May 2021

Improving healthcare service provision in Africa

How health-tech solutions are helping bridge the gap on the continent

BRITER BRIDGES

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Briter Bridges is positioned as the leading data resource for information on the tech and investment landscape in emerging markets. Briter's business analytics platform, Briter Intelligence, counts thousands of users globally and offers a first-of-its-kind interactive tool that puts Briter's rich database and analysis in the hands of tech founders, investors, facilitators and more, enabling them to navigate valuable information on Africa's expansive tech startup industry.

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Startups

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oyi medical card · PresKriber Enhancing HealthCare · REDBIRD · REMA · wellahealth · Waspito

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Introduction

Background

'Improving Healthcare Service Provision in Africa' is a 'beginner's guideline' dedicated to the growing market for digital and technology-enabled healthcare solutions across Africa. It builds on the analysis of hundreds of companies between pre-seed and Series D stage, and over 100 funding transactions that happened since 2015, to define patterns and trends in investment appetite, customer demand, and market gaps. This study intends to offer an overview of the models of operations within digital healthcare provision by juxtaposing funding trends featured on Briter Intelligence with storytelling about the way the sector operates. The products have been clustered into four categories:

- Health management;
- Diagnostics, monitoring and telehealth;
- Medical supply chains and logistics;
- Health financing and insurance.

The report addresses individuals, organisations, and investors who are engaging in, or plan to do business, research, or investment in the digital health sector by looking at the market from the perspective of:

- The number of actors in each vertical;
- The type of customers;
- The different business models;
- The potential for partnerships;
- Challenges and solutions.

Building on in-depth industry knowledge is a crucial first step in the process of starting a business or making informed investments, as data scarcity can slow down decisional processes. *'Improving Healthcare Service Provision in Africa'* serves as an introductory document to understand the state of play in one of the most critical themes in Africa's socio-economic growth debates.

Partly propelled by the inadequacy of public service provision, as well as structural gaps including ill-equipped public services, low doctor-to-population ratio, and logistical inefficiencies, many African economies have experienced a surge in the availability of digital technology to address local healthcare-related challenges, attracting over $110 million in disclosed funding in 2020 alone, according to figures from Briter Bridges' *Africa Investment Report 2020*. Although the increased funding volumes are an indication that private financiers are progressively seeing Africa's healthcare sector as more investment-ready, the regulatory environment and the unit economics remain challenging and leave several investors hesitant about deploying capital because of the complexity of the industry. In addition, despite exacerbating poverty and adding to the already burdensome budgets of hospitals and clinics, the COVID-19 pandemic has had a strong impact on the conversation about Africa's homegrown healthcare capacity, especially in regards to vaccines and access to basic provision, which has somewhat acted as a catalyst for digitally-enabled solutions as a viable alternative to be adopted by both the private and public sector.

Low disposable income and public spending

Healthcare costs can take up a significant share of disposable income in both high- and low-income countries. Insufficient public health expenditure and the low doctor-to-population ratio have resulted in an ill-equipped public sector that lacks the adequate infrastructure and talent pool to meet the healthcare needs of the majority of the population. Most African governments provide insufficient healthcare services, partially due to inability to collect sufficient, and the mismanagement of existing tax revenues, as well as an often bureaucratic public health sector. This implies that several governments cannot afford to provide state subsidies for healthcare treatments. As a result, healthcare expenditure in Africa has averaged 5% of GDP since 2010, below the global average of 10%. This has a direct impact on African households, as it entails out-of-pocket health spending that can affect their ability to meet their basic needs such as housing, food and education. According to a 2020 National Bureau of Statistics (NBS) report, Nigerians spend more on food (57% of household expenditure) than on non-food items, with only 6% apportioned for healthcare-related spending. The concept of disposable income, which implies that the poorer the average household, the larger the share of income spent on basic needs, is too often applied to personal healthcare spending. In addition to the problem of low public health expenditure, the World Health Organization (WHO) 2018 data show that the doctor-to-population ratio in more than 40% of its member states is 10 per 10,000 people, with thirty African countries still averaging below that figure.

The African population is exposed to over 22% of the global burden of diseases, yet the region commands less than 1% of global health expenditure and only has access to 3% of healthcare workers according to WHO data.

Medical drain brain

The doctor shortage across the continent is exacerbated by the so-called 'medical brain drain', with many African physicians emigrating overseas in search of higher wages and better working conditions every year. As many as 55,000 African-trained doctors and 135,000 nurses had migrated to OECD countries between 2000 and 2011. In 2015, four African nationalities – Egyptian, Ghanaian, Nigerian and South African – accounted for 86% of the African-trained physician workforce in the US. As a result, Africa loses an estimated $2 billion every year on training costs for African doctors that migrate to high-income countries such as the US, the UK, Canada, and Australia. On the other hand, rural areas in sub-Saharan Africa, which are home to 60% of the region's population that tend to be poorer, semi-literate, and disconnected from the internet, attract only 25% of medical doctors that remain in Africa. For people in these areas, the private sector often represents the only available option to receive healthcare, although this often still implies having to travel long distances and wait several hours to see a doctor.

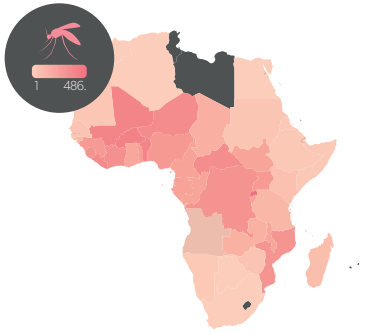
PREVALENCE AND INCIDENCES OF DISEASES ACROSS AFRICA

COMMUNICABLE DISEASES

MALARIA INCIDENTS

Malaria incidents per 1000 at risk, (2018)

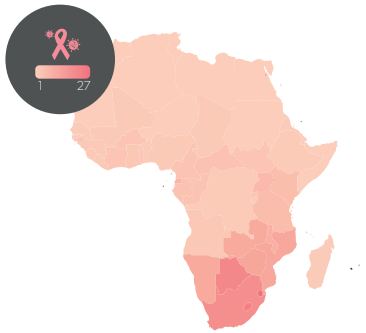
World Health Organization (2018)



HIV PREVALENCE

Prevalence of HIV, total (% of population ages 15-49), (2019)

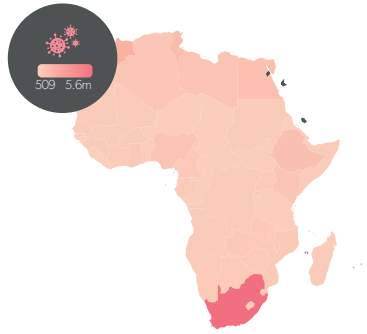
World Bank (2019)



COVID-19 CASES

COVID-19 cumulative cases, (14/04/2021)

World Health Organization (2021)

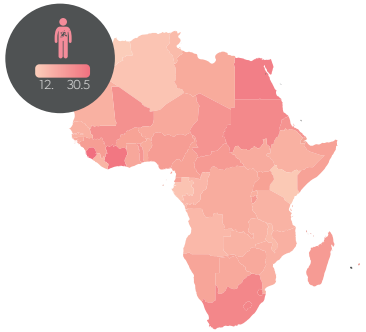


NON-COMMUNICABLE DISEASES

CANCER SURVIVAL

Cancer survival rate within past five years per 100,000 pop, (2018)

