

Start-ups and Mobile in Emerging Markets:

Insights from the GSMA Ecosystem Accelerator

Issue 1, Autumn 2017

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Case Study 1

Biscate: connecting the dots in Mozambique's informal sector



Founding year	2016
Geography	Mozambique
Team	Frederico P. da Silva – Co-founder and CEO Tiago Borges Coelho –Co-founder and Head of Research & Development Erika Rodrigues – Project manager
Tweet pitch	Biscate is a platform using inclusive technologies such as SMS, USSD and web to connect skilled workers from the informal sector with customers **www.biscate.co.mz**

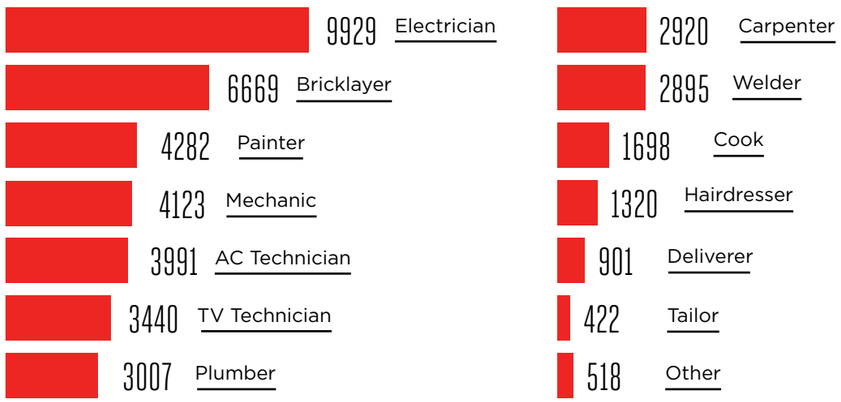
In Mozambique, nine in ten people work in the informal economy[1], making it one of the highest global ratios. Forty-five percent of the population owns a mobile phone[2], although less than 25% has access to the internet[3].

With these statistics in mind, software solutions start-up UX Information Technologies launched Biscate ("odd-job" in Portuguese) in June 2016. This service allows the numerous informal and often uncertified skilled workers located throughout the country to register and advertise their services with a basic phone using USSD technology. Biscate offers potential customers access to a register of workers sorted by trade, location and experience level. Once a job has been completed, customers can rate workers, further enriching the database.

As of July 2017, the 14 team members at Biscate have attracted more than 46K workers to the platform, connecting them to more than 28K customers through a total of 83K contact requests across Mozambique's 10 provinces. Eighteen different trades are available on the platform with the 46K workers distributed as follows:

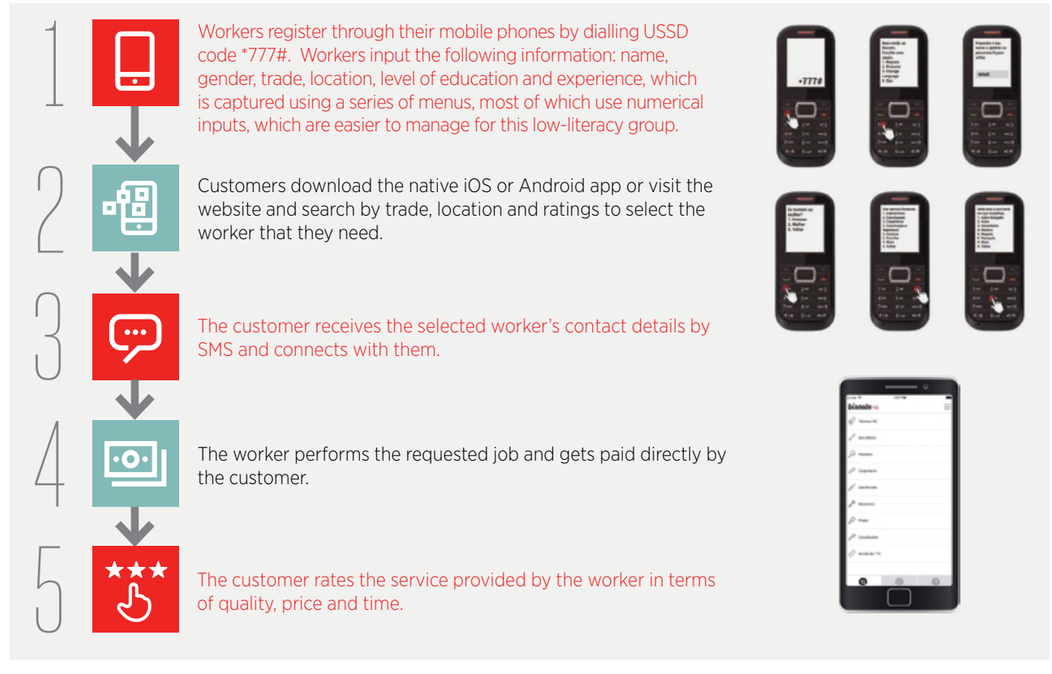
FIGURE 1

Worker distribution on Biscate platform as of July 2017



1 International Labor Organization: http://www.ilo.org/addisababa/countries-covered/zambia/WCMS_462681/lang--en/index.htm
2 GSMA Intelligence "Market penetration, unique subscribers"
3 ITU "Percentage of individuals using the internet": http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx

How the service works



Since its launch, Biscate has been leveraging the power of mobile technology by offering workers and customers access to the service through three different mobile channels: a mobile-responsive website, a native mobile app (both on Android and iOS) and a USSD service. The latter is by far the most popular among workers with an average of 3,000 daily USSD sessions being recorded on the platform.

In order to enable workers and customers to enjoy the service either free of charge or at a limited cost, Biscate developed a B2B cross-subsidisation model through which it charges external organisations for the following services:

- Data analysis on Mozambique's labour market and informal sector (mainly for institutions), based on workers' data
- Targeted below-the-line advertising through bulk SMS to the workers or customers database (for instance for hardware shops wanting to sell tools and material to specific workers in specific locations)
- Talent database subscription allowing companies to access a pool of workers filtered by trade and location, using a dedicated platform
- Online advertising on the website and mobile apps

Biscate optimised for feature phones: USSD 2.0

For every session a worker initiates through USSD, the platform is able to show a contextual page so that Biscate's menu is tailored and dynamic instead of the usual linear navigation (like a decision tree). This allows Biscate to create an individual profile for each user based on their mobile phone. The platform is therefore able to remember" who they are, so that for instance if a session times out, users are sent back to the last screen they visited when they reconnect. Similarly, Biscate can also personalise the user experience by greeting them with the name they registered with and provide other dynamic user experiences. Because all this USSD input takes place on the Biscate application, all of the information is available in real time on Biscate's website and mobile applications, thus effectively making basic phone users visible to internet users.

