



Digitally Transforming the Patient Journey in Africa and Europe

Cross-cutting research for the Digital Strategy Group of the
Africa-Europe Foundation

Researcher: Kevin Muvunyi



Co-funded by the
European Union

The authors of this reference paper have contributed in their personal capacities, and their views do not necessarily reflect those of the organisations they represent, coordinating organisations, research partners or the European Commission.

Reproduction on whole or in part is permitted, provided that full credit is given to the Africa Europe Foundation, and that any such reproduction, whether in whole or in part, is not sold unless incorporated in other works.

The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Coordinated by Friends of Europe and Mo Ibrahim Foundation



Co-funded by the
European Union

In partnership with:



Research Partners: Institut de Prospective Economique du Monde Méditerranéen (IPEMED)
Policy Center for the New South (PCNS) | Next Einstein Forum
Fondation pour les Etudes et Recherches sur le Développement Economique (FERDI).

Table of contents

Executive Summary	1
Introduction	2
Health: State of Play in Africa	3
Overview of the e-health sector in Africa	4
Use Cases Africa	5
African e-health startups positioning themselves in the health value chain	6
State of Play Europe	7
Overview of the e-health sector in Europe	8
Use Cases Europe	8
Key Learnings	9
Recommendations	10
References	11

Executive Summary

Africa continues to face a growing burden of communicable and noncommunicable diseases due to inadequate and deficient health infrastructure, regional disparities of medical and paramedical resources, and a lack of information communicated to patients. A fact that has been accentuated by the current pandemic. On the other hand, Europe continues to have a robust healthcare ecosystem although showing signs of overloading due to the prevailing pandemic. One key aspect that emerges from the prevalent healthcare status in both continents, is that policy makers realize the increasing importance of efficient and adequate digital health solutions.

Digital solutions based on cutting edge technology such as Artificial Intelligence, robotics, cloud computing, to name few, will ultimately reduce the burden on the current health care ecosystems by complementing existing health mechanisms.

Research shows that health startups in Africa are closing gaps within the continent's health value chain with the help and support from European institutions. Some of these gaps include shortage of healthcare professionals to cater to an ever-growing number of patients, high cost of healthcare, lack of robust disease prevention strategies, and inadequate health infrastructure to name a few. Fortunately, African health startups understand the needs of the health systems and are moving fast to fill these gaps by improving the patient journey process, though this is only limited to a few countries. Going forward, Europe and Africa will have to form strategic partnerships around e-governance, data protection, ethical guidelines, computing capacity and interoperability of systems if these startups are to be scaled up and replicated across both continents.

Introduction

New technological advancements are revolutionizing various processes and mechanisms across a wide array of industries at a fast pace. These digitally driven changes continue to demonstrate a great potential to improve efficiency and productivity outcomes regardless of the economic sector. Africa and Europe stand a chance to improve the overall wellbeing of their inhabitants, by applying some of these technological solutions to key sectors such as healthcare, especially given the lessons learned from the pandemic.

The ongoing pandemic has demonstrated that countries which focused on prevention as opposed to those who focused on 'treatment' are better off today. For instance, countries like Rwanda and New Zealand which put in place rigid measures at the onset of the pandemic, have low numbers of infected individuals. Countries like the United States, and the UK which put more emphasis on treatment, are still facing high numbers of infected people. On the other hand, another lesson learned from the pandemic, is that countries with strong R&D and innovation capacity have been able to come up very quickly with vaccine solutions. This includes countries like the UK, Russia, and the US to name a few. All this implies that in the future these are strategic areas (prevention, vaccine development, drugs) for partnerships between Europe and Africa.

Provision of healthcare with international standards remains a major challenge in Africa. The bulk of healthcare systems on the continent continue to lack the necessary resources and relevant strategies to provide quality healthcare at a reasonable cost to patients. As a result, a series of steps must be undertaken on a continental level by the appropriate and relevant stakeholders, through effective consultations, to ensure that African citizens receive the healthcare they deserve. On the other hand, Europe has a developed healthcare system, which had been able to cater to its ageing population until the current pandemic demonstrated the importance of prioritizing digital health solutions. As a result of the pandemic, Europe saw its health resources stretched to maximum capacity. This has prompted European policy makers to consider moving towards an outpatient strategy. Moving some health care functions away from hospitals, they believe, will help ease the current stress on health professionals and institutions.

