

# Current Status of E-Health in Senegal and Perspectives for Development

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## Abstract

Click here and insert your abstract text. Improving healthcare delivery is a matter of emergency currently in Senegal. In fact populations do not have access to healthcare as much as they should....With emerging tools for effective healthcare delivery such as the internet of things, telemedicine innovations and e-learning tools, relying on e-health is becoming a necessity to achieve the goals of the Universal Health Coverage (CMU in Senegal). However there is a lack of financial resources and consensus in data standards due to communication issues between healthcare leaders. As such, they usually waste funds received from NGOs (Non Governmental Organisations) on developing a health software product already developed by a different fellow member on non operable health systems under outdated materials....there are many scenarios showing a deep lack of organisation sometimes caused by NGOs themselves motivated by competition, merely jostling for attention, instead of finding solutions to help needy recipients. This paper looks at the status of e-Health in Senegal exploring the efforts the government has put in place in order to digitalise healthcare in Senegal. It also explores e-health systems developed by professionals and perspectives for development. The study is carried through an examination of scientific journals, research papers and exchanges with health professionals through occasional seminars at the Ministry of Health and Social Action (MOHSA). The study seems to reveal that the potential for e-Health growth in Senegal is enormous although it is just at its early stages of development. This is due to the combination of a rapid growth in internet and mobile phone use in Senegal with the introduction of a regulatory unit for the implementation of an strategic e-Health system in Senegal (the Unit of the Sanitary and Social Map, of Digital Health and of the Observatory of Health) known as CSSDOS at the Ministry of Health and Social Action (MOHSA).

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## **1. Introduction**

The way that healthcare is delivered has been subject to tremendous changes worldwide these past years. With various studies on e-health systems and patient treatment pathway modelling, healthcare services have seen major changes dominated by the use of e-Health innovations with fields such as IoT (Internet of Things), Telemedicine, m-health etc. However, there is a huge gap prevailing between theory and practice particularly in developing country such as Senegal where resources to totally engage in a national e-health system are very limited. An integrated healthcare system via e-Health with a unique dashboard for patients records would be of great importance and would allow all citizens to have access to healthcare. Indeed, that is currently a luxury for some populations in the country. The idea would involve the use of the ETL processes (Extract, Transform and Load) which constitute one of the fundamental bases of Data Warehousing systems to exploit the large amount of data available in hospitals and centres. Benefits would include making healthcare accessible to all populations, reducing governments' budgets for health, improving quality, value, and patients satisfaction [1]. Medical records would become more accessible and diverse allowing doctors to have a more efficient method of analysis with precise data to better decide on the treatment to adopt and even anticipate on the patient's condition...Healthcare being a sensitive subject where critical decisions are constantly made, the need for a better decision making system is urgent to handle effectively the increasing number of patients. Creating an integrated healthcare system would also enhance patients pathway modelling. The use of an integrated healthcare system based on modelling, analysis and optimisation is seen by many as the solution e.g. "Integration – the key to success!" (SciLifeLab, 16.Dec2015, Web) [2].

## **2. Defining E-Health**

The term e-Health is widely used by many professional bodies, academic institutions, individuals and funding organisations. Coined in the latter part of the twentieth century, it can already be found in around 4,000,000 Web pages [3]. It offers the rich potential of extending the healthcare organisation's ability to meet the needs of its patients by enhancing traditional delivery of healthcare services and communication.

With the prefix "e" standing for electronic and "Health" broadly referring to Medicine, Healthcare, Disease or Hospitals, e-Health can simply be defined as the use of ICT (Information and Communication Technologies) in Healthcare to improve the body of epidemiological data, files exchange between health institutions, patient treatment and communication between physicians and patients.