For more information on USSD, see the last section of the report

Working with mobile operators

Since launching, the Biscate team has been collaborating with Vodacom Mozambique (one of the country's three mobile operators boasting 5.5 million connections as of Q2 2017[4]). The Biscate-Vodacom collaboration spans three main areas of synergies:

- **Branding and advertising:** Vodacom and Biscate co-designed and co-branded a nationwide above-the-line advertising campaign for the launch and the first months of the service. This was done across several key channels: newspapers, social media, TV (see the TV spots here), radio and events.
- **USSD and SMS APIs integration:** Vodacom granted Biscate free access to the operator's USSD infrastructure through an API, allowing workers to register on the platform from any phone. Biscate is also integrated with Vodacom's SMS infrastructure.
- **Billing integration:** In the future, Biscate is planning to charge users for the service: workers will pay a registration fee and a quarterly subscription, while customers will be charged per contact request. This functionality will be made possible by accessing Vodacom's billing system, leveraging a revenue sharing agreement agreed between the two parties.





vodacom

"We as an operator provide one link of the chain. The Biscate team has the right expertise; they know how to brand the service and reach the community of users. With Biscate, Vodacom wants to support a local success story"

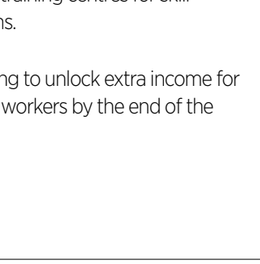
Jerry Mobbs, Managing Director, Vodacom Mozambique

Changing lives

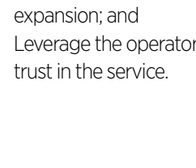
10 REDUCED INEQUALITIES

Mozambique ranks #181 out of 188 on the Human Development Index[5] (HDI) with more than 50% of the country's population living in poverty[6]. Leveraging on the demand for quality services by the emerging middle class, Biscate aims to improve the livelihoods of a currently neglected underprivileged group of individuals by increasing their access to job opportunities and accrediting uncertified but skilled workers through customer ratings.

5 GENDER EQUALITY



Between March and July 2017 1,923 female workers registered (a quarter of all registrations over that period of time) on Biscate, including carpenters, welders and electricians who can now access the same job opportunities as men and compete with them.



Gildo Laura Luís, 31, has been a plumber for the past 10 years. He registered on Biscate in August of 2016 and since then has secured 10 new clients. Gildo talks about some of the challenges he faces in his work: **"Biscate helped me to overcome a lot of the difficulties I had with dishonest customers. Up until now, with Biscate's customers, I have had no problems. I do the work, they like it, and I always do my job to keep the customer. It's a system that has helped us a lot to overcome our challenges."**[7]

Working with the GSMA Ecosystem Accelerator

Biscate received a grant from the GSMA Ecosystem Accelerator Innovation Fund in April of 2017 to:

- Further scale in Mozambique (including through partnership with local mobile operators) through service improvement and a communication campaign
- Link workers to relevant training centres for skill-building and certifications.

By doing so, Biscate is planning to unlock extra income for more than 400 newly-rated[8] workers by the end of the grant in 2018.

Beyond this funding, the GSMA Ecosystem Accelerator is supporting Biscate in strengthening its relationship with mobile operators both inside and outside of Mozambique, in particular to:

- Integrate with the operators' USSD, SMS, billing and mobile money APIs;
- Get advertising/branding support in their geographic expansion; and
- Leverage the operators' brand to build customers' trust in the service.

5 UNDP: http://hdr.undp.org/sites/default/files/2016_human_development_report.pdf
6 UNDP: http://www.mz.undp.org/content/mozambique/en/home/countryinfo.html
7 More stories from Biscate's workers here: https://www.youtube.com/watch?v=Tt9_nfx0T4c&feature=youtu.be
8 In the current system, if a worker is rated, it is a guarantee that a job took place and the worker was paid

Case Study 2

eSewa: providing digital payments for all in Nepal



Founding year	2009
Geography	Nepal
Team	Asgar Ali - President of eSewa Subhas Sharma - CEO of F1 Soft International Biswas Dhakal - Chairman of F1 Soft International Roshan Lamichhane – Chief operation officer
Tweet pitch	eSewa is a payment service provider allowing users to make online payments, pay utility bills, receive money or set up merchant accounts. **www.esewa.com.np**

Launched in 2009 by fintech start-up F1 Soft, eSewa's vision from its inception was to capitalise on the rocketing mobile penetration across Nepal (less than 10% in 2007 to more than 65% in 2017[1]). The start-up is on a mission to simplify payments, promote digital payments and expand financial inclusion for Nepalese people.

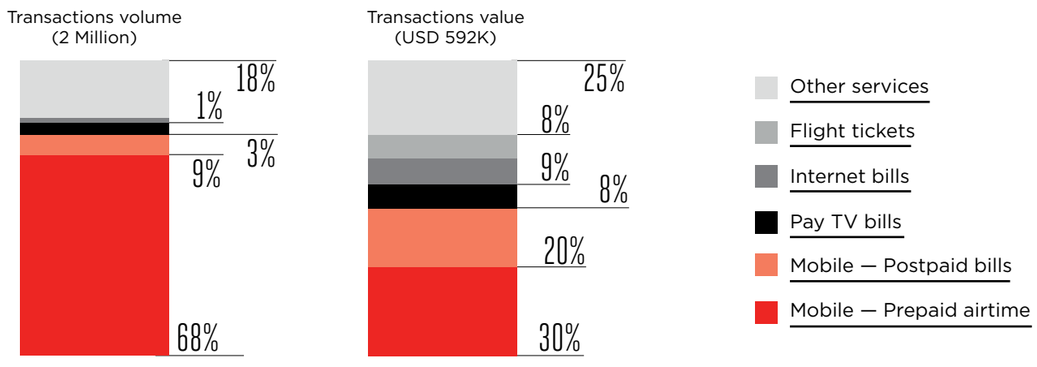
The eSewa solution can be accessed either through a mobile application or through one of their 24,793 agents across the country. Users can, for instance, buy mobile airtime, pay utility bills or deposit funds into their bank account. The application can also be used to buy bus tickets, pay for school fees or book trips abroad. In late June 2017, eSewa received a license from Nepal Rashtra Bank, the central bank of Nepal, which will allow eSewa to provide mobile wallet services to its users, opening up new areas for business development[2].

As of June 2017, eSewa and its 150 staff serve 420,398 active customers[3] across Nepal. Its solution is integrated with 51 banks and it offers hundreds of services through its own agent network, which spreads across the country.