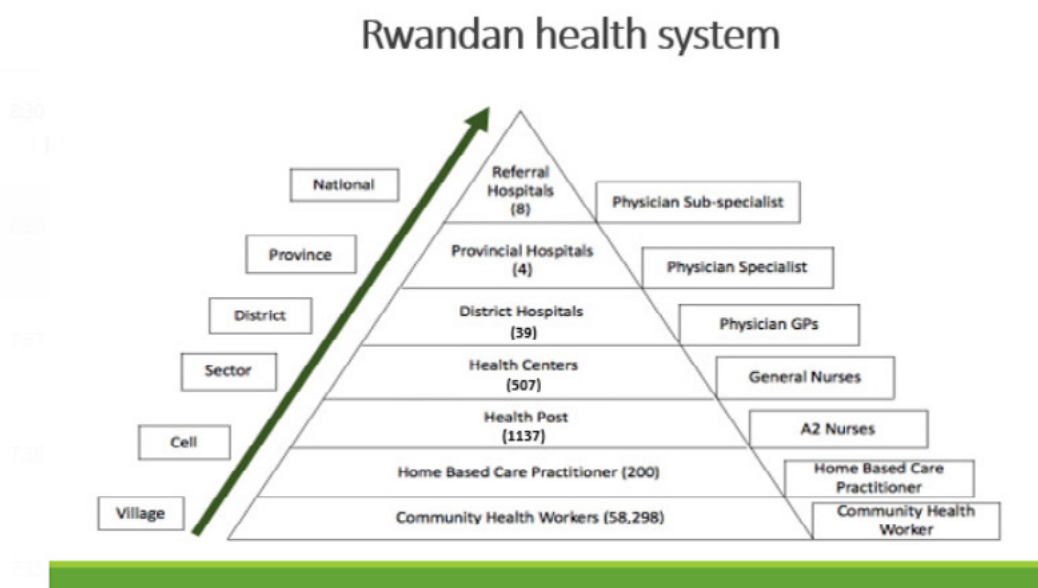
Ultimately, digitalization will progressively play a central role in the healthcare sector. The digitization of the sector will fasten the adoption of an outpatient setting, which will be guided by a customer centric approach, through which citizens will have much more responsibility for overseeing their healthcare.

Health: State of Play in Africa

Equity, accessibility, affordability, preparedness, and delivery. Together, these five powerful words represent the essence of healthcare as it should be. Unfortunately, as the Covid-19 pandemic rages on, it has become clear that healthcare systems worldwide are still ill prepared to procure health care services fit for the post-pandemic era. Healthcare ecosystems in sync with the ongoing digital revolution, and in alignment with new demands created by a post Covid world, will necessitate revamping and complementing old systems with new digital innovations.

Across Africa, the pandemic has awakened policy makers to the sad state of the continent’s healthcare infrastructure, a result of decades of underfunding, inadequate management, and lack of relevant policy frameworks based on accurate foresight. Consequently, Africa still lags in several key health indicators. For instance, in most countries, there is one hospital per 1 million people, one doctor per 10,000, and one hospital bed for 10,000, according to the World Health Organization (WHO).¹ Despite this poor performance, the current pandemic has demonstrated that digital technology will play a critical role in the future of healthcare, and fortunately Africa already has some building blocks in place. These building blocks present the foundation that can be used to create an efficient and equitable healthcare system on the continent.

Most countries on the continent exhibit a pyramidal healthcare structure as clearly demonstrated in the figure on the right. In the case of Rwanda, the first layer of the health pyramid, consists of community health workers, followed by home based practitioners, and the remaining layers consists of health facilities with varying operating capacity. This health structure is largely credited to bring about inclusion. Nonetheless, there are still challenges in terms of efficiency because the different layers of the health pyramid operate in silos. Here lies an opportunity to build thriving health systems on the continent by leveraging the fast-growing mobile ecosystems. Africa is home to the fastest-growing mobile ecosystems, as over 70% of the continent² has mobile coverage with 3G connections and 30% with 4G networks. Additionally, Facebook³ and Google⁴ are installing high-speed broadband networks within and across the continent. This communication infrastructure coupled with growing healthcare innovations across the continent in countries such as Rwanda, Senegal, Kenya, and South Africa to name a few, presents vast opportunities for growth in digital health built on existing health systems.