## **3. Current Status of E-Health in Senegal**

On November 6th, 2017 at the KFH Hotel in Dakar (Senegal), the board of the CSSDOS (created by Ministerial order n ° 8299 on May 16, 2017) introduced to the senegalese nation the National Strategy of Digital Health 2018 - 2023 in Senegal [4]. That did not particularly set food for e-Health in Senegal; there are indeed many previous attempts as shows the report commissioned by the Knowledge for Health (K4Health) through IntraHealth International supported by funding from USAID and entitled as: "Senegal's Journey Toward an eHealth Strategy: Highlights from the Development Process" [5]. Studies on e-Health solutions in Senegal have

shown a large number of disparate initiatives and projects (estimated at fifty) with great examples such as m-Diabete, Karangue, Commcare, Jikkosante etc. However, developers are working each on their side and their lack of communication has led to the construction of non-interoperable platforms with no consensus in data standards. That is just one of the many barriers for e-health development in Senegal, indeed initiatives are all failing to see light facing common challenges.

#### **4. Challenges Faced by E-Health Initiatives**

1) One of the biggest challenges for e-health development in Senegal is that populations are not too inclined for the change to digitalisation. That is caused by the reluctance to enter the unknown world of The Internet for many computer illiterate, and also unreliable network providers who discourage the ones willing to learn. It does not only affect patients but health practitioners as well; they often highlight the issue that data entry to update patients records after each consultation would cause them if an e-health system was to be implemented in all health centres. They even ask for motivations as they truly take this as an obligation, not seeing all the benefits this would bring to them in terms of data analysis, decision making, treatment pathway modelling etc. besides the idea of going paperless.

2) Another challenge is the network failure. There is no way of implementing a performant e-health system in Senegal with the current low level of network provision. Studies should focus on finding ways to create a strong intranet system implemented in all health centres in Senegal, with great back-up systems and no dependence on electricity power supply as the issue of power cuts in Senegal is not resolved yet

3) There is also a shortage of skills in health informatics and a lack of ICT in health professionals' curricula. Young great minds are fleeing the country for other horizons particularly Europe due to the lack of job opportunities. The country is wasting great potentials when it comes to exploring new fields of information technology and e-Health as the graduates and young professionals who got the opportunity to learn and master these subjects in Europe are not coming back. There are no engagements or initiatives from the governments to create jobs and re-insertion opportunities in the society such as guided return programs. That is a barrier for e-health to develop in Senegal as its features are not mastered yet in this part of the world.

4) The lack of good management of funds received from NGO's is causing many financial issues. NGOs should help for better communication, assist and coach seminars for eventual participants who have spotted wastes on duplicated jobs or else and have decided to make it out loud during meetings in order to stop unnecessary projects from going through. That would save resources and rather orient their use for the realisation of great projects already started. Indeed there are many products or project of good quality but lack of financial resources mostly stop them from going through. Two NGOs can happen to fund the same type of project to separate organisations both working for e-health development in Senegal . This is just to mention that NGOs help would be more efficient and effective if they were more concentrated on helping the needy recipients than bringing the attention to themselves [6]. The funds are not going to where they should and expenses are mostly fastidious and unnecessary. On the other hand, those funds wrongly spent do benefit the recipients who are not there for the nation but for themselves. That will introduce the next point in challenges: the leadership in Africa.

5) Leaders in many low-income countries constitute most of the time a barrier to development. Indeed their interests come first before the nation's. As a result, rich people become richer and poor people get poorer as time goes by. There is no solidarity, no support programs for underprivileged people. Some examples of national funding should be looked into; e.g. Benefits scheme in UK (a nation where leaders truly care about citizens, each and everyone would see themselves in one part of the system, from the unemployed to the disabled person). Currently in Senegal, working citizens and capitalists are in the system, control the system and will not let anyone enter the system. It goes from generation to generation. There is no transparency in the job market. As such, young graduates with no relatives in the system will hardly ever get a job and would stay home with their degrees in hands, unable to even provide breakfast for themselves. And if ever they fall sick, practitioners in health centres will not even consult them unless they pay first...we are not yet at the treatment point, that is another story! This is not a call to encourage the implementation of UK's Benefits Scheme in Senegal because the funds are clearly not here. However, workers do pay high taxes but those resources instead of going to the ones deserving them, rather go to ministers, deputies and other members of the government, spent in another bunch of new luxury cars or another set of trips to mecca offered by the President of the Republic. Healthcare to everyone is a must and leaders should look into perspectives to overcome this issue (ref: Article 17 of the Senegalese Constitution which guarantees the right to health for urban and rural populations).

