

The mHealth opportunity in Sub-Saharan Africa

The path towards practical
application

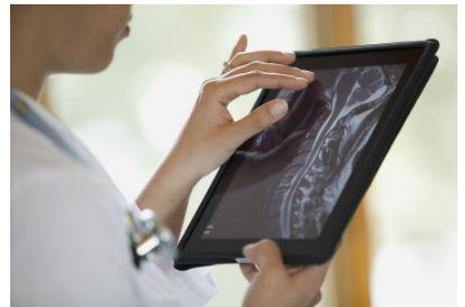


Introduction

Sub-Saharan Africa bears the highest disease burden in the world, nonetheless the economic and technological advancements in the region provide opportunities to develop sustainable mobile health solutions to improve health care. This requires an integrated approach, strategic partnerships and new business models.

According to the Deloitte Open Mobile Survey¹ the health care industry is thought to be the most promising new mobile growth channel. The application of mobile technologies, 'Mobile Health' (mHealth), in the health care industry is increasingly seen as a way to provide high quality and easily accessible care at lower costs. And in terms of revenue the global mHealth market is predicted to grow to 24 billion US dollars by 2018², up from 4.5 billion US dollars in 2013.

mHealth is the practice of medical and public health supported by mobile devices, such as mobile phones, patient monitoring devices, personal digital assistants (PDAs), and other wireless devices³. In regions where basic access to healthcare is a challenge, mHealth can provide remarkable opportunities. Sub-Saharan Africa bears the highest disease burden in the world⁴. Due to weak health care systems (both organizational and financial) quick and effective remote health care management is limited. mHealth can strengthen and improve the current health care system and it has the potential to deliver healthcare to patients in the most remote areas.



The recent economic developments across the continent have been attracting attention from different stakeholders in the mHealth ecosystem. Sub-Saharan Africa is forecasted to be the fastest growing region in the world⁵. Other mHealth investment drivers are the increase in mobile access, the development of high quality networks, health care apps and the demand for wearables. Mobile penetration rates in many Sub-Saharan countries are rapidly getting close to exceeding 80%⁶ and the population is starting to use mobile phones not only as basic communication tools but also to improve and integrate business and services⁷.

However, to improve health care in Sub-Saharan Africa the region should use its positive economic and technological developments. The mHealth ecosystem is a large and complex web of stakeholders that all need to provide their specific input to fully utilize the possibilities of mHealth services. An integrated approach and close cooperation is extremely important to move towards scale and sustainable solutions. The question is, though: who will take the leading role in bringing together all the different players. It is not only about conjoining different resources and expertise - it is about changing the business. Proactivity and innovative thinking are key to building a supporting environment for the strategic implementation of mHealth. This also includes overcoming the different challenges that prevent mainstream adoption. Especially in developing countries, where the challenges are much more problematic than in Western countries.

¹ Deloitte, 2012, Open Global Mobile Survey

² GSMA & PwC, 2012, Touching lives through mobile health assessment of the global market opportunity

³ WHO, eHealth series

⁴ World Health Organization: www.who.int/en/

⁵ Economist Intelligence Unit: www.eiu.com

⁶ International Telecommunication Union: www.itu.int

⁷ World Bank: www.worldbank.org

The application of mHealth

Integrating mobile technology in current health care strategies provides new ways of health care. This facilitates and engages the system, the health care professionals and the patients. In developed countries the primary focus is on reducing health care costs, optimizing assets utilization and efficiency, delivering higher quality of care, and improving patient experience. The main focus in Sub-Sahara Africa (and other developing regions), is improving access to basic health care, remote diagnosis, remote monitoring and prevention. Followed by access to health-related information, quality and effectiveness of service delivery, and reducing the shortage of well-educated health care professionals. There is a wide range of mHealth services, simple examples of which are services such as text messaging to improve treatment compliance and applications for diagnostic and treatment support. More complex examples are complete system infrastructures that enable remote monitoring and audio-visual communication for real time interaction between patients and providers. Other complex procedures are cloud based solutions for data collection and storage and special home monitoring devices that, e.g., measure blood glucose levels to increase self-treatment. Synchronous or asynchronous techniques can be applied to provide mHealth services - or a combination of both.