Source: Rwanda Ministry of Health

Overview of the e-health sector in Africa

Africa continues to face a growing burden of communicable and noncommunicable diseases due to inadequate and deficient health infrastructure, regional disparities of medical and paramedical resources, and a lack of information communicated to patients. A fact that has been accentuated by the current pandemic. Nonetheless, African governments, the private sector, local innovators, as well as multinationals have all stepped up and invested in digital health solutions. According to Gabriella Mulligan, co-founder of Disrupt Africa, “Interest in the e-health space in Africa has accelerated in the last 18 months, and with the advent of the Covid-19 pandemic, there is a sudden spotlight on e-health startups.”⁵ Existing figures demonstrate that, the number of startups active in the health-tech space on the continent has grown by 56.5 per cent over the last three years, with 180 ventures currently in operation.⁶ This enthusiasm for e-health has also been echoed by investors, with more than half of all funding to have gone into the space in the past five years having been transacted in the first half of 2020 and totaling over US\$90 million.⁷ Major pharmaceutical multinationals such as Sanofi, Bayer, Merck or Pierre Fabre are also providing mentoring & financial support to e-Health start-ups in Africa.⁸

Nonetheless, the amount of funds being raised on the continent is still comparatively limited, compared to the US\$8.4 billion raised in the first quarter of 2020 by about 500 AI startups across 42 countries.⁹ African start-ups only get a tiny slice of these funds due to the small venture capital base on the continent, particularly sub-Saharan Africa. African countries could borrow a leaf from Rwanda regarding health financing. The country, through its health financing sustainability policy has been able to achieve major health-sector targets, including reduction of unmet needs; increased use of healthcare services; fewer catastrophic health expenditures; and reduced inequality in access to healthcare. The above framework if correctly applied to digital health, has the potential to grow the African e-health ecosystem.

In addition to the challenge of inadequate health financing, the continent continues to face barriers with regard to standardization and recognition of health professionals’ diplomas, which prevents movement of qualified professionals whose expertise is much needed in many regions of the continent. Moreover, there is an issue of weak policy frameworks that do not consider data protection and consent regulations, as well as cyber security standards. The lack of these in current health policy frameworks around the continent continue to slow down the fast adoption of e-health solutions. Lastly, innovators together with entrepreneurs still face stumbling blocks in the lab to market process as mentioned above. Insufficient government support, inadequate policy frameworks, low venture capital, and poor digital infrastructure are all factors slowing down the growth of digital health on the continent. Additionally, lack of national identification in most African countries is a major challenge to the growth of the e-health sector. Nonetheless, it is important to mention that the prevailing pandemic has induced a paradigm shift, as e-health startups witness an increased uptake of their products.

The following section highlights the role played by African startups in two countries in the fight against Covid-19, and how the impact of their work can be used as a steppingstone to build synergies between European and African governments around e-health. Novel digital solutions on the continent seem to be reducing gaps in the health value chain.

Use Cases

Nigeria

Through its national Centre for Disease Control (NCDC), the country was able to launch a Covid-19 eTraining course on Infection Prevention and Control. Nigeria was also able to increase its molecular laboratory network for Covid-19 testing by partnering with start-ups such as 54Gene and eHealth Africa, which were instrumental in expanding testing capacity. Through a collaboration with LifeBank, a blood delivery digital health start-up, Nigeria was able to develop rapid testing kits and create a shared database to track available medical equipment.