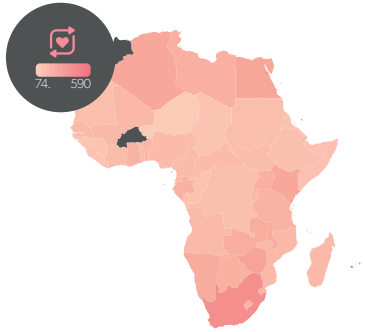
Cancer Atlas (2018)



DISEASE MORTALITY

Mortality from CVD, cancer, diabetes or CRD between exact ages 30 and 70 (%), (2016)

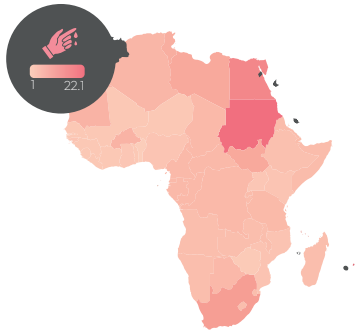
World Bank (2016)



DIABETES PREVALENCE

Diabetes prevalence (% of population ages 20 to 79), (2019)

World Bank (2019)



The healthcare funding landscape

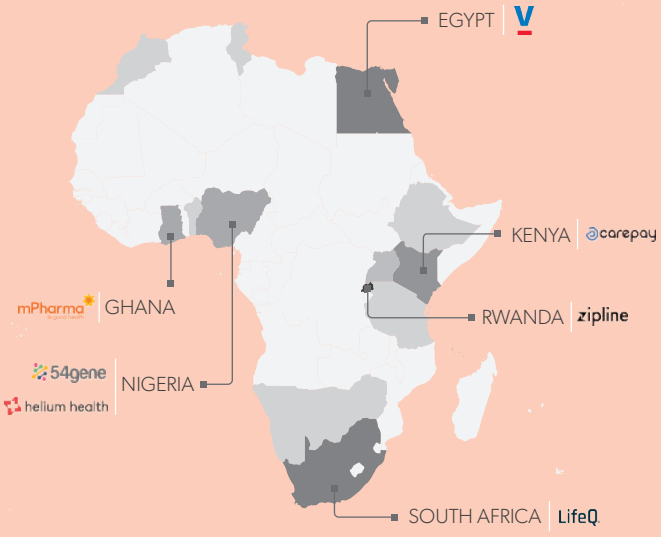
The healthcare sector in Africa is largely dominated by government-led and donor-funded initiatives, as infrastructural and regulatory constraints have historically made barriers to entry for private enterprise costly. However, thanks to the lowering price of software and hardware, new models are being explored by entrepreneurs, as companies begin leveraging partnerships to reduce set up and maintenance costs. This as it is being seen in a number of emerging business models, such as e-pharmacies, mobile clinics, and health management platforms. The opportunity to partner with other businesses to generate revenues, as opposed to trying to reach consumers directly, partly stems from the inability of many early-stage companies to monetise due to the limited disposable income and low rate of insurance. As Wilfred Njagi, Founder of health-focused accelerator Villgro Africa explains, however, the ability of companies to collaborate with governments, due to their significant involvement in the healthare sector on the continent, can offer companies access to large, underexplored customer segments. Undoubtedly, COVID-19 has played a catalyst and awakening role in positioning digital solutions as an additional expedient to tackle the current state of the healthcare industry.

Breaking down healthcare funding

Africa's private healthtech sector attracted less than 10% of the total share of funding that went to startups in 2020. Out of all the health products analysed in this study, telemedicine enjoyed the largest share of funding, attracting over $40 million.

The most funded companies in the healthtech sector in 2020 were Egyptian doctor appointment booking startup Vezeeta, Ghanaian e-pharmacy startup mPharma, Nigerian biotech startup 54Gene, and Nigerian electronic medical records Helium Health, with $40 million, $17 million, $15 million, and $10 million respectively. In H1 2021, LifeQ was the company raising the highest amount in a single round, i.e. $47 million. In an industry that has traditionally struggled to attract private investment on the continent, healthtech-focused investors in this space are betting on innovative companies that are addressing the continent's healthcare challenges to breach new market opportunities and drive the industry onto a path towards maturity and technological advancement.