With over 80% of digital payments in Nepal, eSewa processes more than 130K transactions a day. A closer look at monthly transactions[4] shows the following breakdown in terms of services:

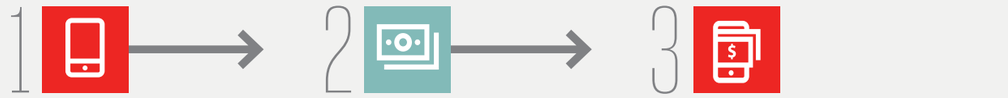
FIGURE 1

eSewa users monthly transactions breakdown[12]



1 GSMA Intelligence, Unique subscribers mobile penetration
2 https://techlekh.com/esewa-mobile-money-license/
3 Customers with at least one transaction in the past 30 days
4 Transactions between July 16, 2017 and August 16, 2017

How the service works





Beyond its Android and iOS apps as well as its mobile responsive portal, eSewa also offers non-smartphone users the possibility of accessing their services directly through syntax-based SMS transactions or JAR[5]-based mobile applications for feature phones. Today, close to 60 per cent of all eSewa transactions originate from a mobile phone (52 per cent from smartphones, 7 per cent from basic mobile phones):

TRANSACTIONS (VOLUME)	SMARTPHONES	BASIC PHONES	DESKTOPS/ LAPTOPS
THROUGH AGENTS	36%	6%	26%
DIRECTLY BY USERS	16%	1%	16%

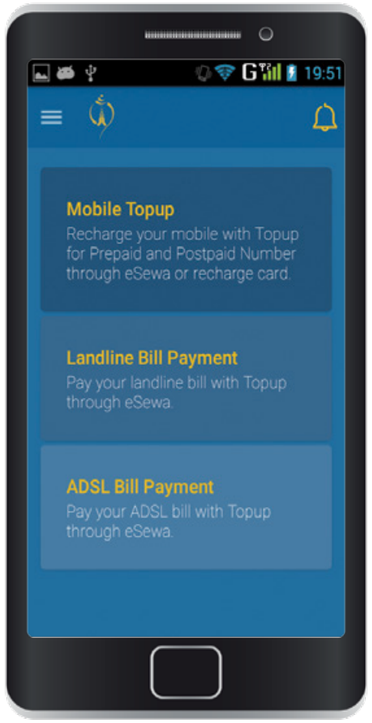
5 Java ARchive

Working with mobile operators

On a monthly basis, close to 80 per cent of the eSewa transactions are directed to mobile operators in the form of prepaid airtime or post-paid bill payments. As a result, eSewa's agent network is the largest distributor of airtime and SIM cards for Nepal Telecom and Ncell, the leading local mobile operators (16 million and 15.5 million connections respectively[6]).

"As a partner, eSewa has truly changed the way people recharge using their mobile. They have made our services such as SIM cards and top-up available and accessible to every corner of Nepal through their mobile app, agent network and bank network. This has reduced our churn rate and increased our ARPU as direct business benefits. In addition, it has reduced our inventorial costs, which would otherwise be incurred for recharge scratch cards."

Minu Pradhan, Manager, Mobile Service Directorate, Nepal Telecom



Screenshot from the Nepal Telecom Android app offering users to top-up their airtime or pay their telecom bills using eSewa.

Changing lives

8 DECENT WORK AND ECONOMIC GROWTH

As of June 2017, 24,793 micro and small businesses (eSewa agents or "points") are using eSewa as a key business and revenue source. These points are small shops, grocery stores, communication centres or internet cafes. The businesses can register by filing in an online or physical application form through local coordinators known as "eSewa zone". Beyond the agents making a living through eSewa, the service is also encouraging a more digital economy in Nepal with close to half a million people transacting digitally.





"I started my business with a phone booth in 2008 and invested around USD 1,000. With the growing mobile phone usage, that business went down after a couple of years and I invested another USD 3,000 to turn it into an internet café. Again, after a few years, I ran out of business. In 2015, I became an "eSewa point" and then an "eSewa zone" with now about 80 eSewa points to cover. Today, on a daily basis, I sell about 15 flight tickets and make 30 remittance payments, but I also sell airtime and event ticket, and pay the utility bills of the neighbourhood. When I look back, I used to earn about USD 160 per month in early 2015, while I earn about USD 440 per month these days. I have recently opened two other outlets and recruited 8 staff."

Umesh Shrestha, Zone Travels P.ltd.

Working with the GSMA Ecosystem Accelerator

eSewa received a grant from the GSMA Ecosystem Accelerator Innovation Fund in April 2017 to:

- Improve the eSewa agents app's usability, and
- Further expand eSewa' service and operation in the Eastern Region of Nepal

By doing so, eSewa is planning to unlock additional income for more than 6,000 families by the end of the 18-month project. They will also contribute to improve the financial inclusion of traditionally unbanked or under banked local populations. Beyond this funding, the GSMA Ecosystem Accelerator is supporting eSewa in strengthening its relationship with mobile operators.

Case Study 3

Optimetriks: crowdsourced data for better decision-making in African retail



Founding year	2015
Geography	Kenya, Uganda, Tanzania, Cameroon, Ghana, Mali, Guinea-Bissau, DRC
Team	Paul Langlois-Meurinne — Co-founder and CEO Augustin de Choulot — Co-founder and CTO Marc de Courcel — Co-founder and COO
Tweet pitch	Optimetriks is a crowdsourced data collection mobile solution designed to improve the distribution of Africa's fast moving consumer goods companies.

www.optimetriks.com

There is a growing opportunity for Fast Moving Consumer Goods (FMCG) companies in Africa's expanding household consumption market (Kenya alone represents $28 billion in retail sales annually[1]). In spite of the growth in consumption, the majority of retail sales still happen in small outlets. In Kenya, about 70% of the population do their daily shopping in open markets and through other informal channels[2].

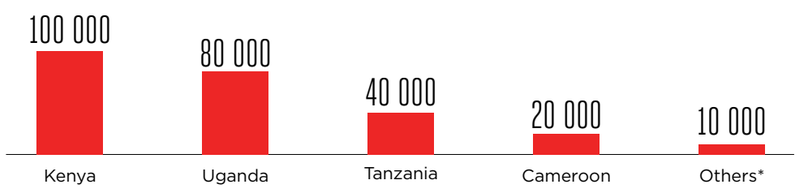
Distribution is therefore costly, fragmented and dependent on multiple layers of intermediaries. Brands have limited information on their markets and commercial performance, which leads to errors in assessing dynamics, universe size, stocks levels, merchandising or pricing.

Launched in 2015, Optimetriks' solution leverages a community of users, paid per visit, to perform retail census and audits, collect data on the ground and take pictures at outlets through Optimetriks' native Android application and a Facebook Messenger chatbot. The aggregated crowdsourced data is then screened and cleaned, photos are analysed through an artificial intelligence solution and the results are displayed to FMCG companies through live web business intelligence dashboards.