54Gene

54Gene, a Nigerian based health technology start-up founded in 2019, is working to close the disparity in genomic data which is largely unrepresentative of Africa. African genomic data accounts for less than 3% of the global genomic data.¹⁰ Working in partnership with African researchers and research institutes, 54Gene collects clinical data (de-identified) to generate African genetic data for use in global genomic research that will eventually be used in drug discovery. The start-up has a biobank facility with access to more than 9 million patients. Recently, the startup partnered with a US based genomics company called Illumina to establish a new state of the art genetics facility in Nigeria.¹¹

Africa has one of the largest genetic pools. Considering the genetic diversity on the continent, there are immense opportunities to develop AI-based pharmacogenomics applications. 54Gene, has demonstrated that it is possible to fill the gaps in terms of treatment along the patient journey process.

An EU-AU partnership, through financial investment in genomic data should be scaled up, because it has the potential to improve the process of drug development, and by the same token initiate advancements in medical treatment. In a post Covid world, both Europe and Africa would greatly benefit.

Life Bank

LifeBank uses low-tech tools like feature phones and high-tech tools like blockchain to deliver essential medical products and save lives in health systems across Africa. LifeBank's platform improves the supply of these essential medical products by gathering inventory information and deploying the most efficient tool to deliver these critical supplies quickly.

LifeBank is clearly demonstrating that the growing adoption of mobile technology on the continent, can be used as a basis to bypass infrastructure challenges that continue to hamper the efficient delivery of health care products in Africa.

Rwanda

Digital health has been a key enabler for Rwanda's Covid-19 response, particularly in terms of access to information and healthcare. The government has set up a toll-free national helpline and a USSD platform for self-triage. Information from the WHO was disseminated via SMS and drones, and AI-enabled drones operated by technology company Zipline have been used to deliver medical supplies to more remote areas of the country.

The following digital solutions have helped the government respond effectively to the Covid-19 outbreak:

- Contact tracing: Infections are being traced through the paperless Open Data Kit app that can be downloaded on a mobile device. Data is collected for analysis by outbreak investigation teams.¹²
- Covid-19 surveillance: A digital reporting surveillance system for health facilities is being used to monitor influenza-like illnesses and severe acute respiratory infections in real time to provide early warnings of suspected Covid-19 cases.¹³
- Infection prevention: Robots have been used in healthcare settings to perform simple tasks, such as checking temperatures and monitoring patients to reduce healthcare workers' exposure. These robots have proven especially hopefully in Covid treatment centers, by reducing the infection rate between patients and doctors.¹⁴
- Data visualization: Geographic Information System (GIS) is being used to monitor Covid-19 cases at the household level to assess the need for lockdown measures, to focus public health interventions where there is evidence of community transmission and to monitor at-risk populations.¹⁵

Nonetheless, there are other e-health startups currently in use in the country that have come to form an integral part of the country's health ecosystem. These digital solutions showcase the extent to which they can have a positive role on the patient journey process if well implemented. Some of the startups include, Babyl that does medical triage of patients, the teleradiology platform for medical imaging diagnostics and research run by Insightiv technologies, as well as the Ecole Polytechnique Federale de Lausanne (EPFL) pilot project to use clinical support decision algorithms at the primary level care.

These initiatives demonstrate the existing partnership between Africa and Europe, as all the institutions are based primarily in Europe. Therefore, the key is to ensure that there is an adequate framework to replicate these successful products in both continents.

African e-health startups positioning themselves in the health value chain

In addition to the e-health startups mentioned above, there are other digital solutions slowly taking root on the continent and strategically positioning themselves in the health value chain in terms of prevention, diagnostics, treatment, and post treatment.

Ubenwa, a start up from Nigeria, uses AI for cost-effective diagnosis of birth asphyxia by analyzing the sound of an infant cry. Tulip Industry, based out of Guinea, manufactures disruptive and sustainable technologies and precision medical diagnostics equipment customized to fit context. Healthcent, a start-up from Cape Town, South Africa, secured a huge contract from the United Kingdom's (UK) National Health System (NHS) worth USD3 million over a two-year period with possibility for extension.¹⁶ Healthcent will be providing its communication platform, Signapps, to the NHS to manage the system's communication among its networks. The platform offers predictive analytics and also includes patient engagement and care team coordination. The startup built a strong track record in the past four years through partnerships with local health institutions and public hospitals. Healthcent has to date received more than half a million dollars in seed funding from mainly venture capital and angel investors. The deal with the NHS attests to the high level of competency of local development teams to compete at a global scale.