FUNDING DISTRIBUTION IN AFRICA



MOST FUNDED COMPANIES

EGYPT

MOST FUNDED PRODUCTS 2016 - 2021

E-pharmacy and Medical Supply Chain

Doctor Booking

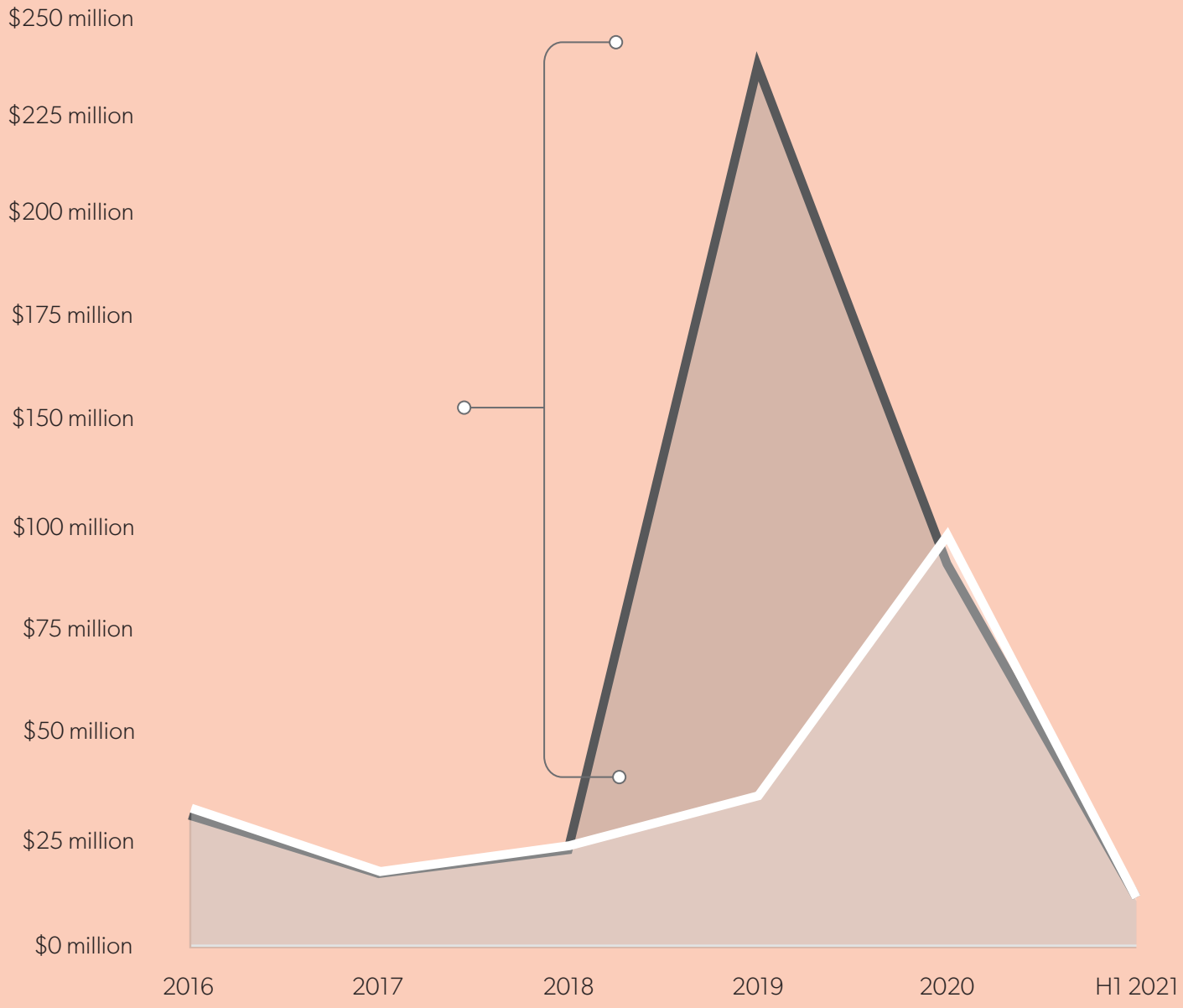
Telemedicine

EMR

Biotech

Diagnostics

HEALTHTECH FUNDING BY YEAR



HEALTHCARE MANAGEMENT

ELECTRONIC MEDICAL RECORDS

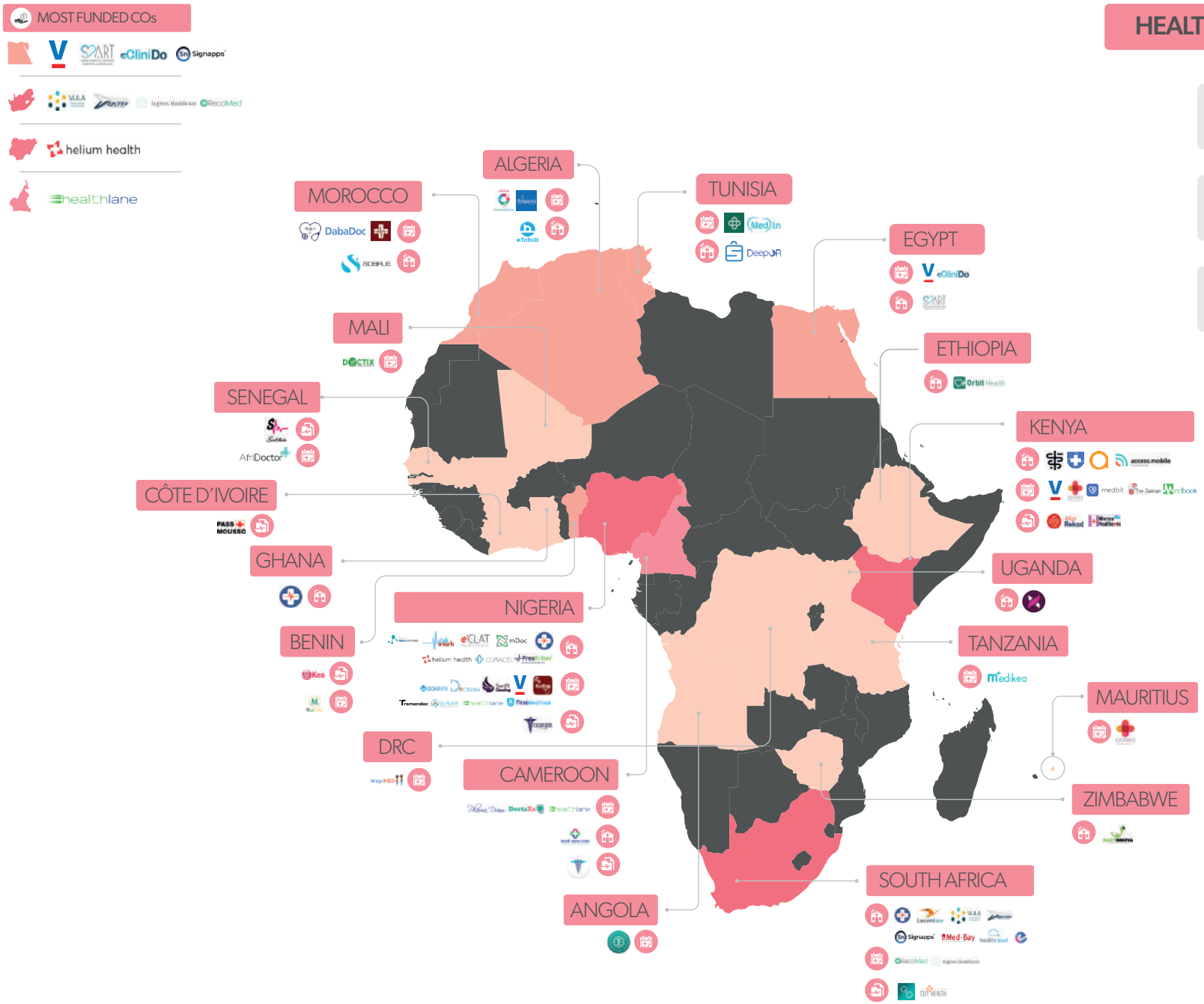
Platforms that connect healthcare providers and patients, through online services, chat, video calls, text, and other digital communication tools.

DOCTOR BOOKING PLATFORMS

Platforms that connect healthcare providers and patients through directories and digital appointment tools.

MANAGEMENT & COMMS

Software, tools and platforms that help healthcare providers manage their patients, schedules, doctor communications, billing, appointments, and hospital activities.



1
Enhancing and optimising health management

Digitising 'pen and paper' processes

Healthcare facilities in many African countries largely leverage 'pen and paper' systems, and the lack of reliability due to the human element in this process has an impact on the quality of healthcare provision. This implies that any curricular interactions ranging from scheduling to booking, filing documentation, attending consultations, and receiving treatment remain based on physical contact. Because of the costs tied to digitising infrastructure, most clinics still rely on walk-ins and 'old fashion' note-taking as their primary way to keep records and this not only acts as a bottleneck that limits the flexibility of administration, but it also comes at a cost of losing documentation, being left with illegible notes, ease of making errors, and finite physical storage space.

