

# Prospects for financial technology for health in Africa

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## Abstract

Over the years, technology has revolutionized the operations of many industries, ranging from manufacturing and agriculture to financial institutions which are usually the first users of innovations. Owing to the recent technological trends in the financial sector, such as mobile money, artificial intelligence, and medical robotics, as well as the rapidly increasing human population and the emergence of new patterns of disease, it is necessary for the healthcare sector to adopt new strategies to deliver efficient and effective healthcare services. Financial technology (FinTech), a combination of financial services and technology, entails the incorporation of modern, innovative technologies by industries into their financial services. FinTech is an endless array of applications, products, and services which includes mobile banking, cryptocurrency, insurance, and investment apps among many others. Any enterprise that employs technology to enhance or automate financial services and processes is referred to as FinTech. This fast-growing industry serves the interests of both the business sector and the consuming public. There have been many applications and uses of FinTech, however, its employment in the field of health remains to be explored further and maximized, particularly in the developing world like Africa. This paper aims to explore the prospects of FinTech for healthcare in Africa.

## Keywords

Technology health, financial institutions, insurance, cryptocurrency, mobile banking

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## Introduction

The African healthcare system's long-term growth is a major booster of human capital and is thus an important part of economic growth. Financial technology (FinTech)

aims to digitize healthcare technologies by introducing digitally aware financial models into the healthcare sector. FinTech combines financial services and technology and entails the incorporation of modern, innovative technologies by industries into their financial services. It is an endless array of applications, products, and services

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which includes digital ID, mobile banking and money, artificial intelligence, medical robotics, blockchain technology, cryptocurrency, insurance, and investment apps.<sup>1</sup> FinTech is any enterprise that employs technology to enhance or automate financial services. There have been many applications and uses of FinTech, however, its employment in the field of health remains to be explored. For example, FinTech has actively contributed to electronic payments, digital banking, insurance, lending, B2B FinTech, payment securities, and blockchain technology in developing countries with the United States, United Kingdom, Singapore, Lithuania, and Switzerland leading in FinTech innovations.<sup>2</sup> This becomes more challenging in places where digital technology is just starting to develop like in Africa. FinTech is seen to have a tremendous benefit for the healthcare sector and its development should be encouraged particularly in Africa to serve the interests of both the business sector and the consuming public with the overall goal of equitable development.<sup>3</sup>

### **Towards achieving universal health coverage: the role of FinTech**

To attain optimal health and achieve healthy lifestyles in any population, access to quality healthcare services remains an indispensable factor.<sup>4</sup> Universal Health Coverage (UHC), which is also encapsulated within the 2030 Agenda of the Sustainable Development Goals (SDGs), is defined as a phenomenon in which all individuals and communities have access to the various healthcare services they need without any financial hardship.<sup>5</sup> Achieving UHC in Africa remains a formidable challenge given the state of development of many of its countries. It is still beset by a heavy burden of disease, and economic underdevelopment and geographical isolation compound the lack of access to healthcare services. Twenty-seven out of the 48 countries in Sub-Saharan Africa are faced with the problems associated with direct out-of-pocket payments for healthcare services.

Particularly in low- and middle-income countries (LMICs), over 100 million people are becoming poor annually due to the high costs of healthcare services.<sup>6</sup> With the increasing cost due to the fast introduction of new health technologies, populations and governments continue to suffer financial hardship thus derailing the achievement of good health indicators as mandated by the UN SDGs. A population embedded in a society with a sound financial network and support system is imperative—whether it be membership in health insurance, access to bank facilities and loans, an easy or facilitated payment system to health providers and facilities, or financial backup for quick provision of health services. It is therefore imperative to develop sustainable solutions and infrastructure that support healthcare financing.<sup>4</sup> As part of UHC policies, FinTech initiatives can be targeted at populations in LMICs. People who lack access to

formal financial services also lack access to and cannot afford quality healthcare services. According to a report from the World Health Organization and World Bank in 2017, more than half of the global population cannot afford essential healthcare services. About 800 million people worldwide expend at least 10% of their family budget on health expenses. Out of these 800 million, for almost 100 million people, these expenses are high enough to push them into extreme poverty.<sup>7</sup> This makes it rational to converge the goals and approaches of FinTech initiatives and UHC to offer solutions to growing healthcare financing challenges.<sup>8</sup>