Lastly, leDA is another e-health platform that is slowly revolutionizing primary healthcare in rural areas in West Africa. Essentially, the platform was developed by digitizing integrated management of childhood illness (IMCI) protocols.¹⁷ It has been observed that medical treatment of children improves whenever this tool is used, compared to traditional paperwork consultations. Health workers follow IMCI protocols better and diagnose more efficiently when using a digital tool.

State of Play Europe

In stark contrast to the African continent, Europe has a robust healthcare ecosystem although showing signs of overloading because of the prevailing pandemic. There are several key indicators, which demonstrate the degree of advancement of the continent's health systems compared to Africa.

For instance, data shows that by May 2020 European countries had carried out 23,000 tests per million people for Covid-19, amounting to 17mn in total, while in Africa there were just 685 tests per million. The ability to test many individuals in the context of a global pandemic points to the robustness of the European healthcare system, as this requires a high level of planning and preparedness. Additionally, health systems in many higher income European countries have achieved broad service coverage for much of their population. For example, statistics from WHO demonstrate that there were, on average, 538 beds available per 100 000 inhabitants in 2018 across the whole of the EU-27, which is roughly 54 beds per 10000.¹⁸ Considering that in Africa the number is 1, this is a big difference. Furthermore, data from 2015 demonstrated that there were roughly 66 health professionals available per 10000 people,¹⁹ compared to 1 per 10000 in Africa. These numbers partially showcase the wide disparity between African and Europe health systems.

It is also important to note that access to adequate healthcare from qualified professionals on the European continent is much more developed than in Africa. For instance, in Nigeria, 63% of newly trained doctors end up practicing abroad. This is the case in most African countries, and the complete opposite in Europe.

The Bologna process has slowly improved the standardization of health education, as well as facilitating student and staff mobility across Europe. Consequently, the EU has gradually been able to curb the shortage of health professionals in some of its less developed member countries, thereby improving the quality, access, and distribution of healthcare services. In the era of rapid urbanization and the rising global burden of NCDs, such as heart disease, strokes, cancer, diabetes and chronic lung disease, Europe has made significant progress in understanding how urban design can directly and indirectly shape NCD risk factors. Through the WHO's European Healthy Cities Network, Europe is promoting smart city planning that considers transport modes such as walking and cycling; healthy food options; availability of health and community services for the prevention, early detection, and treatment of disease; and air quality.

Lastly, the European continent is way ahead in terms of health legislation. The General Data Protection Regulation (GDPR) applicable from 25 May 2018 provides a uniform set of rules for data protection across the EU.²⁰ The GDPR has a direct relevance for the digitalization of health, because it has articles that define provisions that apply to health data. Furthermore, The GDPR²¹ allows Member States to maintain or introduce further conditions, including limitations, about the processing of genetic data, biometric data or data concerning health. Having such a strong regulatory framework in place will greatly influence the growth of the e-health sector.

Overview of the e-health sector in Europe

Like much of the rest of the world, the current pandemic has influenced European governments to rethink the role of digital technology in the healthcare ecosystem. To ease the burden of its overloaded health systems, European countries have been seeking innovative ways to move healthcare provision away from the hospitals and into people's homes by reducing in-person contact. Various European experts believe that the promotion and implementation of digital health services will in the long term reduce the unnecessary use of health services that were already struggling to meet the needs of an ageing population.

A report published in February 2020, just before the outbreak of the Covid-19 pandemic, valued the European e-health market at \$3933 million and estimated the compound annual growth rate at 15.49% to reach \$ 7107 million by 2025.²² These figures are likely to increase given the increasing interest across EU institutions, national governments, healthcare industries and stakeholders to digitalize the healthcare ecosystem. Efforts aimed at deploying more cost-effective healthcare provisions, reducing the frontline nursing workload, easing lifelong learning activities for healthcare professionals, facilitating cross-border care, and fully developing EU Electronic Healthcare Records (EHR) will be the key drivers of this growth.²³

Despite these positive indicators, Europe still struggles with a lack of interoperability between e-health services in different countries, along with a blockage created by a growing number of digital applications designed without the end user in mind, the end users being the healthcare providers.²⁴ European experts suggest, that obtaining fit-for-purpose solutions within different EU contextual situations, will necessitate co-creation and co-ownership between developers and health professional through each stage of product development.²⁵ Lastly, it is important to mention that Europe still has a major problem of interoperability between its various health systems, as there is not a single common Electronic Health Record system operating across all EU Member States.