## **5. Perspectives for Development of E-Health in Senegal**

Perspectives should include the definition of standards for e-health professionals to consider the exchange of information between solutions in favour of interoperability. They should use the same language and be in the same line of definition with DHIS2, the national data warehouse system for healthcare already in place, currently adopted by nearly all health centres in Senegal [7]. Softwares in place should allow users to carry out analyzes that will include all data collected for healthcare.

Also, in terms of perspectives, we should enhance communication and encourage all e-health professionals to report to a main board for e-Health such as the CSSDOS endorsed by the government and officially decreed by the Minister as the Unit for e-health in Senegal. The CSSDOS should not just occupy a Unit at the Ministry though, it needs to become a Direction or a full Department with enough staff members, a strong leadership and actual workshops. Senegalese authorities have not understood yet the benefits of creating an integrated and intelligent healthcare system and as such they do not give full credit to e-health initiatives.

A perspective for development would actually start by a bigger focus of leaderships in e-health strategies for all the benefits it involves. A more organised system for healthcare is urgently needed. The CSSDOS is already on the right path in their project as they are currently designing the so called Sanitary and Social Map of Senegal, listing all the health centres in Senegal and visiting each site to perform an inventory of the equipment, laboratory material, hardware and software systems (always insufficient or outdated), network infrastructures and human resources, both existing and required on site, and finally the health services offered on each site. They then categorise each of them in the health pyramid they designed, looking into the ones that need to be upgraded or downgraded in terms of the population's needs. Of course none of the health centres would ever need a downgrade as the service is already quite nonexistent in Senegal but that is just to say.

Presented this way, we can all assume that members of the CSSDOS are doing a great job as evaluating available resources should be the first thing to do when designing a strategy for e-health. They have been in every region in Senegal to achieve their goal but still, there are other organisations that would rather do this job again when designing a Hospital Information System for example, instead of consulting the CSSDOS. They will indeed reproduce the same job for the same results with resources provided by the NGOs at fault. Eventually, if the NGOs representant had taken the initiative to assist at each of the meetings for the project's progress, there would be a potential for them to spot these issues as there are always people ready to bring the attention to those issues during the meetings although leaders, happy to gain a part in the funds will always make sure those people are not heard. Those funds could have served to renew and refurbish the outdated materials in hospitals to allow them to support new e-health systems in construction. They could also have been spent on studying the implementation of a reliable intranet system for all health centres in Senegal with the most offering network provider in Senegal in order to easily implement the e-health system when the time comes for it.

Finally, perspectives should also include studies for legislation and data protection. Medical records portability should be set and issues for privacy and ownership in collected data addressed.

## **6. Recommendations**

We recommend to genuinely follow guidelines provided by the World Health Organization and International Telecommunication Union (2012) on their National eHealth Strategy Toolkit [8]. They recommended to start managing the process with the engagement of a strong leadership and stakeholders for the following steps:

- Develop e-health action lines for an integrated action plan
- Determine high level resource requirement
- Apply funding constraints to refine plan
- Define implementation phases

They better illustrated the challenges above mentioned and offer perspectives to overcome them for successful e-Health implementation.

## **7. Conclusion**

This workload has been developed in order to show the need of improvement of healthcare delivery in Senegal. It has helped to confirm the urgency to adopt e-health solutions to achieve goals of universal health coverage, assess its current status in Senegal and finally bring perspectives for development. Studies have shown that if communication is improved between healthcare professionals, ICT experts and NGOs, better results could be achieved as the motivation is already here. At last, a stronger leadership is definitely required for better management of resources, diligence in work sessions and transparency in the system.

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