### **What role is FinTech playing?**

The applications of FinTech, including innovations for improved access to healthcare finances, are being continuously investigated and are undergoing trials in several areas. Technology is becoming an important tool to provide patients with fast and efficient methods to deliver healthcare services. Aside from the fact that it can scale up payment processes and alleviate complex transaction charges, FinTech is also being looked into as an alternative for expanding financial access to meet the healthcare needs of people living in LMICs.<sup>9</sup> Mobile-based health savings accounts, low-interest loans, and remittances are illustrations of payment-oriented FinTech solutions that are used specifically to increase access and affordability of healthcare for populations in LMICs which are most times out of reach. Furthermore, data-oriented FinTech solutions, which facilitate payment processes in healthcare settings, use technology to process the data in large numbers and at a very high speed.<sup>10</sup> Over the years, payment has been a significant healthcare challenge that has the potential to further exacerbate the already-felt impact. FinTech has undoubtedly caused remarkable changes in this aspect; completing payment is now faster and more effective than ever, particularly in advanced economies. Other sectors such as banking, education, trade, and enterprises, have already made inroads in this field. The rapid connectedness of Africa with the laying out of cables in many parts of the continent is hastening the process of digitalization.

### **Improved healthcare accessibility**

Another important prospect of FinTech is improved healthcare accessibility through mitigating inefficiencies in a payment plan and reducing financial exclusion to access quality health services. Procedures that require complex payment schemes and services are becoming more accessible and this gives room to believe that further improvements will be made in this field. It is therefore important to think about the possibilities that the incorporation of FinTech into healthcare will bring to the table as it can open doors for opportunities to scale up healthcare accessibility for populations in LMICs, most especially in African countries.<sup>11</sup>

With FinTech being incorporated into the healthcare industry, patients can now pay for their medical expenses during emergencies with low-interest loan methods. This will save lives and help the healthcare system maintain financial stability. By combining technology and traditional services, the FinTech industry's digital transformation will deliver trustworthy financial services to rural and underprivileged populations. Healthcare providers will experience fewer problems and incur less expenditures because of cash-based payment options. FinTech initiatives are promoting quality and affordable healthcare services to the population in LMICs through financial inclusion and affordable health insurance. People who are financially inclusive are more likely to save money in case of emergencies and less likely to borrow for medical reasons.<sup>12</sup>

With the incorporation of FinTech into healthcare, working with patient data and managing complex data will become easier. GemOs, an example of a blockchain-based FinTech platform, provides healthcare networks with a set-up that facilitates data sharing and data protection. That set-up can be amplified by artificial intelligence software such as DreamQuark, which facilitates data processing through deep learning algorithms and provides recommendations accordingly.<sup>10</sup>

The finance and healthcare industries share a high bar for data protection and privacy. With FinTech being used in healthcare, patients can expect improved attitudes toward their privacy, which can eventually bring about ultimate patient satisfaction.

## Health financing

A major prospect of FinTech in the healthcare industry is healthcare financing. Health financing is an important fraction of the healthcare sector which enables progress toward achieving UHC through the promotion of effective service coverage and financial inclusion. Many individuals lack access to basic health services due to the high costs involved. Several different types of FinTech platforms designed for healthcare financing can be applied in efforts to promote financial access to healthcare services, with some FinTech healthcare financing providers merging two or more types of approaches in their solutions. Illustrations of FinTech applications for healthcare access include digital saving, digital lending, insurance technology (insurtech), and crowdfunding, which encompasses donations and mutual aid actions. Most of these services are functional in other countries. A good example of this kind of platform is Arogya Finance in India, a digital lending company that provides patients with preapproved point-of-care lending with low-interest rates and digital healthcare loans for emergency point-of-care needs, with the use of a digitally assessed alternative risk scoring tool.<sup>9</sup>

The following are some examples of FinTech start-ups that are reimagining and improving payment systems in healthcare settings, mostly in developed countries such as

the United States: PayZen, CueSquared, ESO, WellPay, Cedar, MedXoom, and PayGround.

## Peer-to-peer lending and crowdfunding

Nonreliance of FinTech on traditional financial institutions such as commercial banks to formally construct borrowing–lending relationships constitutes a major reason why it is leading the spotlight in areas of socioeconomic well-being. FinTech and peer-to-peer lending have made borrowing easier and funds disbursement faster. The conditions for accessing loans are also less complicated, most times requiring only basic data such as personal information which has lessened the problems and burdens associated with healthcare payments. FinTech solutions have made healthcare services more affordable for populations in low- and middle-income segments of society by expediting and simplifying the payment process for healthcare services by patients, and by providing low-interest loans and mobile-based health savings accounts.