	Asynchronous	Synchronous	Hybrid
Description	Store and Forward techniques to exchange pre-recorded data	Real-time interaction: audio-visual communication and/or monitoring	Combination of both asynchronous and synchronous technologies to provide health and wellness support for patients
Application	For easy procedures when minimal resources are required	For more complex procedures	For transitional care and monitoring with help lines
Category	Prevention, Diagnosis, Treatment, practitioner support, administration	Diagnosis, treatment, monitoring, healthcare surveillance, emergency response and remote ICU	All categories
Medium	SMS, Voice and Apps	SMS, Voice and Apps Internet based (Video, Devices)	All mediums
Examples	Drugs reminders, compliance tracker, tele-dermatology	Mobile consultations, disease monitoring and alerts, real time data exchange, tracking body vitals	Chronic disease management

Table 1. Types of mHealth services

Despite all the opportunities provided by the mHealth solutions, challenges lie ahead as well, such as globally accepted policies, guidelines and standardized metrics. Standards were approved recently, for the global use of mobile devices in health care⁸. This is a great milestone to increase standards-based interoperability and communications among medical devices. It will stimulate innovation and it will drive mHealth towards a global scale. However, other critical challenges such as health information security, evidence base and user acceptance must be taken into account. Likewise, the governmental situation, financial resources and type of stakeholders in developing countries present far greater challenges than in developed countries. Sub-Sahara Africa strongly depends on international funding, for many of its health services. And the combination of public, profit and non-profit organizations is difficult to coordinate.

⁸ IEEE standards association, 2013

The mHealth drivers in Sub-Saharan Africa

Increase in mobile connectivity and developments in technology

Whereas the telecommunication markets in the developed world are becoming saturated, mobile technologies in Africa are evolving rapidly from simple communication tools into service delivery platforms⁹. Sub-Saharan Africa has one of the least developed infrastructures in the world but its mobile network coverage is very high. Improved network coverage, the launch of 3G - and of 4G -, together with the possibilities provided by WiFi, have increased mobile connectivity in Sub-Saharan Africa. The growth rate of the mobile market in Sub-Saharan Africa is one of the highest worldwide. Consequently, mobile-cellular penetration rates and the growth of 3G connections are high compared to the developed world as well as other parts of the developing world¹⁰.



Figure 1. SIM penetration and 3G connections (%) in high potential Sub-Saharan African countries (2013)¹¹

⁹ Center for Global Development, 2010, *Mobile Phones and Economic Development in Africa*

¹⁰ GSMA & Deloitte, 2012, *Sub-Saharan Africa Mobile Observatory*

¹¹ GSMA Intelligence Data, 2014

Besides the increase in mobile connectivity, the evolution of health apps and the fast development of innovative devices and wearables are other drivers for mHealth. The number of content based applications increases quickly, currently there are more than 97 000 mHealth apps worldwide and the top mHealth content publishers generated almost 3.5 million downloads¹².

Improve access to basic health care

Approximately 12% of the total population worldwide lives in Africa, yet Africa (especially Sub-Saharan Africa) bears the highest disease burden worldwide. Africa bears 71% (as % of total QALYs) of the global distribution of communicable diseases (infectious diseases)¹³. While the high rate of communicable diseases and the recurrent epidemics remain the highest concern, a growing incidence of chronic diseases aggravates the situation. The weak health care system, weak infrastructures and reduction in international funding are barriers against Sub-Sahara African countries improving their populations' health status. The majority of patients in Sub-Saharan Africa thus have very limited or no access to health care clinics and basic health care services. For decades people have been trying to develop sustainable solutions to solve this life threatening problem and save the lives of millions. Little progress has been made to date and since this is a complex problem the world has been unable to realize real success.

The shortage of well-educated health care professionals is a serious problem. The public system is heavily underfunded and poor management of health care professionals and the inability to provide high-quality training cause low staffing levels. The inadequate infrastructure in Sub-Sahara Africa means health care staff has to work under difficult conditions. Travel distances are long and the buildings in rural areas are poorly maintained, while disease surveillance, drug supply systems, pharmaceutical management and drug stock management are weak¹⁴¹⁵.

Due to Africa's weak health care financing system it remains very difficult to tackle the health crisis and achieve the Millennium Development Goals in 2015. The health care financing system in Sub-Sahara Africa is divided into public spending and private spending. Public spending covers less than 20% of Africa's total health care expenditure. Resource availability is unequally divided: a mere 15% of the population has access to private health care, while the latter accounts for more than 80% of the total health care expenditure. More than 80% of private health care payments are informal or "out-of-pocket" payments¹⁶. Such payments, in turn, cause other problems such as direct income loss and income loss from an inability to work. Formal health insurance projects, social protection or international funding are limited to prevent out-of-pocket payments. Still, mobile money usage is extremely high in Africa and mobile operators are starting to anticipate on the potential of mobile money transactions in health care. Kenya, for example, is where the leading mobile operator Safaricom has partnered with leading insurer Changamka Microhealth and investment company Britam to launch "Linda Jamii". Linda Jamii is an affordable mobile health care insurance option that enables uninsured Kenyans to pay for health care using the M-PESA mobile money service¹⁷. Examples like this show that the effective use of mobile health services, ideally in combination with mobile money usage and insurance, can improve system weaknesses and access to health care.