The progressive increase in mobile penetration and the need to respond to these sort of challenges have led to the rise of digital health management systems designed to help healthcare providers store, exchange and retrieve patient medical information. Software built for hospitals, such as customer relation management systems (CRM), offers a centralised information management system that provides automatic input of patient appointments, as booking platforms also become vehicles for digitising and managing medical records. Additionally, as traditional methods are also used for payments, especially in peri-urban and rural areas, digital payment systems are quickly being put at the forefront of the ongoing transformation. Companies such as Nigeria's Helium Health, a leading health management provider offering a service suite spanning electronic medical records and payment integration, for instance, allows clinics and hospital to receive payments from patients from different demographic segments, by including USSD technology and bank transfers. Doctor booking platforms have mushroomed across the continent, from Morocco's DabaDoc to Egypt's Vezeeta, Nigeria's Preskriber, Dokilink and Doctoora, Ghana's Kenko Doctor, Cameroon's WASPITO, and Tanzania's MediKea. These portals allow patients to book the doctors according to their needs, sorting them by name, specialisation, location, and cost. Cameroon's WASPITO operates in a system with a doctor-patient ratio of 1 doctor per 40,000 people, with only 50% of patients having direct access to primary physicians, and often forced to travel longer distances with longer queues to receive care. WASPITO is one of dozens of young companies addressing this missing link by digitising healthcare processes, from doctor booking to lab work and electronic prescription, by signing up doctors, hospitals, pharmacies and laboratories to their platform, so that patients can book them directly. One of the challenges to digitisation is the reluctance to adopt new methods and users are not always digitally savvy or keen to be onboarded on brand new systems. To bypass this, WASPITO's Founder and CEO Jean Lobe explains, as "*most patients are attached to either their doctor or hospital, doctors are encouraged to recommend booking platforms and educate their audience about the benefits of virtual interactions.*"

By partnering with hospitals, Waspito is able to place ambassadors to drive traffic on the platform. According to Lobe, about 70% of doctor-patient consultations are conversations that can be carried out without physical examination, and rather discussed virtually. The average time of such consultations is seven minutes and the digital appointment booking system streamlines the process, cutting on waiting time that would exist in a walk-in clinic. By reaching more patients, doctors are able to subsdise the cost of the consultations, hence reducing access barriers.

Nigeria's Preskriber provides a medical booking platform targeted at doctors and service providers. According to Preskriber's founder Halima Balogun, "technology adoption by both providers and end-users is largely slow", dragging uptake of such digital solutions. The next chapter departs from the use of technology for better healthcare maangement and explores how digital solutions are bringing medical personnel to the patients' doorsteps and are changing the health consultations and diagnostics' landscape.

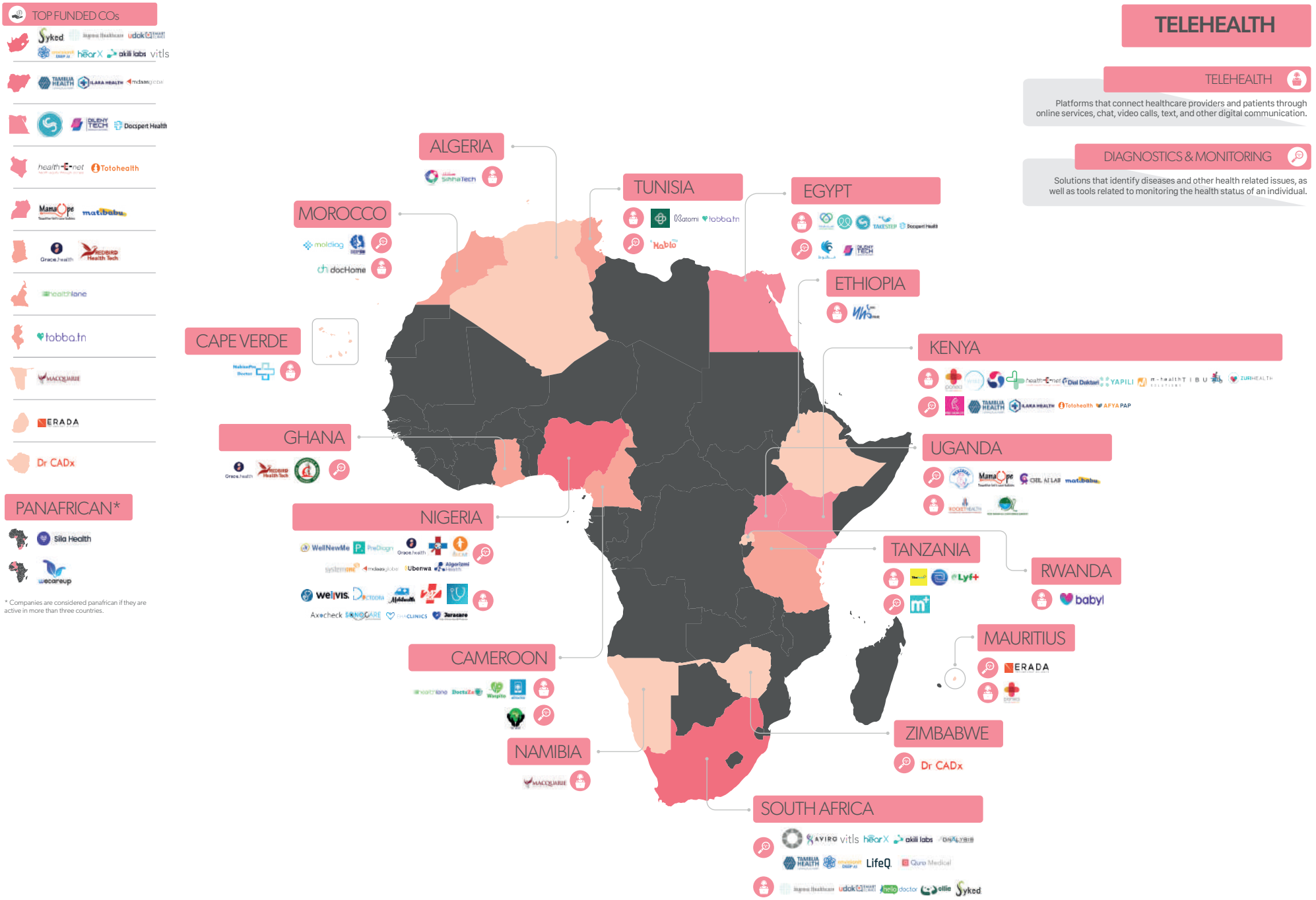
TELEHEALTH

TELEHEALTH

Platforms that connect healthcare providers and patients through online services, chat, video calls, text, and other digital communication.

DIAGNOSTICS & MONITORING

Solutions that identify diseases and other health related issues, as well as tools related to monitoring the health status of an individual.



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2
Delivering remote healthcare services

On-demand healthcare and mobile clinics

The rise of on-demand services has offered an alternative to the status quo in accessing healthcare, by allowing patients to request a visit from a doctor or a healthcare specialist in a similar manner to how they would request a ride through mobile applications. On-demand healthcare services are often thought as part of the "uberisation of services" that is characterising several industries. Especially since the beginning of the COVID-19 outbreak, on-demand healthcare solutions have become more common as they offer a safe and convenient way for patients to receive the physical and mental care they need from reliable healthcare professionals without the need to leave home. Additionally, for elderly and vulnerable people, on-demand healthcare opens up the possibility to receive regular care and keep their health conditions periodically monitored. Companies like Nigeria's GeroCare offer subscription-based access to regular visits from an assigned doctor and allow patients to keep their health records stored and monitored through a digital platform. GeroCare also leverages partnerships with NGOs and health service providers in order to meet healthcare costs for those user segments who cannot afford to pay for the service.

However, threats to safety in risky areas represent a challenge for startups in the healthcare sector who try to reach users in remote areas. "Sending doctors to remote places can be difficult, as they tend to express their unwillingness to go for reasons ranging from logistical inefficiencies to the fear of being kidnapped", explains GeroCare's Co-Founder Dr. Ajibola Meraiyebu. As a workaround, GeroCare launched MEDRA (Medicare for Rural Areas) Telehealth Box, a toolkit that makes it easy for users in rural areas to access quality healthcare even without having access to physical medical facilities or an internet connection. People in rural areas can receive care by visiting a GeroCare kiosk, which is mounted by an administrator and equipped with a telehealth device. The box allows patients to text, phone, or videocall a doctor and also contains accessories that enable diagnostics and monitoring of their health. This concept is similar to mobile clinics, which act as a moving walk-in clinic that can be transported to people in remote areas.