Headquartered in Nairobi, Optimetriks and its team of 15 staff, which spans four countries, has so far (as of July, 2017) conducted over 250,000 outlets visits and collected over 1 million data points thanks to their 1,500 strong community of users. This data has been supporting 10 companies in improving their distribution across Africa.

FIGURE 1

Retail outlet visits conducted by Optimetriks in Africa 2015-2017



**Others constitutes DRC, Ghana, Guinea-Bissau and Mali*

1 According to AT Kearney's The 2017 Global Retail Development Index™
2 According to AT Kearney's The 2017 Global Retail Development Index™

How the service works

1 The client company defines the information that they want about their network of retailers and the distribution KPIs they want to track.

2 Optimetriks publishes the missions (1 mission per retailer) with the corresponding earnings at the app.

3 The user – who has downloaded the Android mobile app and create their profile - picks a mission based on their profile and location.



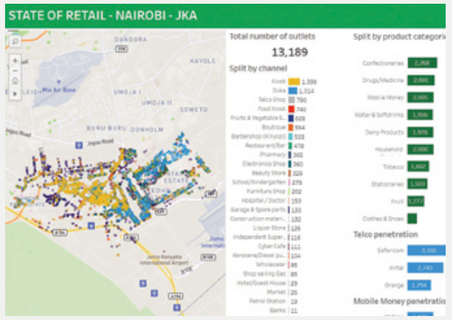
4 The user collects the data on their smartphone, takes pictures and the GPS coordinates of the location for monitoring purposes.

5 Optimetriks verifies the data quality through pictures, GPS and data analysis. Once the data has been verified, the user is paid via mobile money and rated.

6 Optimetriks aggregates and analyses the data before publishing the results on the client's dashboard[3]



7 The client company receives the answers to their questions through the dashboards and takes operational action to fix the issues that have been identified. The reported issues are fixed for the small retail outlet owners (ex: stock availability, visibility deployment, training, etc.)



On the user side, Optimetriks runs on a native Android mobile app. Due to the nature of the data collected, including pictures and GPS coordinates, users need to be equipped with smartphones (even entry-level devices). The data captured is pushed to Optimetriks servers in real time. If the mission is located in a low-connectivity environment, the app enables offline data collection and the data is synced with Optimetriks servers when the user is back online.

Optimetriks also uses a Facebook Messenger chatbot for some of the missions. This leverages the Messenger mobile app interface, which is already familiar to many users in Africa. It is essentially a two-way communication tool through which users can express feedback, share their location, take pictures, rate a picture or a video displayed, etc. Questions are pushed by Optimetriks' bot as part of an automated conversation and the users respond to them as they appear. Optimetriks is the first data collection and analytics firm in Africa to leverage a mobile chatbot channel.

3 "State of Retail – Nairobi" – Optimetriks proprietary census of Nairobi, identifying 80,000 unique outlets with their characteristics, pictures and GPS location

Working with mobile operators

In order to process the payment of earnings to users, Optimetriks has integrated with mobile money APIs in the countries where they operate and can therefore process these transactions through bulk payments. Beyond this mobile money API integration, the main way in which Optimetriks is currently working with mobile operators in Africa is by offering them its commercial services in monitoring their agent networks' performance in terms of market share measurement, merchandising presence, product awareness, etc. The team has conducted this type of work with Tigo Ghana, Orange Mali, Zantel and Airtel Uganda.

For example, Tigo Cash Ghana has recently started using their end-to-end solution to enable live field reporting from their 40 sales representatives across the country.

"Optimetriks is a relevant technological solution that gives us real time insights from our mobile money agents across Ghana, which we then use to influence the performance of Tigo Cash. Their end-to-end solution is easy to deploy, agile and reliable."

Carl Eli Pomeyie, Head of Mobile Financial Services, Millicom (Tigo) Ghana Ltd

"Optimetriks has performed a national assessment of our distribution network performance in record time, with high quality results. The provided information, along with the web visualisation, has proved very useful in helping us to improve our services."

Idrissa Diallo, Head of Distribution, Orange Mali

Changing lives

1 NO POVERTY

Optimetriks unlocks additional income for its users, who are often students. The team estimates that working on missions for Optimetriks generates up to 40% additional income for the users and that each user usually supports five people around him/her (children and/or parents). Optimetriks' 250 most active users have therefore been supporting around 1,250 people around them.

Beyond the users, Optimetriks is also indirectly supporting small shop keepers as the challenges they face (stock levels, distributors visit frequency, merchandising, training needs etc.) can now be reported to the FMCG companies that supply them with products, and those FMCG companies can take the necessary measures to fix those issues.

8 DECENT WORK AND ECONOMIC GROWTH



"I finished my studies at Makere University in Kampala in 2015. I now work as a Marketing Executive for my uncle's printing company. I have been working with him for the last 4 years, along with completing my studies and now my missions/projects with Optimetriks. My last assignment with Optimetriks was to perform around 20 store checks to assess the presence and the strength of a leading local dairy brand in the market. Thanks to the money I earned from the missions I conducted through the Optimetriks app, I was able to send money back home to Soroti to develop our family's agriculture business."

Simon Ekocu, 25, Optimetriks user

Working with the GSMA Ecosystem Accelerator

Optimetriks received a grant from the GSMA Ecosystem Accelerator Innovation Fund in April 2017 to:

- Improve the existing service through enhanced platform capabilities;
- Improve the user scoring mechanism and the design of customised training material; and
- Advance the service in Kenya and Uganda

By doing so, Optimetriks is planning to unlock additional income for more than 700 new users by the end of the grant in 2018.