Positive economic developments in Sub-Sahara Africa

Finally, the positive economic development in Sub-Sahara Africa is a driver for stakeholders to create mHealth solutions. Africa is forecasted to be the fastest growing region in the world. Especially the economies in East, West and Southern Africa are showing positive GDP growth rates. Ease of doing business is improving and employment rates and access to credit increases rapidly in the regions. Governmental health care spend (currently the lowest worldwide) is even expected to increase as the economy grows.

“Africa is forecasted to be the fastest growing region in the world”

South Africa is the largest healthcare market in Sub-Sahara Africa, followed by Nigeria and Ghana (West Africa) and Uganda and Kenya (East Africa). South Africa's GDP is many times bigger than the other countries in the Southern region, has a high pharmaceutical spend¹⁸, and currently has the most mobile health deployments. In West Africa especially Ghana and Nigeria have been growing at rapid rates due to recent oil finds and a flourishing economy.

Together these countries contribute to 70% of the western region. East Africa is one of the most integrated regions in Sub-Sahara Africa. Investment opportunities are high because of its advanced stage of development¹⁹. East Africa shows a growing economy - mainly caused by its high resource

¹² Research2Guidance, 2013, *Global Mobile Health Market Report 2013-2017*

¹³ WHO

¹⁴ WHO

¹⁵ United Nations Foundation, 2013, *Five Years of Mobilizing for Health Impact*

¹⁶ WHO and World Bank

¹⁷ www.safaricom.co.ke

¹⁸ Deloitte, 2013, *Deloitte on Africa, The "New" Economies in Africa*

¹⁹ Deloitte, 2013, *Deloitte on Africa, The "New" Economies in Africa*

potential and rich agriculture but also because of its energy, tourism, non-processed and manufactured goods. Another driver for the economy is the increased demand for products and services. The economic expansion has increased the countries' GDP (together Kenya and Ethiopia roughly contribute 55% to the regional GDP) and the middle class of African consumers. Most spending is on food and beverages but as incomes increase healthcare and telecom expenditures will grow²⁰.

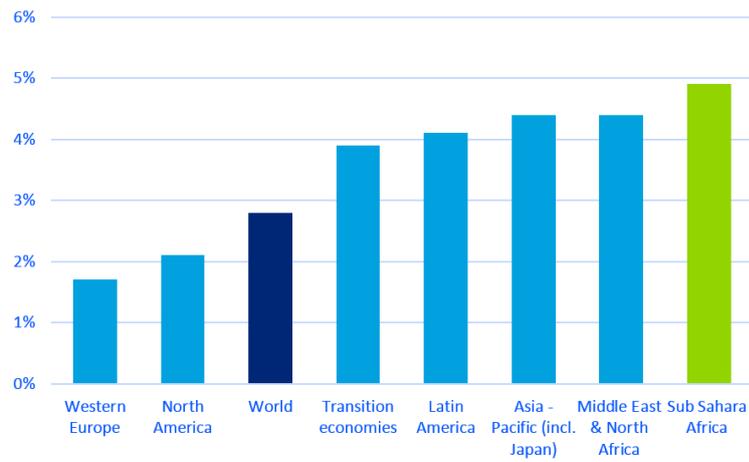


Figure 2. Average annual forecast growth per region (2011-2015)

²⁰ Deloitte, 2013, Deloitte on Africa, *The "New" Economies in Africa*

The opportunity of cooperation

The mHealth ecosystem

The concept of mobile technology in health care is not new and for years people have been talking about the mHealth hype cycle. Although a lot of research and pilots have already been implemented, mHealth's practical application is still inchoate. Projects are often not sustainable enough to go beyond the pilot phase and scaling up implementation is often limited because a global, consistent framework including indicators and evaluation methods is lacking. In this context the payers, governments and regulators currently have the most important role in the mHealth ecosystem. They can be seen as the initiators of the health care transformation, in that they should create a supporting environment for the other stakeholders. In a more mature stage of mHealth application in health care the layers and interconnection between the different stakeholders will probably shift. The ultimate situation is a model where all stakeholders cooperate and stimulate each other.