The following section highlights best practices in two European countries, which have embedded digital technologies in their respective healthcare systems:

Use Cases Europe

Estonia

Throughout the globe, Estonia has built a reputation as a tech powerhouse. The country has been able to deploy innovative solutions in different sectors such as banking, education, and taxation to name a few.

Through political will, and a comprehensive digital strategy, Estonia has been able to build a robust e-health sector. For instance, all Estonians who have been to a doctor have their own online e-health records which can be tracked. This has allowed doctors to easily access patient's electronic records, such as test results and X-ray images. Ten years after their launch, e-health services include collecting health service reimbursement invoices; health insurance information; digital picture archiving services; electronic health record services for physician to name a few. The long-term benefits have been that when Covid-19 hit digital public services continued uninterrupted. Moreover, digital health records and e-prescription services freed up Estonian doctors, nurses, and administrators for the fight against the pandemic.

Key Learnings

The patient journey can be explained as the steps that a patient goes through from the moment, they fall sick to the time they are fully recovered. In other words, it is their journey through the healthcare system. This journey can be broken up into four stages. Namely, prevention, diagnostics, treatment, and post treatment. These four key phases encapsulate the global health value chain.

Based on the state of play of e-health in Africa, digital innovation is slowly having a positive impact on the continent's health value chain by filling some of the structural gaps. For instance, as already mentioned in this paper, a start up like 54Gene is improving medical treatment in countries like Nigeria, by enabling Africans to begin the process of owning drug manufacturing based on their own genomic data. LifeBank, is reducing gaps in infrastructure, by building on the vastly available mobile technology on the continent to ease the delivery of medical products. Uberwa, a start up from Nigeria, uses AI for cost-effective diagnosis of birth asphyxia by analyzing the sound of an infant cry. Tulip Industry, based out of Guinea, manufactures disruptive and sustainable technologies and precision medical diagnostics equipment customized to fit context.

Based on these key facts, both Europe and Africa need to focus and find synergies around the patient journey. Strategic partnerships around e-governance, data protection, ethical guidelines, computing capacity and interoperability of systems should be prioritized.

Recommendations:

- African startups are slowly closing structural gaps in the continent's health ecosystem. These startups cover areas spanning the four stages of the patient journey. Namely, prevention, diagnostics, treatment, and post treatment. As already demonstrated in this paper, startups such as 54Gene and healthcent are already partnering with western institutions to scale up their product offering. Therefore, what does this mean for Africa and Europe? This means that Africa which has less regulatory red tape can act as a proof of concept for novel digital health solutions, which could then be scaled up in Europe. Adequate policy frameworks and strategic Public private partnerships involving both continents around the lab to market process, would provide a much-needed boost to these groundbreaking e-health startups.
- Africa has inadequate healthcare systems, despite the growing number of digital health solutions in several countries. Point of care systems are still weak in most countries, where personnel, equipment, as well as infrastructure to conduct primary care functions such as prevention, diagnostics, and treatment are scarce. Therefore, Europe should partner with African countries to improve capacity and empower point of care systems through digital means to improve healthcare delivery on the continent. Eventually, Europe would reverse innovate to cater to its own population.
- There is a blockage in Europe created by a growing number of digital applications designed without the end user in mind, the end users being the healthcare providers. This is probably the case in Africa as well. Therefore, this necessitates concerted efforts between both Europe and Africa to rethink and reconfigure product development as it relates to e-health. Two pilot projects within the realm of diagnostics and treatment, should be undertaken conjointly emphasizing co-creation between developers and health professionals. These would act as use cases for future and larger common projects.
- Presently, both Europe and Africa do not have a common electronic medical health record system within their borders. The lack of interoperability within these continents, as well between themselves, means that colossal amounts of health data, which are not exploited, could if harnessed have resulted into novel digital products. Since some European countries already have common electronic medical record systems at national level, they could act as use cases for policy makers in Africa to emulate.
- Europe is already far ahead in the implementation of ethical guidelines and data protection regulations pertaining to digital solutions. To help speed the uptake of e-health products on the continent, Europe and Africa should engage in sharing best practices, keeping in mind their different social contexts.
- It has been demonstrated that smart city planning has a positive effect on urban populations by substantially reducing the NCD risk factors. Through the WHO's European Healthy Cities Network, Europe is already promoting smart city planning that considers transport modes such as walking and cycling; healthy food options; availability of health and community services for the prevention, early detection, and treatment of disease; and air quality. Europe and Africa should create an EU-AU Smart Cities Network in charge of the promotion and implementation of Smart Cities in both continents.