Beyond this funding, the GSMA Ecosystem Accelerator is supporting Optimetriks in strengthening its relationship with mobile operators across three main areas:

- Improvement of mobile operators' distribution efficiency[4]
- Insurance of consistent customer experience at agent level for mobile users
- Integration with mobile operators' mobile money APIs

4 Find out more here: http://optimetriks.com/2017/07/10/what-we-can-offer-to-mobile-operators/

Mobile operators in the News

How mobile operators support local start-up ecosystems to help catalyse mobile innovation

EXTRACT FROM: START-UPS AND MOBILE IN EMERGING MARKETS

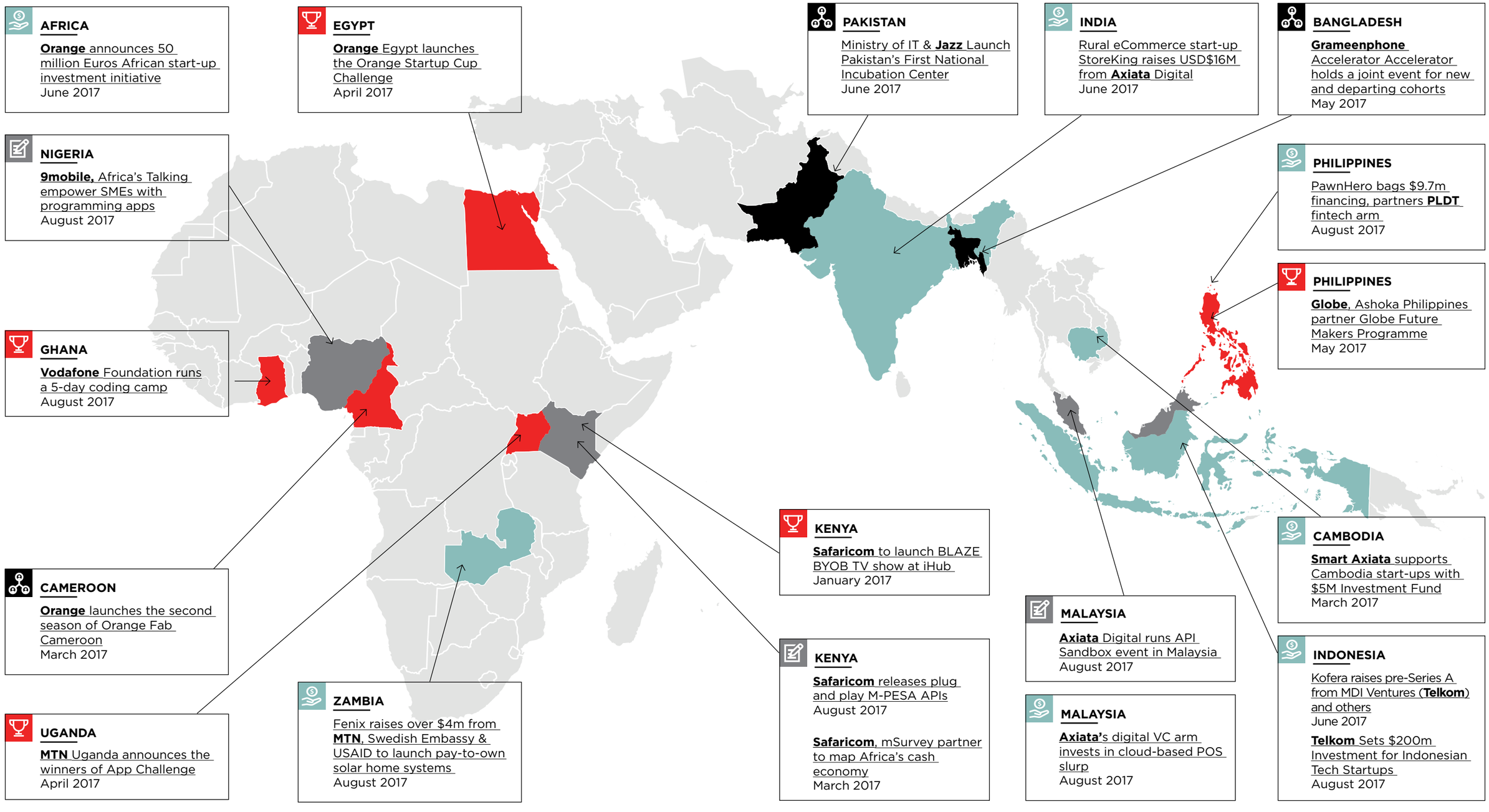
For more information please get in touch: accelerator@gsma.com or gsma.com/ecosystemaccelerator

The map below is a snapshot of start-up-related mobile operator initiatives that were launched between January and August 2017. Each initiative has been mapped against a framework that we developed in a previous report: Building Synergies: How Mobile Operators and Start-ups Can Partner for Impact in Emerging Markets. Those recent developments include Investments, Competitions, Commercial Agreements and Tech Hubs initiatives. For this report, we have chosen to dive deeper into six of the initiatives.

FIGURE 1

Start-up related mobile operator initiatives in emerging markets (Jan-Aug 2017)

INVESTMENTS **COMPETITIONS** **COMMERCIAL AGREEMENTS** **TECH HUBS**



AFRICA
Orange announces 50 million Euros African start-up investment initiative
June 2017

EGYPT
Orange Egypt launches the Orange Startup Cup Challenge
April 2017

PAKISTAN
Ministry of IT & **Jazz** Launch Pakistan's First National Incubation Center
June 2017

INDIA
Rural eCommerce start-up StoreKing raises USD$16M from **Axiata** Digital
June 2017

BANGLADESH
Grameenphone Accelerator Accelerator holds a joint event for new and departing cohorts
May 2017

NIGERIA
9mobile, Africa's Talking empower SMEs with programming apps
August 2017

PHILIPPINES
PawnHero bags $9.7m financing, partners **PLDT** fintech arm
August 2017

PHILIPPINES
Globe, Ashoka Philippines partner Globe Future Makers Programme
May 2017

GHANA
Vodafone Foundation runs a 5-day coding camp
August 2017

CAMBODIA
Smart Axiata supports Cambodia start-ups with $5M Investment Fund
March 2017

CAMEROON
Orange launches the second season of Orange Fab Cameroon
March 2017

KENYA
Safaricom to launch BLAZE BYOB TV show at iHub
January 2017

MALAYSIA
Axiata Digital runs API Sandbox event in Malaysia
August 2017

INDONESIA
Kofera raises pre-Series A from MDI Ventures (**Telkom**) and others
June 2017

Telkom Sets $200m Investment for Indonesian Tech Startups
August 2017

UGANDA
MTN Uganda announces the winners of App Challenge
April 2017

ZAMBIA
Fenix raises over $4m from **MTN**, Swedish Embassy & USAID to launch pay-to-own solar home systems
August 2017

KENYA
Safaricom releases plug and play M-PESA APIs
August 2017

Safaricom, mSurvey partner to map Africa's cash economy
March 2017

MALAYSIA
Axiata's digital VC arm invests in cloud-based POS slurp
August 2017

FIGURE 2

Orange announces €50 million African start-up investment initiative

INVESTMENT

In June 2017, Orange launched a €50-million investment fund dedicated to African start-ups. A newly established arm, Orange Digital Ventures Africa, is steering this investment initiative. The Dakar-based team will be investing €25m directly, while the other €25m will be invested indirectly via funds specialising in the digital sector, in partnership with Partech Ventures and AfricInvest[1].