Telehealth

Across many underserved markets, telehealth solutions are offsetting the barriers to access basic healthcare service provision for millions of people. The ability to respond to immediate needs despite the scarcity of medical personnel and the infrastructural inadequacies that characterise many low-income countries means that telehealth solutions are often the only way of providing quality healthcare for people less accessible areas, such as periurban, rural, and informal settlements. At the heart of telehealth are connected devices that enable patients to interact with doctors or medical staff through online services, chat, video calls, SMS, and other virtual communication tools.

Although established well before the COVID-19 pandemic, telehealth has seen widespread adoption and demand from patients, as it has allowed users to receive care while being able to maintain social distancing.

Patients pay to access a doctor and the telehealth platforms charge a commission from doctors who use their platform to provide teleconsultations. Typically, the fee is 10-20% of their earnings, with companies offering training and guidelines for the doctors in their practice of delivering care online as "digital literacy among doctors isn't necessarily widespread and even younger generations sometimes need a degree of training", as Hudibia's CEO Ahjoku Amadi-Obi explains. Telehealth can be used to conduct diagnosis and blood pressure and heart rate tests through a wearable device or an online portal, though some - like imaging tests - still require in-person visits to hospitals.

Hospitals now encourage the use of telehealth for non-urgent care to prevent hospital and clinic staff from getting overwhelmed as they continue to battle the pandemic. A number of other factors have also contributed to the increased adoption among patients and healthcare providers, including: reduced healthcare delivery costs offered by digital platforms; the growth of mobile internet penetration; advancements in smartphone technology, and the consequential drop in handset prices. Despite the accelerated adoption of telehealth services in Africa, many startups in this sector still encounter socio-cultural and infrastructural challenges that affect their service delivery, such as users' limited digital literacy, apathy towards solutions such as health insurance, poor infrastructure and lack of funding. For example, in the case of limited understanding of telehealth services, while the targeted customers of telehealth platforms include the elderly, it takes marketing the solution to their children and relatives to get them to sign up. Also, "several mobile-enabled healthcare services still see their potential capped due to infrastructural challenges, by the lack of electricity and connectivity in peri-urban and rural areas", Amadi-Obi explains, reflecting upon the inefficiency of having to dial back in every time the line drops while on the phone with medical practitioners or doctors.

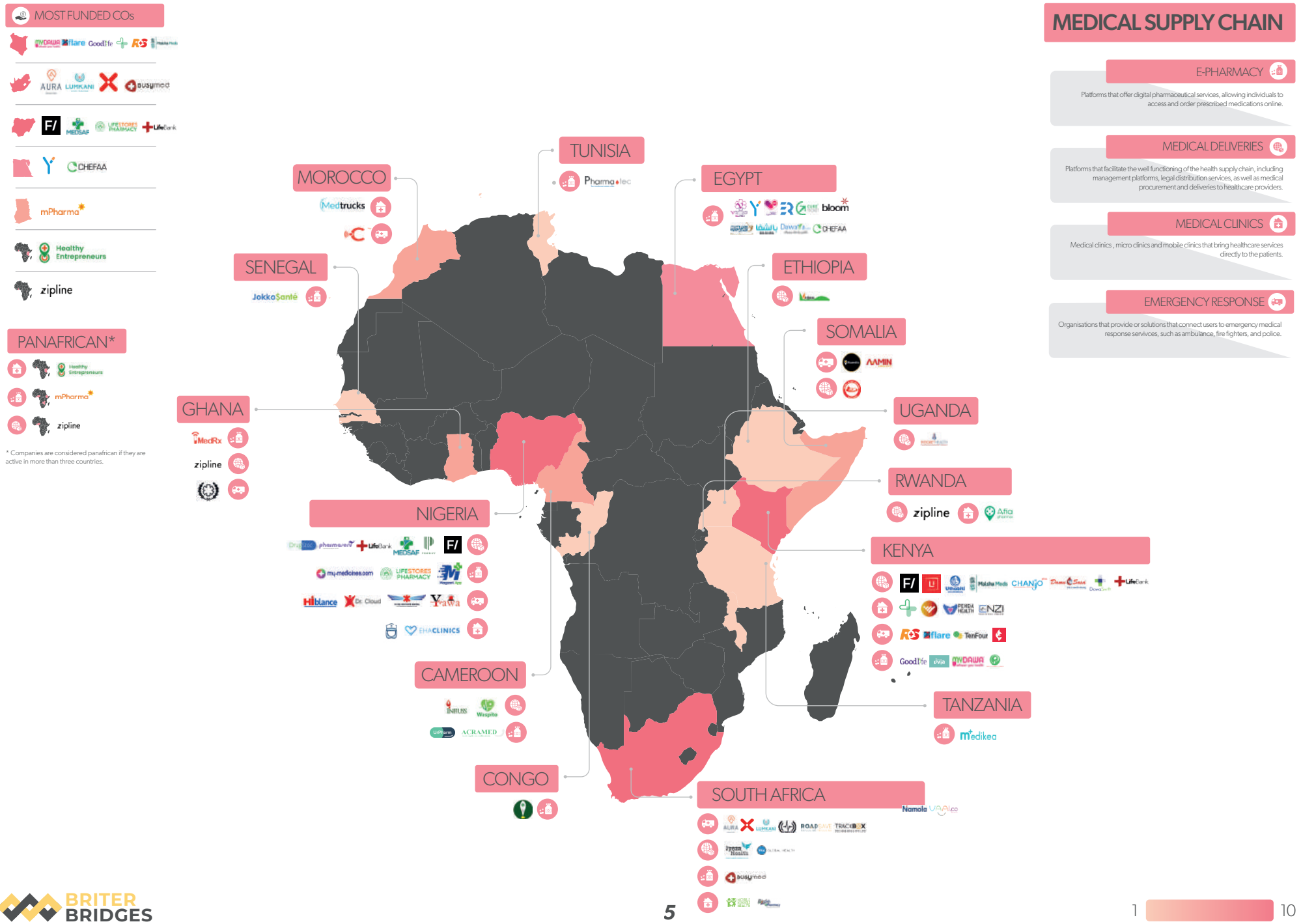
Diagnostics and monitoring services

A vast number of people in Africa die every year from chronic and communicable diseases that are mostly treatable because, aside from big hospitals in major African cities, many clinics lack medical and diagnostic laboratories and equipment. The inadequate medical infrastructure has provided an opportunity for private companies that leverage technology to make access to healthcare equipment cheaper, more fungible, and better distributed. In recent years, this has led to a shift towards decentralised diagnostics, predominantly driven by patients' convenience, increased trust in private healthcare providers, which has also boosted the usage of telemedicine services, and, more recently, the need to maintain social distancing in the wake of the COVID-19 pandemic. This hasn't come easily, as companies providing diagnostics services have had to consider unit economics, which in Africa remain

hard primarily due to the low disposable income, especially in periurban and rural areas. Historically, healthcare in Africa has not been seen as able to generate commercially viable returns and this has resulted in the creation of a development paradigm which has led to a typical 'prosperity paradox' scenario, whereby the sector has been associated (and delegated) to the humanitarian realm instead of being seen as a destination for investment. This has ultimately resulted in a widespread underdevelopment of healthcare service provision across the continent.

