgriTech platforms Twiga Foods and eFishery received debt financing at later stages, in addition to funding in Series B and C rounds from new and existing investors. At this stage, start-ups can also access traditional financing that is often unavailable earlier on.

7. As with Lumos, water and energy start-ups also pursued debt financing given the higher upfront capital requirements for hardware and infrastructure-related solutions. Because loans were larger, debt financers for **utility start-ups were primarily government or multilateral development agencies**, including US Overseas Private Investment Corporation (OPIC), the US International Development Finance Corporation (DFC), and the World Bank. At an earlier stage, Kiva (an online microlending platform) was a smaller scale debt funder for DrinkWell.

8. The **popularity of VC arms of development agencies** is evident. It is worth noting that certain multilateral debt financers, such as the IFC, also participate in traditional VC funding via their venture arm, such as IFC Venture Capital Group and ADB Ventures. Global banks also provide Series A and follow-on funding through their VC arms, including Goldman Sachs Venture Capital and UOB Venture Management.

9. **Corporate social responsibility (CSR) and foundation funding** remain important funding sources in early stages, both through grants and seed rounds. Examples include the Mastercard Foundation, Rabo Foundation and Shell Foundation. There are fewer criteria for awards and grants compared to the financial growth requirements of later-stage funders, making it a more viable option for start-ups in more nascent sectors and markets.

10. It is noteworthy that **MNOs took part in VC rounds**. Kenyan MNO Safaricom was both a VC funder and provided conventional strategic start-up-corporate partnerships, having provided Series A funding to Eneza Education in

Kenya. Orange's venture arm deploys funds for start-ups, including Sudpay. Telkom Indonesia's VC arm, MDI Ventures, also participated in follow-on funding in Qlue's Series A round.

3.3 Case studies

The following case studies highlight the importance of partnerships in closing the gender finance gap and the best practices of GSMA portfolio start-ups that have built scalable business models.

Twiga Foods: Best practices in business model scalability

Having raised more than $150 million in funding since its founding in 2013, Twiga's capacity to grow and operate at scale has attracted both VC and institutional investors. To date, Twiga has reached more than 100,000 customers in Kenya and plans to expand across Africa. To better understand Twiga's success, Figure 8 evaluates the company against five best practices of business model scalability identified by the MIT Sloan School of

Figure 8

Five best practices in business model scalability applied by Twiga Foods

1 Operate with multiple distribution channels

- In addition to their own B2B platform, Twiga has diversified distribution to cover informal retail and other e-commerce channels
- Partnered with e-commerce retailer Jumia to offer a Twiga Fresh Bundle on Jumia's consumer-facing platform at half the price of other retailers
- Plans to roll out low-cost manufactured food and non-food products under their brand

2 Eliminate typical capacity limitations

- Addresses key agricultural supply chain capacity limitations, starting with access to data
- Improves access to reliable market data critical for supply chain planning and optimisation through their Sokolytics Product, leveraging data analytics to help their customers understand critical factors driving decisions

3 Outsource capital investments to partners

- In addition to venture funding, Twiga has partnered with financial institutions to offer their vendors and farmers access to credit products through third-party providers. This reduces Twiga's risk while expanding service capacity and providing additional data points to enhance their artificial intelligence (AI) analytics

4 Allow customers and partners to assume multiple roles in the business

- With multiple products addressing various pain points along the agricultural value chain, Twiga can engage their platform users in different roles, including working capital financing, marketplace buying and selling, data providers, etc.
- Development funding partners can also help deploy Twiga products across their user base

5 Create platform models

- Unifies the fragmented agricultural industry by simplifying the supply chain between fresh food producers, FMCG manufacturers and retailers through a B2B e-commerce platform
- Eliminates the need for many intermediaries, significantly lowering food costs for consumers

Source: Analysis of five factors adapted from the framework, Building Scalable Business Models, MIT Sloan Management Review

Management.[16] This model was developed based on the experiences of international companies such as Google, Apple and Groupon, as well as a five-year study of 90 Scandinavian companies. When measured against this global benchmark, the strength of Twiga's business model is evident.

Sehat Kahani: Success reduces gender bias

Sehat Kahani, a telehealth platform led by two women co-founders, serves female customers and recruits female doctors to provide service delivery. The HealthTech start-up is addressing a critical gap in Pakistan's healthcare market where demand for doctors outpaces supply, especially in rural areas, while many women doctors leave the workplace after starting a family. The founders saw an opportunity to tap into the potential of these doctors. Using the power of mobile technology, Sehat Kahani gives women doctors the opportunity to work from their home and connect with patients who need healthcare.

Sehat Kahani received significant support from the GSMA to develop an early partnership with MNO Jazz Pakistan. The founders have stated that this strategic partnership with a reputable MNO provided the credibility and traction to attract additional funding and key partnerships, including with the public sector. Once Sehat Kahani showed measurable success, they did not experience any discernible gender bias in their operations or fundraising as their results and record stood on their own. They felt more confident as the company grew, applying the lessons, experience and knowledge they gained along the way. Figure 9 summarises the gender impact of Sehat Kahani after receiving GSMA grant funding.