Orange Digital Ventures Africa is seeking start-ups tackling Africa's fundamental challenges in areas such as new connectivity, fintech, internet of things (IoT), energy and e-health. The Fund is looking to invest between $2 million and $5 million in each start-up.

The investment vehicle will leverage on Orange's current initiatives in the region. The mobile operator runs in-house tech hubs (Orange Fabs) in Cote d'Ivoire, Cameroon and Senegal. Orange also works with a network of partner incubators such as CTIC in Senegal and CIPMEN in Niger. It also runs the Orange Social Venture Prize, which recognises promising social enterprises and entrepreneurs across the continent. As part of its efforts to integrate with the tech ecosystem, the mobile operator group has also made a number of its APIs (USSD, SMS, Billing and Orange Money) fully available to developers and entrepreneurs across multiple markets in Africa.

Grameenphone-led accelerator graduates third cohort and selects fourth cohort of start-ups

TECH HUB

The Grameenphone Accelerator (GPA), an acceleration programme run by Telenor's operation in Bangladesh graduated its third batch in August 2017, and announced its fourth.

Start-ups from the third batch – Jolpie, Microtech, and Bankcomparebd – successfully completed their four-month journey with GPA and showcased their businesses to investors. Grameenphone Accelerator also revealed five upcoming start-ups– AlterYouth, Amruddog, Avijatrik, Foodtong and MARS.

GP Accelerator provides start-ups with curriculum-based mentorship by international and local experts over a period of its four-month programme. Selected start-ups are offered $15K, $1,000 worth of Amazon web service (AWS) credit and office space at GP Accelerator. Upon graduating, start-ups that show potential to scale are offered an additional $15K. Lastly, all start-ups are connected with investors, relevant industry contacts and professional support on topics such as term sheets, valuation, financial modelling and marketing. In return, Grameenphone Accelerator takes 10% equity from each start-up in return for its support.

MTN Uganda announces the winners of App Challenge

COMPETITION

MTN Uganda's three-day app development challenge attracted over 20 application entries. In May 2017, app developers were tasked with coming up with innovative prototypes of mobile-based solutions under the themes of mobile health, finance, education, business, entertainment and agriculture.

The grand winner was Team JustGo, which developed a solution targeted at long-distance travellers to book buses through both a mobile app and a USSD code. Team Nightingale was the mHealth win; they prototyped a counterfeit drug capturing application. Team Soma Africa won the mEducation category with a solution that streamlines the student admission process with a mobile and web solution. In the mAgriculture category, team Has won by showcasing MUHOGO, a real-time disease diagnosis application for cassava.

All winners will take part in a six-month incubation programme at MTN partner tech hub Outbox and be mentored on problem validating, product building and business training. MTN will also provide start-ups with direct access to the operator's APIs. Start-ups that have benefitted from MTN App Challenge in the past include laundry service providers Yoza and coupon-based payment solution MamboPay (which is available in both English and other local languages on MTN's USSD menu)

1 http://www.latribune.fr/technos-medias/orange-va-investir-50-millions-dans-les-startups-en-afrique-733448.html

FIGURE 3

Smart Axiata launches $5 million fund for Cambodian start-ups

INVESTMENT

In March 2017, Smart Axiata teamed up with investment consultancy Mekong Strategic Partners to launch a $5 million innovation fund for digital start-ups in Cambodia. The mobile operator is looking to invest ticket sizes ranging from $25,000 to $500,000 in 10-20 start-ups within sectors such as financial technology, digital commerce, entertainment, social media, advertising, education and healthcare.

The country has witnessed a rapid growth in mobile and smartphone adoption over the last few years. According to GSMA Intelligence, in the last three years up to Q2 of 2017, smartphone penetration in Cambodia has almost doubled from 20% in Q2 of 2014 to 39% in Q2 of 2017. In addition to financing, the Fund will provide support to start-ups through mentoring, knowledge sharing and business development. Successful start-ups will also gain insights into marketing, branding and other critical business processes leveraging on Smart's resources and expertise.

Safaricom, mSurvey partner to map Africa's cash economy

COMMERCIAL AGREEMENT

Safaricom and data collection start-up mSurvey teamed up to launch a Consumer Wallet – a platform that will use SMS to map out Africa's cash-based economy. Consumer Wallet will be available on a subscription and licensing basis.

The partnership combines Safaricom's internal resources and distribution channels with mSurvey's data gathering expertise. As of March 2017, Safaricom had 100,744 M-Pesa agents around the country. Meanwhile, over 17 million unique consumers have interacted with mSurvey's between its launch in 2013 and 2017[2]. Safaricom and mSurvey have piloted a 1,000-person survey sample to look into the preferences and spending on items such as food, transport, education and housing. Consumer Wallet will provide insights into the spending habits of "offline" consumers. This is particularly important in Africa, since a significant amount of consumer spending occurs in cash in the informal economy. The partnership comes after Safaricom's strategic investment into mSurvey in August 2016 via the Safaricom's Spark Venture Fund. The fund has also invested in Eneza Education, FarmDrive, iProcure, Lynk and Sendy.

Axiata Digital launches an API sandbox for start-ups

COMMERCIAL AGREEMENT

Axiata Digital, the digital arm of Axiata Group Berhad, ran an event in August of 2017 to showcase its API platform Axiata Digital MIFE (Mobile Internet & Fulfilment Engine). During the event, the mobile operator's digital arm held an introductory talk on MIFE API and the MIFE Sandbox. Axiata Digital also briefed attendees on use cases for MIFE APIs including SMS, Direct Carrier Billing (DCB) and Voice.

The company also showcased Axiata Digital Challenge, where successful start-ups are granted opportunities to expand their businesses through partnership with Axiata to marketplaces in several Asia markets such as India, Nepal, Sri Lanka, Singapore, Indonesia, Cambodia and Malaysia. The nature of the partnership will include white labelling, co-developing and licensing applications, as well as go-to-market promotions.

The MIFE platform is operator-wide and will be available to all developers and entrepreneurs looking to gain access to the Axiata API solution in order to scale their solution across Southeast Asia.

2 Safaricom Annual Report and Financial Statements 2017 https://www.safaricom.co.ke/images/Downloads/Resources_Downloads/Safaricom_2017_Annual_Report.pdf

Mobile Technologies for the SDGs

How start-ups and mobile operators in emerging markets are leveraging USSD technology to address socio-economic challenges

Of the 3.7 billion people not yet connected to the internet, 2.5 billion (two-thirds) actually live in areas that are covered by 3G or 4G signals[1]. This means that coverage is not the only obstacle. Some of the major barriers include the cost of mobile data and smartphone ownership (despite the price dropping significantly) as well as the lack of digital literacy and content relevance for potential users.

To circumvent these limitations, technology start-ups looking to target a broader audience are looking beyond internet-based means.