Diagnostics services and health monitoring in Africa have been associated with high costs and, in recent years, companies like Kenya's Ilara Health and Nigeria's MDaaS Global have been confronting this challenge by seizing the opportunity to leverage business-to-business models to bypass the inability of individual consumers to afford cures, and targeting instead clinics and hospitals. These companies develop and distribute low-cost diagnostics devices and equipment, which they sell or lease to traditional clinics. In Kenya, where Ilara Health operates, some of the leading causes of death include diabetes, cancer (prostate in men, cervical in women), cardiovascular diseases, and maternal mortality and yet, most of these conditions are treatable and non-fatal if caught in advance through proper prevention. Affordable diagnostics equipment is crucial because, "*in a market where a blood test costs $20 a month and someone makes $100 a month*", Ilara Health's CEO and Founder Emilian Popa explains, the market opportunity can look complex as only a limited percentage of the population could afford to spend up to 25% of their income in preventive healthcare. Similarly, Oluwasoga Oni, CEO and Co-Founder at MDaaS Global, explains that, while people want to access healthcare provision, they remain far from able to afford it, for example "*if you go for a pregnancy scan in Kenya, these will likely cost around $20 . In Nigeria, scans are priced around $3-4, but even that is not an affordable figure for many people*".

In addition, the insurance penetration rate in Africa is very low and, as a result, the perceived inability to generate sufficient profits has acted as a counterincentive for healthcare companies otherwise interested in entering the African market. To address this, companies like Ilara Health have strived to address the lower the cost of diagnostics by partnering with insurers who may benefit from the data generated from the diagnostics devices to predict claims, trends and costs. Digital solutions are in fact increasingly opening up the opportunity to leverage the wealth of new data generated by the devices to produce crucial insights into a population's health. Equally, the ability to generate large datasets for the first time represents an opportunity beyond insurance, as it can prove useful to non-governmental organisations and governments to understand the causes of pathologies at large and how they are affecting the population on the continent.


MOST FUNDED COs
PANAFRICAN*
* Companies are considered panafrican if they are active in more than three countries.
MOROCCO
TUNISIA
EGYPT
SENEGAL
ETHIOPIA
SOMALIA
GHANA
UGANDA
RWANDA
NIGERIA
KENYA
CAMEROON
TANZANIA
CONGO
SOUTH AFRICA
MEDICAL SUPPLY CHAIN
E-PHARMACY
Platforms that offer digital pharmaceutical services, allowing individuals to access and order prescribed medications online.
MEDICAL DELIVERIES
Platforms that facilitate the well functioning of the health supply chain, including management platforms, legal distribution services, as well as medical procurement and deliveries to healthcare providers.
MEDICAL CLINICS
Medical clinics , micro clinics and mobile clinics that bring healthcare services directly to the patients.
EMERGENCY RESPONSE
Organisations that provide or solutions that connect users to emergency medical response servivces, such as ambulance, fire fighters, and police.

3
Evaluating Africa's medical supply chains

The World Health Organization includes the "*Right to the highest attainable standard of health*" as a founding principle of international law and a priority for all citizens. However, this is often not the case for low-income countries across Africa, where the medical supply chain faces logistical inefficiencies such as weak inventory management, inefficient distribution networks, and lack of funding. Primary healthcare facilities often lack basic medications and the majority of the medical devices sent to the continent by the international community remain underutilised due to inadequate technical expertise or infrastructural limitations, such as patchy internet connectivity and unreliable electricity in rural areas.

Across the continent, unconsolidated medical distribution, coupled with exclusivity agreements between distributors and suppliers, makes penetrating the market as a new private distributor difficult. Nigeria, for instance, counts over 200,000 medicine retail points, with only a small proportion of the supply chains being covered by major pharmaceutical suppliers. A similarly scattered chain is also the case in Kenya, with over 700 registered wholesalers and 1,300 retailers in Kenya as licenced pharmacists and pharmaceutical technologists.

Medical supply chain

For many Africans, the immediate point of reference for primary care coincides with the nearest chemist or pharmacy. Unlike in clinics and hospitals, which have large equipment at their disposal, pharmacies, often only stock rapid diagnostic tests (RDTs) for pregnancy, blood sugar level, high blood pressure, malaria or lipid disorders. Across the continent, most people living in the low-and middle-income bracket have limited access to medicine due to affordability, proximity to health centres, availability, or a generally weak management system. This is particularly the case in Nigeria, with the population facing healthcare financing barriers and a low physician to patient ratio standing at 4 doctors per 10,000 people. Across the continent, startups are seeking to decentralise medical access by leveraging patient-pharmacy relationships as the first point of medical care, however they are often faced with the inability to regulate the quality and range of medicines that are available to these shops.

Companies such as Nigeria's Field Intelligence, Kenya's Maisha Meds, and Ghana's Redbird Health have been working to tackle supply scarcity in medical delivery. Redbird Health partners with pharmacies across Ghana and operates a Software-as-a-Service model based on the log, organisation, and analysis of macro health data gathered from rapid tests for chronic illnesses such as hypertension. The medical data can be leveraged to generate insights for partners and public health organisation.

According to Redbird Health's Co-Founder Patrick Beattie, "*preventive medicine remains largely alien to most of the population and most pharmacies are not willing to pay for their management software on subscription since it reduces their already low margins. Redbird's revenue model requires that*

pharmacists directly purchase disposable tools such as needles, blades and strip tests from Redbird, and in exchange receive the data software for free." In order to incentivise adoption and increase affordability, Redbird Health offers pharmacies to pay a start-up price to be registered on the network and a 4-month payment plan. To meet regulatory requirements, pharmacies in the Redbird Health network do not provide diagnostics out of the scope of medical regulations and are legally required to refer patients to physicians for an informed clinical assessment. The added value lies in the ability to streamline processes and increase reach capacity when it comes to detecting diseases such as malaria, which are widespread, curable, and can be addressed through over-the-counter medications recommended by pharmacists.

E-Pharmacies

Africa's medical supply is heavily import-reliant, with more than half of its over-the-counter and prescription medication being imported. Owing to high costs, patients end up paying significantly more for markup costs from wholesalers and retailers. Some private clinics in Uganda were found to make a final retailer mark-up of up to 900%, hurting out-of-pocket payers. In most parts of the continent, pharmacies are still largely brick and mortar, with medical facilities often having an internal pharmacy, recommended by internal doctors, with prescriptions typically written on paper. Building on e-commerce-like models, e-pharmacy companies have grown across the continent as viable alternative to accessing medicines, as medicine can be ordered online and delivered or collected at set pick-up locations. Companies such as South Africa's BusyMed, Nigeria's DrugStoc and Lifestores, Kenya's Goodlife Pharmacy and MYDAWA, and Ghana's mPharma have gained significant market shares in the past few years by way of digitising the medical supply chain, increasing accountability through better trackability, and guaranteeing product quality.