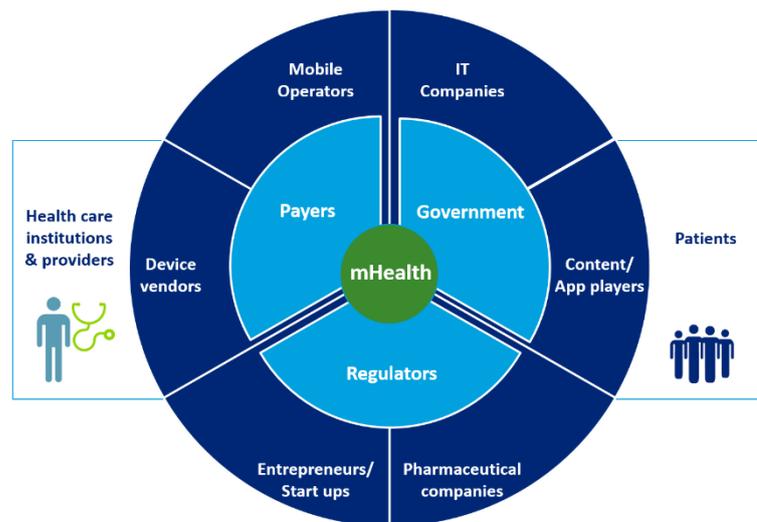


Figure 3. The current mHealth Ecosystem

The payers, government and regulators are in control

In today's situation the payers are the key to fast adoption and probably the most powerful stakeholder in the mobile health ecosystem. Without the chance of a yield the mobile operators, device vendors, IT/Software companies, content players and pharmaceutical companies will hesitate to invest in mobile health projects because they risk not getting a return on their investment. Hence, making the payers believe in the effectiveness and long-term benefits of the mHealth solution is extremely important. National governments and regulators have a close link to the payers' role in this early phase of mHealth transformation. Payers' decisions to include mHealth service depends on objective criteria and guidelines. This is where regulations

“Payers, governments and regulators should create a supporting environment”

and ethical considerations strongly influence the mainstream adoption of mHealth services by payers. The recently announced approval of standard guidelines for the use of mobile devices in health care is a step forward in reducing the risk of low adoption levels caused by non-interoperability among medical devices. This is a sign that governments acknowledge the importance of their role and the potential of mHealth as an integrated part of health care. This is still just a small step towards

mainstream adoption but it might catalyze the process towards an integrated mHealth approach. An important note regards less regulated regions such as Sub-Saharan Africa, where the success of mHealth and secure funding strongly depends on international subsidies (foreign aid) - governmental or otherwise -, international and national private companies (other than insurers), NGOs, entrepreneurs and venture capitalists.

The other key players

Pharmaceutical companies could be considered to be the most powerful health care players. And mHealth will inevitably present them with huge opportunities. For example, one of their main problems in developing countries are the difficulties in collecting market and patient information and data on medicine consumption. Systematic data collection and storage can be improved through mHealth, helping pharmaceutical companies to better understand patient needs, track compliance, and consequently scale up access to medicine and better manage out-of-stock issues. However, until now pharmaceutical companies have not been able to cope with the speed of technological developments. Contrary to entrepreneurs, pharmaceutical companies have a conservative and independent character and the question is whether they will lead the game where mHealth is concerned. They should shift towards a different approach: one where open conversation, innovative thinking and a strong focus on technology are necessary. In this manner entrepreneurs are valuable players in the mHealth field. True entrepreneurs have a specific set of skills and capabilities: they are rule breaking, inherent creative, open-minded, tenacious, risk-taking and, notably, they show real passion to make things work. The other stakeholders can learn from entrepreneurs how to beat the odds and reach success in mHealth in incremental and measurable phases. Once again this emphasizes the importance of cooperation between all stakeholders.

Mobile operators can be seen as the vital link in the mHealth ecosystem: they provide the connectivity on which all mHealth services depend. They need to fully exploit their ability in providing stable and high-quality networks that are able to handle high traffic loads. Cooperating with IT/Software companies, content players and device vendors they should innovate and expand their business models beyond their traditional services. By building strategic partnerships these stakeholders can provide IT solutions that will ultimately lead to business integration and improved (access to) health care. Together they are ideally positioned to facilitate mHealth services and they could provide the crucial integration platform to support major growth in the mHealth ecosystem.

Cooperation is crucial

The mainstream adoption of mHealth requires a high level of know-how and acceptance by all stakeholders and, of course, the user acceptance by patients and the health care providers. If mHealth's opportunity is to be fully exploited, stakeholders will need to proactively seek strategic partnerships, public-private or otherwise, and build cooperative and sustainable business models. Developing an open and cooperative ecosystem enables them to bring diverse strengths and capabilities that facilitate the delivery of new solutions.