USSD is one of the channels enabling start-ups to reach almost anyone. The technology has been used in emerging markets for more than a decade and is sometimes considered to be the 'ancestor' of mobile apps.

Based on data gathered from more than 550 start-ups that applied in July of 2017 to the second round of the GSMA Ecosystem Accelerator Innovation Fund, **one in five start-ups across Africa and Asia Pacific are leveraging USSD technology to meet their customers' needs.** Some of these start-ups use USSD as their sole communication channel, while others are adopting hybrid approaches that combine web, SMS, USSD and/or IVR.

The relevance and importance of USSD in emerging markets have attracted the attention of internet corporations such as Facebook, Twitter and Google. These companies have worked with local mobile operators to enable emerging markets users to have access to their internet-based services without the need for internet-enabled phones. For instance, several mobile operators offer their users access to Facebook through USSD. Using this service, users can view their news feed and update or like a status without having to connect to the internet and all at very little cost.

FIGURE 1

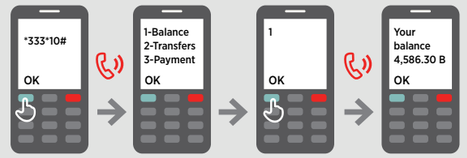
What is USSD?

Patented in 1994, the USSD technology, or Unstructured Supplementary Service Data, is an interactive, menu-based technology, which is supported on most mobile devices.

USSD messages can be up to 182 alphanumeric characters long. USSD is similar to SMS in that it sends short text-based messages; however, instead of text messages going from user to user, USSD messages travel from the user to the mobile network or vice versa. USSD creates a real-time connection, which allows for a two-way exchange of data between users and the network. This makes the technology more responsive than SMS. Also, like SMS, USSD works on standard phones, feature phones and smartphones without the need to install any app or programme, or access to mobile data.

How it works

'Self-care' (users checking their airtime credit balance) is one the most common use cases of USSD. Users typically dial a short code on their phone, for example, #123*, and get access to a menu where they can check their airtime balance and other options.





Beyond the technology giants, emerging market start-ups are also using USSD technology. Launched in 2012, Hoppr (India) a mobile device-agnostic location-based check-in service was initially a USSD-only service. The start-up set out to build a hyper local e-commerce ecosystem in India, where users are able to explore offers available with brands and merchants in their vicinity via USSD. Within just six months of operation, Hoppr had garnered 65 million check-ins, three million registrations and over a million active users[2]. After reaching critical mass on the USSD platform, Hoppr adopted a hybrid approach by launching an Android app to expand its addressable market to customers with internet services. Hoppr was later acquired by Hike and has since been integrated into the Indian instant messaging platform[3].

1 Source: GSMA Global Mobile Trends 2017, https://www.gsmaintelligence.com/research/?file=3df1b7d57b1e63a0cbc3d585feb82dc2&download
2 https://techcrunch.com/2013/03/09/as-it-hits-3m-users-after-6-months-hoppr-checks-in-its-bid-to-be-indias-foursquare/
3 http://economictimes.indiatimes.com/tech/software/hike-brings-hoppr-tiny-mogul-games-under-main-brand/articleshow/48466977.cms

Start-ups, USSD technology and the Sustainable Development Goals (SDGs)

The examples below highlight start-ups across emerging markets that are utilising USSD technology as a tool to effect positive socio-economic change in their respective operations.

SDGs	START-UPS	
1 NO POVERTY	CashUp (India): The Fintech start-up runs a USSD-based money transfer platform that allows users to make direct bank to bank transfers. It is available in three languages – English, Hindi and Tamil.	
2 ZERO HUNGER	MLouma (Senegal): The agtech platform connects farmers to customers by displaying real-time market prices and localisation. The solution is built on Orange's SMS and USSD platform (#303# My Store), as well as a web application. Farmers can subscribe directly by dialling a USSD code.	
3 GOOD HEALTH AND WELL-BEING	GiftedMom (Cameroon): The start-up offers health information and monitoring services to pregnant women in marginalised communities through USSD, SMS and a web application. GiftedMom integrated Orange's SMS, #303# My Store and Direct Carrier Billing APIs into its platform in production mode at Orange Fab Cameroon.	
	Casava (Nigeria): A peer to peer (P2P) insurance platform that aims to use artificial intelligence (AI) to enable consumers to buy insurance where the customer makes small weekly and monthly insurance subscription payments via debit card or USSD. Casava aims to be the first start-up in Africa to offer consumers P2P insurance. As of September 2017, it is yet to launch.	
4 QUALITY EDUCATION	Chalkboard Education (Ghana): The edtech start-up provides Africans with distance-learning university courses. The start-up offers an easy mobile learning solution that allows universities to upload teaching materials. Students can access these courses with or without an internet connection. Chalkboard Education addresses the issue of connectivity through USSD and SMS technology.	
5 GENDER EQUALITY	Kasha (Rwanda): The e-commerce start-up sells and delivers healthcare and private health products for women such as contraceptives and tampons. Customers can access Kasha via USSD, mobile and a web application. Customers using USSD can simply type in a short code to access Kasha's menu and place orders.	
6 CLEAN WATER AND SANITATION	Skyfox (Ghana): The social enterprise, which reduces service downtime, runs a project in rural Ghana. When a water hand pump breaks, someone in charge (usually a caretaker) can initiate a USSD session to send a report to a technology platform managed by SkyFox, which updates the status of the facility as "Not Working". Simultaneously, information is sent to a set of mobile phones of individuals such as mechanics who can fix the water hand pump.	
7 AFFORDABLE AND CLEAN ENERGY	Brighterlite (Pakistan): Brighterlite provides high-quality solar home systems to low and medium income households. In Pakistan, Brighterlite's customers can pay for their monthly rentals via USSD (more details in GSMA Mobile For Development report: "Easypaisa: A mobile operator-led solar PAYG model for Pakistan").	
	Onelamp (Uganda): The social enterprise provides last-mile on-demand delivery service for clean energy to those at the base of the pyramid. Through USSD and SMS services, Onelamp offers same-day delivery of solar lamps to off-grip households.	
8 DECENT WORK AND ECONOMIC GROWTH	UX (Mozambique): The Mozambican start-up launched Biscate to connect workers in the informal sector to customers via web and USSD technologies. Informal workers in Mozambique usually lack (or have very little) access to the internet. With USSD technology, informal workers have greater access to employment and income opportunities. More information available in the Biscate case study above.	
11 SUSTAINABLE CITIES AND COMMUNITIES	Online Cabs (Sri Lanka): The start-up runs a mobile-based taxi booking service. To achieve the widest possible reach, Online Cabs partnered with Dialog Sri Lanka's Ideamart to integrate its USSD, SMS and location APIs. Using either the USSD or SMS booking option, users can now book taxis using a basic phone.	
12 RESPONSIBLE CONSUMPTION AND PRODUCTION	Verdant (Nigeria): The start-up offers agronomy services such as geo-location based weather forecasting, soil preparation, crop cultivation advice and post-harvest advisory services including market price information, financial planning and supply chain information. Farmers can interact with the services via USSD, SMS and IVR.	
16 PEACE, JUSTICE AND STRONG INSTITUTIONS	BenBen (Ghana): A solution for governments to convert physical land titles to digital copies via Blockchain. BenBen provide citizens with a USSD, Android and web platform that allows them to manage land records and perform land transactions.	