Ghana's mPharma, for instance, has built a drug monitoring infrastructure to connect medical facilities, doctors, pharmacies and patients on a cloud-based portal. This decentralisation of medicine stock information helps doctors know the exact pharmacy to send the patient to, without recommending them to one without their prescribed medications. Doctors prescribe medication and send a prescription code to the patient's and pharmacy's phones, and once the patient's information enters the system, their doctor can access their prescription history. According to mPharma's CEO Gregory Rockson, Africa's medical supply chain mostly operates with investors relying on distributors to wait to receive purchase orders from healthcare providers before supplying drugs to them - also called a "push" data model. This entails vulnerability to stock-outs and an inability to forecast demand. To work around this, mPharma adopts a "pull" data model, leveraging an integration system to provide distributors with real-time dispensation data guiding suppliers with re-order levels, prompting the distributor to supply drugs without needing the constant input of the provider.

E-pharmacies' models involve direct supply of medicine from manufacturers or distributors, price listings on e-commerce platforms and purchase by customers. To break this process down,

1. the customer sets up an account,
2. searches for medicines,
3. adds them to cart,
4. verifies prescription where needed,
5. makes the payment,
6. receives a receipt confirmation,
7. receives the delivery.

The exceptional value of unifying this process is specifically contextual to a sector whose historical lack of reliability and accountability has resulted in avoidable loss of hundreds of thousands of human lives.

Some of the most adopted revenue models in the medical supply chain include:

- **Commissions-based payments from the sale of health products and equipment**: This is one of the most common revenue models for e-commerce platforms across sectors. Pharmaceutical companies list their products on the platforms, and the e-pharmacy platform earns a predefined commission of the percentage of sales per item. To bypass burdensome steps within the pharmaceutical supply chain, e-pharmacy companies tend to buy medicine directly from the pharmaceutical company, forgoing the distributor and the retailer.
- **Medical advertisements**: Advertisements and sponsored listings from medical clinics, health insurance providers, pharmaceutical companies, labs and relevant medical service providers as brand partnerships.

HEALTH INSURANCE AND FINANCING

HEALTH INSURANCE

Platforms that offer health insurance services and healthcare coverage for individuals and businesses.

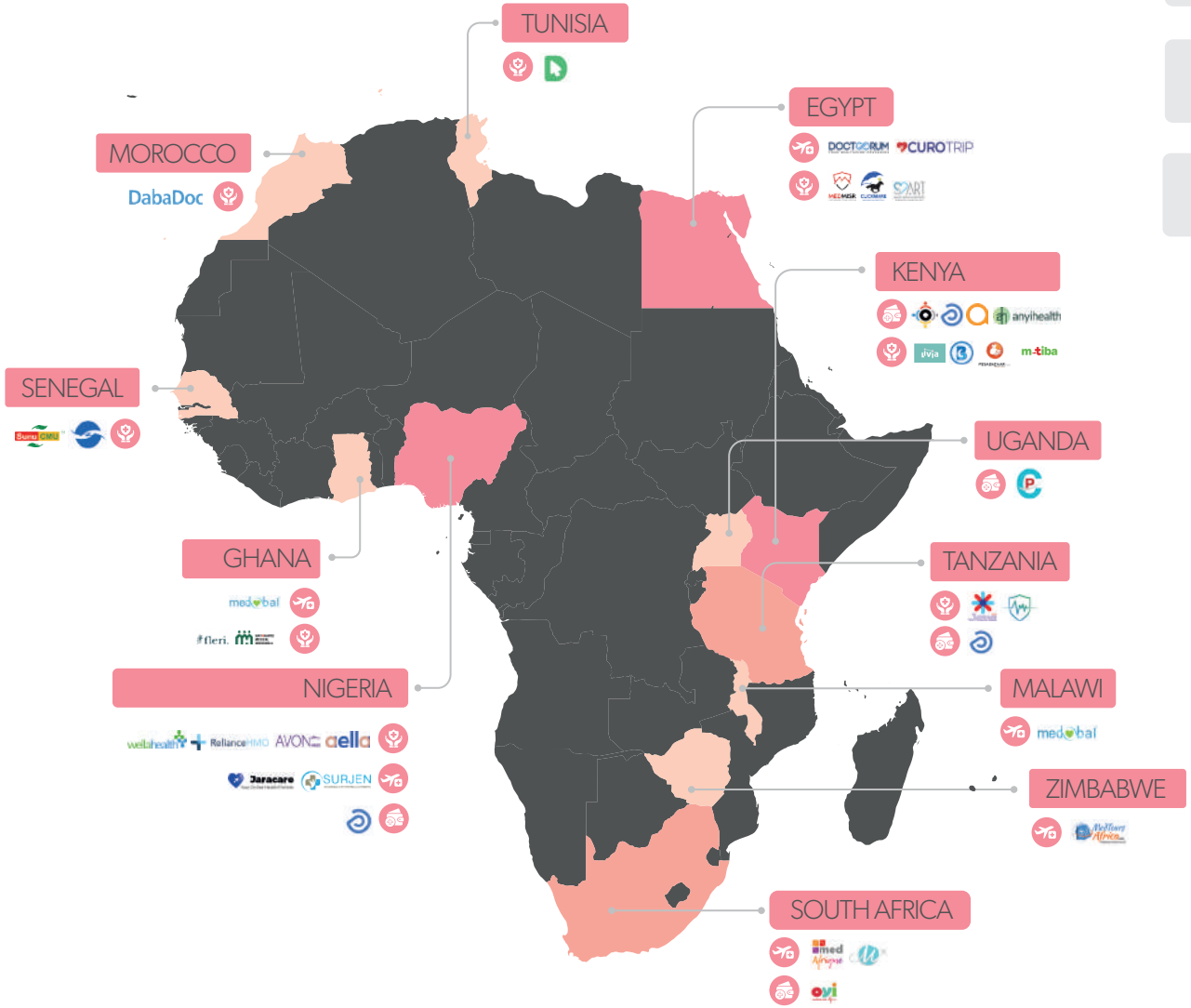
HEALTH FINANCING

Platforms that offer health financing and savings solutions to provide access to health care.

MEDICAL TOURISM

Companies and solutions that facilitate all activities related to travel abroad for medical treatment.

MOST FUNDED COs



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Exploring healthcare financing and insurance

Digital health wallets and medical credit

In order to expand financial inclusion across Africa and, in turn, increase access to healthcare provision, a number of companies have developed digital products that allow customers to save, borrow, and get access to micro-insurance packages that can cover medical costs without the need to resort to traditional banks and insurers. Because of the extremely low insurance penetration with more than half of the countries in sub-Saharan Africa having a penetration rate of less than 1%. This is partly because most people in Africa generally have apathy towards insurance due to low per capita income and the need to prioritise spending on basic needs. As the population covered by health insurance plans or employment-tied medical aid is low, most people remain heavily reliant on public healthcare or on spending out-of-pocket for health services.