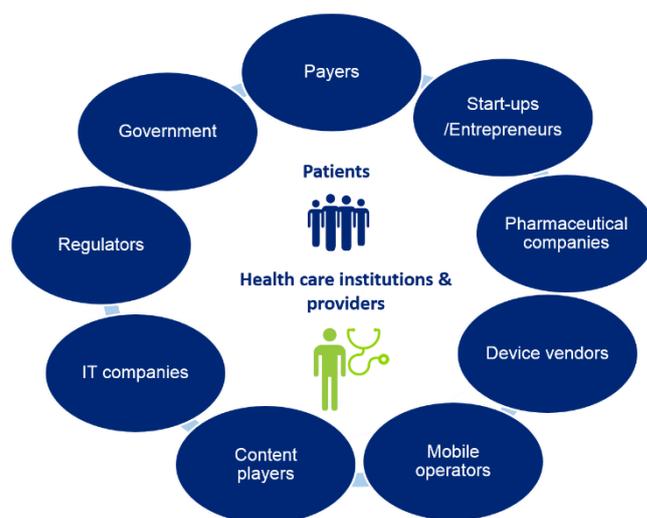


Figure 4. Mature mHealth Ecosystem

Addressing the major challenges of running businesses and promoting mHealth services in developing countries requires close collaboration with local parties, a relationship built on trust and the empowerment of the end user.

Delivering mHealth services to connect businesses, health care providers and patients, involves an integrated approach with which mHealth services should be aligned with local and national health priorities. Continuously monitoring and assessment is needed to ensure the match with existing health care services and to ensure a solid business case. Finally, a high level of flexibility and the ability to adapt is necessary to keep up with economic and technological advancements, new regulations, national priorities and changing patient needs.

Our ambition

Deloitte has assisted companies with mHealth services in the developing world, including Mexico, Brazil, India, Rwanda, Tanzania and South Africa and in the developed world alike, including the United States, United Kingdom and Sweden. Deloitte is well suited to expand the mHealth opportunity and provide assistance in a variety of projects, encompassing strategic reviews, strategy formulation and implementation as well as vendor/partner analysis and guiding coordination.

Our ambition with this article is to demonstrate to companies in developed economies, the value, opportunities and challenges of mHealth services in developing and emerging markets. Deloitte recognizes the complexity of doing business in these markets and the challenges encountered in building a local network and coordinating different stakeholders. Our experience lies in both the private and public sector and an extensive body of work is already being performed by the Deloitte Global Center for Health solutions²¹ and the Deloitte Emerging Markets practice²². We will draw on this experience and knowledge of our professionals to facilitate the generation of innovative mHealth solutions for interested stakeholders.

	<p><u>mHealth in an mWorld</u> Report says mobile apps only scratch the surface of possibilities offered by mHealth. Improvement opportunities exist along the value chain, from engaging patients to maximizing provider productivity to controlling costs.</p>
	<p><u>Telecare and Telehealth - A game changer for health and social care</u> How can telecare and telehealth play a role in helping to transform health and social care by enabling commissioners and providers to respond effectively to rising demand for health and social care services?</p>
	<p><u>The four dimensions of mHealth infobrief</u> Factors that should be considered in mHealth work including infrastructure, policy landscape, demographics, and disease dynamics.</p>
	<p><u>Infographic--mHealth: a check-up on consumer use</u> Consumer interest in mobile health (mHealth) is strong and its potential to improve health care is high. Despite this interest, however, Deloitte's 2013 Survey of U.S. Health Care Consumers shows that consumer adoption of mobile health technologies remains limited.</p>
	<p><u>Virtual Health Can it help your organization create a transformational culture while bending the cost curve?</u> The integration of telehealth or telemedicine initiatives in mainstream care delivery to provide complementary or substitute care – got a big boost from innovations in communication technology that has created more convenient, fast and affordable virtual interaction.</p>
	<p><u>eVisit: the 21st century housecall</u> Deloitte TMT prediction 2014</p>

Table 2. Sample of our mHealth thought leadership

²¹ http://www.deloitte.com/view/en_US/us/Insights/centers/center-for-health-solutions/

²² http://www.deloitte.com/view/en_US/us/Industries/US-federal-government/federal-focus/Emerging-Markets/index.htm

Contact

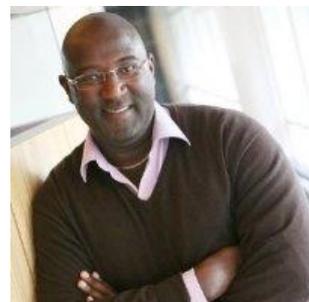
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