Mobile operators and USSD APIs in emerging markets

USSD was initially used by mobile operators for self-care, but the number of use cases has grown exponentially. Many operators realise the economic potential of providing APIs access to local developers and entrepreneurs and have launched a variety of initiatives. Highlighted below are three examples of mobile operator USSD APIs platforms. For more extensive research on the potential of open mobile operator APIs read our previous publication – APIs: A bridge between mobile operators and start-ups in emerging markets – and video – The Power of Mobile Operator APIs.

- **AXIATA (SRI LANKA):** Dialog Axiata launched a business unit in 2012 to power its API platform Ideamart. Dialog has since partnered with competitor Hutchinson Telecommunication to enable developers to seamlessly connect to both mobile operators' APIs via Ideamart's platform. There are currently nearly 2,000 USSD-powered apps on the Ideamart platform. As a result, the number of USSD API calls generated for August 2017 was 2.8 million.

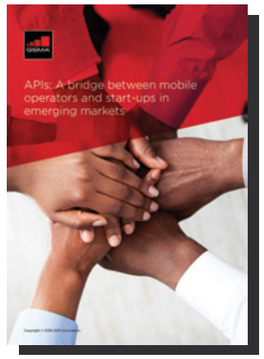


- **ORANGE (AFRICA):** The mobile operator runs a platform, #303# My Store, which enables developers to plug into a standardised USSD API. #303# My Store is active in Cote d'Ivoire, Cameroon and DRC with around 50 third-party services accessible on the platform. There are approximately 200,000 unique average monthly users on the #303# My Store. Orange is now looking to expand the service to its operations in Egypt, Mali and Senegal in early 2018.



- **9MOBILE (NIGERIA):** The mobile operator has partnered with APIs aggregator Africa's Talking, a Pan-African software solution company, to empower developers and SMEs with access to telecom infrastructure through APIs. The partnership will enable the provision of mobile communication tools such as two-way SMS and USSD APIs to start-ups and SMEs[4].





4 https://www.vanguardngr.com/2017/08/nigerian-software-developers-get-9mobile-api-boost/

Looking ahead: calling emerging markets' start-ups to consider the USSD opportunity

From the aforementioned examples, we have observed that start-ups tend to take two approaches when deploying USSD technology. Some use USSD-only solutions, while others leverage USSD to complement their SMS, IVR, web and/or mobile applications. The latter approach exposes start-ups to a wider addressable market, allowing them to reach customers with and without internet-enabled phones.

The GSMA Ecosystem Accelerator expects a rise in the use of USSD as more mobile operators open up their APIs and as aggregators like Africa's Talking or hubtel integrate with more and more operators regionally.

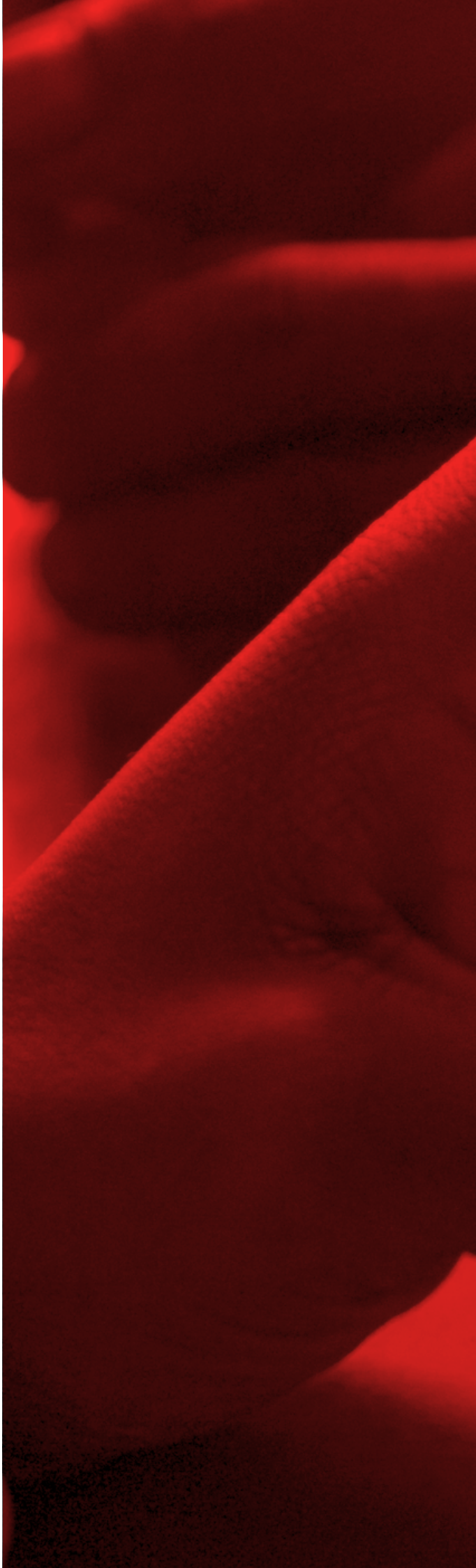
There is a growing trend of start-ups integrating USSD with emerging technologies i.e. Blockchain (BenBen, Ghana) and AI (Casava, Nigeria). USSD also works hand in hand with Internet of Things (IoT) solutions since it is designed specifically for transferring small quantities of data and it utilises less power than standard IoT mobile connections[5].

USSD combined with emerging technologies hints that despite being more than 20 years old, USSD is not archaic and remains a relevant communication channel to deliver mobile services in emerging markets, especially to low-income populations.

We therefore encourage emerging markets start-ups developing mobile services for the mass market to look carefully at the opportunities offered by USSD technology and engage with local mobile operators to unlock them.

5 http://www.hatchmfg.com/overview-of-ussd-for-iot/

For further information please visit
the GSMA website at www.gsma.com



GSMA HEAD OFFICE
Floor 2
The Walbrook Building
25 Walbrook
London EC4N 8AF
United Kingdom
Tel: +44 (0)20 7356 0600
Fax: +44 (0)20 7356 0601