The World Health Organisation details that out-of-pocket payments account for over 60% of private health financing and this risks exacerbating the social provision divide in a continent where income disparities persist and public services cannot include large swathes of the population. Low-income earners have traditionally had to find ways to save for anticipated financial medical needs and prepaid healthcare expenses or risk medical poverty traps. In order to address this gap, although government-financed insurance schemes have hitherto remained underdeveloped, private-sector initiatives have been appearing, as several startups are working to provide health insurance or act as insurance agents across countries. While the traditional health insurance sales process is predominantly based on physical interactions, there is an increasing push to adopt digital distribution channels, driven by the dozens of startups appearing on the continent. In addition, as Enza Capital's Managing Director Mike Mompi emphasises, the inability of patients to pay for health services and access insurance products has a knock-on effect on other healthcare businesses that could otherwise thrive in an environment where the population benefits from insurance.

Innovative business models devised by companies working on digital wallets, such as South Africa's Oyi Medical Card, Kenya's social innovation M-TIBA and AfyaPlan, and Uganda's ClinicPesa, are offering a pathway to solve the affordability problem for low-income users. On M-TIBA, users can save any amount of funds in their mobile account, pay, and get treated by healthcare providers contracted by M-TIBA. South Africa's Oyi Medical Card's application process entails creating an account with one's name and identification number, then a Mastercard-like card, which is restricted to payments toward medical specialists, physicians and pharmacies, is couriered to the user's location. Just like health insurance, users can enter an agreement with their employers to deposit a monthly amount into the account, with regular account statements sent via USSD or WhatsApp.

The typical user of this service is a person earning less than $1000 per month and, differently from regular insurance plans, beneficiaries of medical savings plans are not restricted to immediate family members and dependants, and payments can be made for anyone as long as it is for medical use. Companies in this business generate revenues through hybrid models split between subscription and transaction costs. Users are charged a fixed monthly based subscription fee and a predefined transaction fee. As most fintech companies face regulatory limitations of offering a 'banking' service, companies have worked around this hurdle by forging partnerships with accredited banks and financial institutions, allowing them to 'sublicense' the savings service. While each partnership has unique terms of the agreement, standard plans with a bank would involve a program fee to cover running and operational costs, monthly licencing fees and a percentage fee per transaction. With regards to South Africa's savings culture, in the third quarter of 2020, research showed its gross savings rate was reported to be 15.9%, and this percentage would correspond to people's personal savings, habits and abilities. According to Tamsanqa Tami Ngalo, Oyi Medical Card's founder, the financial inability to save and the poor savings culture slow down adoption of dedicated platforms or leaves many digital accounts dormant.

Health insurance and insurance aggregators

While government-financed insurance schemes are often underdeveloped and offer limited coverage, private-sector initiatives are largely encouraged, with several companies stepping in to provide health insurance or act as insurance aggregators. These companies in particular, develop platforms that compare several insurance providers and provide price and product breakdowns. Companies include Nigeria's Anyi Health, WellaHealth, and Avon Health, Kenya's APA Insurance, UAP Insurance, and Tanzania's Jamii Africa. For healthtech startups such as Tanzania's MyHI, the clients are insurance providers. The revenue model involves a hybrid of both commission-based revenue from insurance companies and subscription-based revenue from selling management and administrative software to insurance companies.

Auxiliary services

As more data and analytical capabilities become available thanks to the spread of digital solutions, a number of auxiliary services in the insurtech sector appear. WellaHealth provides digital solutions at the crossroads of pharmaceutical supply chain and health insurance, with one of its flagship projects being the sale of a subscription-based customer relations management system (CRM) to pharmacies, to help them manage their customers' prescriptions, USSD reminders and customer data. As 291 per 1000 Nigerians are at risk of experiencing a malaria incidence, WellaHealth provides insurance plans against treatment for daily recurring illnesses, such as screening and treatment of malaria, and testing of blood sugar and hypertension. Insurers sell a malaria health plan at $8 per month, and this covers the cost of testing in the pharmacy, prescription, and or reference to a doctor in case malaria is not confirmed by the test.

WellaHealth first onboards individual pharmacies onto the network and provides them with a free app for customer relations and inventory management, as well as a digital wallet in which WellaHealth credits them for every medical fulfilment. Such networks mirror the same process users would have gone through while seeking primary health care from pharmacies or chemists.

A plausible model of partnership for a company like WellaHealth, with regards to managing their data, is with health maintenance organisations that dispense recurring medications, helping guide supply. For instance, according to WellaHealth's Product and Growth Lead, Greg Emuze, its pharmacy networks dispense between 100 and 150 doses of medication for chronic illnesses such as diabetes and hypertension.

Finally, as digital solutions increase, healthtech companies can start benefitting from 'peer' partnerships with organisations focusing on the production of big data, security mechanisms, which do have degrees of application in the healthcare sector but can also find market segments elsewhere. This is the case of companies developing API integration software or fraud detection and traceability solutions such as Ghana's Curacel, Nigeria's Chekkit, as well as Kenya's Lami.

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Conclusion

Although healthtech companies cannot be considered a panacea for well-functioning public healthcare infrastructure, dynamic players in the private sector have shown the potential to operate as a catalyst to improve access and coverage. Creating an enabling environment for African countries to further accelerate digital solutions in healthcare is a step to achieve Sustainable Development Goal 3. and the digital health ecosystem is seeing the proliferation of companies adopting similar business models that are contextualised to local needs, capacities, existing solutions, structural infrastructure, resources and circumstances. In this context, partnerships have proven pivotal for the companies to scale and build sustainable models. Some of the most frequent partnerships include:

- Doctor booking platforms collaborating with hospitals and clinics to streamline and optimise the flow of patients;
- Telemedicine and diagnostics companies partnering with health financing platforms and insurers, usually on the basis of data sharing;
- Insurance aggregators partnering with medical facilities and insurance providers.
- Medical supply chain companies partner ing with pharmacies, hospitals, and gover ment organisation to improve the efficiency of delivery and quality of products, espe cially when it comes to counterfeiting.

Persisting challenges

Although trust in the adoption of digital solutions is increasing, a number of challenges to the development of a thriving healthtech market persist:

- A general indifference towards digitising an otherwise walk-in medical system is most common among the elderly population. Doctor booking platforms are obliged to invest significantly in educating their audience.
- Sociocultural and infrastructural challenges that affect service delivery, such as limited understanding of telehealth services by users, poor infrastructure and lack of funding.
- Increasing difficulty to send doctors into remote places, as they express their unwillingness to go for reasons ranging from logistical inefficiencies and plausible insecurity. This affects medical supply chains as well as on-demand healthcare providers.
- The unit economics in providing diagnostics services, which are low in most places in the continent since disposable income spent in healthcare remains low, especially in periurban and rural areas.
- Preventive medicine is an alien concept for most of the population, and most pharmacies - especially in rural areas - are not willing to pay for management software on subscription since it reduces their already low margins.

- Counterfeiting represents a significant challenge for pharmacies who are forced to invest in tracking software and certificates. Technology is offering a guarantee to keep transactions and processes under control.

- There exists a general apathy towards health insurance, since a large proportion of the population, especially in remote regions, view it as "anticipating sickness." This cultural element remains a significant obstacle to the establishment of digital healthcare solutions at large.

- The lack of insurance also represents a detrimental factor for unrelated businesses that could otherwise thrive in areas where the population can benefit of insurance services do not find economic viability

- While many users embrace the idea of having a mobile or card health savings wallet, financial inability to save, or a poor savings culture added to people's preference to have the flexibility to spend their savings, affects the ability to use these wallets efficiently.

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