References

- 1 <https://www.weforum.org/agenda/2020/07/great-reset-africas-e-health-systems/>
- 2 Mobile Phone Penetration Throughout Sub-Saharan Africa - GeoPoll
- 3 Facebook to build internet cable 'circumference of Earth' - BBC News
- 4 A Bird? A Plane? No, It's a Google Balloon Beaming the Internet - The New York Times (nytimes.com)
- 5 <https://disrupt-africa.com/2020/06/26/africas-e-health-sector-booming-as-startup-numbers-and-investment-reach-record-high/>
- 6 <https://disrupt-africa.com/2020/06/26/africas-e-health-sector-booming-as-startup-numbers-and-investment-reach-record-high/>
- 7 <https://disrupt-africa.com/2020/06/26/africas-e-health-sector-booming-as-startup-numbers-and-investment-reach-record-high/>
- 8 <https://www.iqvia.com/blogs/2020/02/paving-the-way-for-digital-health-in-north-east-and-west-africa>
- 9 <https://www.cbinsights.com/research/report/ai-in-numbers-q1-2020/>
- 10 <https://www.genengnews.com/insights/africas-missing-genomic-data-and-its-impact-on-health-care/>
- 11 <https://www.businesswire.com/news/home/20200903005204/en/Illumina-Collaborates-With-54gene-in-the-Creation-of-a-World-Class-Genomics-Facility-in-Nigeria>
- 12 <https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2021/01/Health-Systems-Digital-Health-and-COVID-19.pdf>
- 13 <https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2021/01/Health-Systems-Digital-Health-and-COVID-19.pdf>
- 14 <https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2021/01/Health-Systems-Digital-Health-and-COVID-19.pdf>
- 15 <https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2021/01/Health-Systems-Digital-Health-and-COVID-19.pdf>
- 16 <https://disrupt-africa.com/2020/09/02/cape-town-e-health-startup-secures-contract-from-uks-nhs/>
- 17 <https://www.tdh.ch/en/news/digital-health-lifesaver>
- 18 https://ec.europa.eu/eurostat/statistics-explained/index.php/Healthcare_resource_statistics_-_beds
- 19 https://gateway.euro.who.int/en/indicators/hfa_494-5250-physicians-per-100-000/
- 20 file:///C:/Users/User/Downloads/StaffWorkingDocumenteHealth.pdf
- 21 file:///C:/Users/User/Downloads/StaffWorkingDocumenteHealth.pdf
- 22 <https://www.marketdataforecast.com/market-reports/eu-e-Health-market>
- 23 <https://www.healtheuropa.eu/digitalising-the-healthcare-ecosystem-in-the-european-union/100949/>
- 24 <https://www.healtheuropa.eu/digitalising-the-healthcare-ecosystem-in-the-european-union/100949/>
- 25 <https://www.healtheuropa.eu/digitalising-the-healthcare-ecosystem-in-the-european-union/100949/>



Contact Information

Brussels Office

Treesquare
De Meeûssquare 5/6
1000 Brussels
Belgium

Cape Town Office

The Oval

1st Floor Oakdale House
1 Oakdale Road, Claremont
Cape Town 7708
South Africa