16. Nielsen, C. and Lund, M. (7 December 2017). "Building Scalable Business Models". MIT Sloan Management Review.

Figure 9

Sehat Kahani's gender impact

With GSMA funding

- Launched six e-health centres, two in each province
- Created an e-health mobile app providing access to physicians
- Developed 20 e-health courses in both Urdu and English
- 800,000+ beneficiaries reached via health education awareness campaigns

MNO partnership via GSMA

- GSMA was instrumental in helping Sehat Kahani establish their first big brand partnership, including making introductions and facilitating many series of meetings. As a result, Sehat Kahani became the first HealthTech company in Pakistan to sign an MOU with MNO Jazz.
- This attracted attention from other investors, the Ministry of Information Technology and Telecommunication and other partners, setting the company on a growth trajectory

"Empowered Women, Empower Women"

- As a company started by two women, Sehat Kahani recognises the power of their platform to empower both providers and female users
- Hiring all-female doctor consultants
- Majority women patients and platform users
- Partnerships drive credibility and lessen gender bias due to a track record of growth and market proof
- The confidence of founders grew as they learned to run their business more effectively and attract more opportunities

Impact to date

- 35+ e-health clinics
- 360,000+ patients treated via video consultation
- 3.2 million+ beneficiaries reached via health education awareness campaigns
- Team of 250, including HQ and community staff
- 5,000+ female doctor provider network
- 35 health education drives

Source: GSMA, Sehat Kahani website and interview, author's synthesis and analysis

"I joined Sehat Kahani as a volunteer during the pandemic, later on joining the team as consultant cardiologist, educator and advisory. It's a great platform for the doctors to reach out to their patients from the comfort of the home and office, and for the patients to seek valuable advice, sitting at home especially with the pandemic situation."

Testimonial from female doctor on Sehat Kahani's platform

Image source: Thomson Reuters Foundation/Handout by Sehat Kahani

4 Recommendations for key stakeholders

The following recommendations for key stakeholders are synthesised from interviews and observations, including lessons learned by the start-ups themselves. These recommendations can be used as guidelines to support start-ups with their fundraising journeys, as well as those looking to invest in impactful and scalable solutions in LMICs, and those organisations offering them support.

4.1 Start-ups

Be strategic in identifying the right investors and partners

- Seek out investors committed to diversity and inclusion
- Ensure your goals, values and ROI are aligned with the investor
- Identify investors that understand the unique dynamics of your sector and country/region
- Be able to demonstrate expected returns to investors based on their criteria

Find a champion to promote start-ups in their networks

- A champion could be a start-up advisor, investor or customer
- Champions can help start-ups develop partnerships, secure new business and promote their product to customers. They can also help bring in funding and expand your network

Diversify revenue streams and manage risk

- Diversify revenue streams along your value chain by creating value for all relevant stakeholders
- Develop a solid working knowledge of financials and continue to understand the needs of your core customer base
- Find opportunities to share risk among partners

Foster strong communication with investors

- Develop your public speaking skills and find opportunities to speak at industry conferences and events attended by potential funders and investors
- Learn how to better articulate and customise your start-up's value proposition to the investor audience. For example, what specific commercial benefit or value do you offer that would incentivise the MNO to partner with you? What change are you creating in the world and why should investors join you on your journey?
- Be patient with fundraising. As one portfolio start-up put it, "everything takes longer and costs more than planned"

4.2 Investors and funding organisations

Increase outreach to women tech entrepreneurs

- Provide more support to build a pipeline of investor-ready companies led by women, specifically targeting accelerators and incubators that focus on women-owned and -operated ventures
- Greater **inclusion of female VC partners** and leadership at investment firms can create more diverse investment perspectives and improve the gender balance
- Actively explore opportunities to **collaborate with women-led initiatives and events** in their local start-up ecosystems to identify start-ups
- Dedicate a percentage of funding to women-led start-up applicants that meet their investment criteria

Address negative bias against LMICs

- Better understand the start-up landscapes in LMICs to reduce negative bias against certain countries

— Several respondents emphasised the need for investors to open their minds to investing in historically underserved markets and sectors. Investors should evaluate the merits of the start-up's operations and growth potential, rather than judging the location of the start-up based on negative bias.

Partner with other funding organisations to reduce funding gaps

— Collaborating with different investors can help to scale innovative solutions in LMICs. As shown in Figure 7, there were numerous investors from North America, Europe and the UK with greater scale, highly developed networks and significant funds. These investors could partner with in-country investors who are more likely to understand the unique challenges local start-ups face.

Support hardware start-ups

— The donor community can play an even bigger role in supporting hardware start-ups whose solutions are not always as attractive to commercial investors. Supplying grant funding and technical assistance to hardware start-ups in the early stages can help catalyse their journey to scale and manage supply chain challenges.

4.3 Accelerators and tech hubs

While the development of start-up ecosystems can vary depending on the level of market maturity, the following general recommendations can be adapted and contextualised to the needs of an ecosystem.

— It is crucial that tech hubs **find a sustainable business model** so that they can continue to support start-ups. Across ecosystems, accelerators have run into financial difficulty due to the time it takes for invested ventures to generate a return. Other sources of funding, such as support from a large corporation or donor, will likely be required to run a sustainable accelerator programme.

— Start-up hubs should **leverage their community to combine member volumes and partner** with organisations such as Amazon (AWS), Microsoft and others to provide community-wide discounts for start-ups in the local market.

— Tech hubs must **create consistent community-wide programming**, such as events and seminars, to create connections, generate leads and build trust among different stakeholder groups. Hubs should organise dedicated business development meetings for start-ups to share leads, find resources and exchange referrals. For instance, traditional demo days might not be appropriate for nascent ecosystems, which typically have limited early-stage venture capital. Tech start-ups in these ecosystems could benefit more from mentoring, networking and skills training.

— Tech hubs should **foster a community-wide sense of collaboration** rather than competition. Support workshops on systems and design thinking, futures-building and social innovation will encourage collaborative problem-solving and dynamic exchange of ideas between sectors.

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