Another popular example of a FinTech platform that improves healthcare financing is crowdfunding, which leverages digital and social platforms to raise funds and donations. An illustration of crowdfunding is Xiang Hu Bao in China, a platform that makes provision for mutual aid made easy by a digital interface, hence providing patients with a basic health plan against 100 types of diseases. Insurtech, when compared to conventional insurance, broadens access to healthcare services using data from Internet-enabled devices to inform price premiums in a customized way, therefore making healthcare finances more accessible.<sup>9</sup> Owing to the settlement structure in Africa where a large portion is made up of low-income households, FinTech can prove to be an achievable alternative to traditional banking where people can gain access to reliable, affordable, and sustainable financial services.

## Conclusion

FinTech for health leverages innovation to improve access to quality healthcare services and help in financing by shifting the dynamics of payment plans and broadening financial access to healthcare services. It has been proven over time to be effective and it is imperative to incorporate FinTech into the healthcare industries of Africa to improve the deteriorating state of healthcare services in the continent. Amidst economic uncertainties, FinTech can help medical institutions and doctors adapt to patient expectations, which are continuously evolving, and build effective strategies to prepare for a digital future. By harmonizing the discovery and exploration of financial resources, digital financial transformation is assisting governments, businesses, and regulators in achieving the UN SDGs. FinTech allows healthcare customers to get funds easily and at a low-interest rate, enabling them to meet their medical needs and thus improving the health of the population.

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## References

- Liu Y, Saleem S, Shabbir R, et al. The relationship between corporate social responsibility and financial performance: a moderate role of FinTech technology. *Environ Sci Pollut Res* 2021; 28: 20174–20187.
- Martinez R. Top 5 countries leading FinTech Innovation. *FinTech Weekly*, <https://fintechweekly.com/magazine/articles/top-5-countries-leading-in-fintech-innovation> (2020, accessed 10 July 2022).
- Ciulla F and Mantegna RN. Dynamics of FinTech terms in news and blogs and specialization of companies of the FinTech industry. *Chaos* 2020; 30: 083112.
- Ifeagwu SC, Yang JC, Parkes-Ratanshi R, et al. Health financing for universal health coverage in Sub-Saharan Africa: a systematic review. *Glob Health Res Policy* 2021; 6: 1–9
- Minh HV, Pocock NS, Chaikunapruk N, et al. Progress towards universal health coverage in ASEAN. *Glob Health Action* 2014; 7: 25856.
- Simfukwe K, Adebisi YA, Oladunni AA, et al. The role of health service delivery networks in achieving universal health coverage in Africa. *South East Eur J Public Health* 2021. DOI:10.11576/seejph-4470.
- World Health Organization. World Bank and WHO: half the world lacks access to essential health services, 100 million still pushed into extreme poverty because of health expenses, <https://www.who.int/news/item/13-12-2017-world-bank-and-who-half-the-world-lacks-access-to-essential-health-services-100-million-still-pushed-into-extreme-poverty-because-of-health-expenses> (2017, accessed 10 July 2022).
- ACCESS Health International. What is FinTech for Health? [Internet]. 2021 [cited 2021 Dec 14], <https://FinTechforhealth.sg/what-is-FinTech-for-health/>.
- Sam A and Sonja M. FinTech's role in reducing disparities and financial barriers to health care access. [Internet]. RAND Corporation, 2021, 2021 [cited Dec 14], <https://www.rand.org/blog/2021/07/FinTechs-role-in-reducing-disparities-and-financial.html>.
- William AH. What FinTech can do for Healthcare. [Internet] *Forbes*. 2019 [cited Dec 11], <https://www.forbes.com/sites/williamhaseltine/2019/11/21/what-FinTech-can-do-for-healthcare/?sh=7fb093b038d6>.
- Elhadi YAM, Adebisi YA, Abel UV, et al. National health systems strengthening as the primary strategy to achieve universal health coverage in African countries. *South East Eur J Public Health* 2021. DOI: 10.11576/seejph-4445
- Al-Hanawi MK, Chirwa GC, Kamninga TM, et al. Effects of financial inclusion on access to emergency funds for health-care in the kingdom of Saudi Arabia. *J Multidiscip Healthc* 2020; 15: 1157–1167.