



Challenges Faced by Organizations in Implementing Telemedicine in Developing Countries: A Literature Review

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ABSTRACT

Telemedicine is the use of information and communication technology (ICT) to provide and support health care. It is not only limited to communication between physicians, but it can also be used in consultation, diagnosis, monitoring and even surgery. It provides a way for the masses that live in remote areas to access medical services without having to travel all the way to urban areas to seek medical attention. Most developed countries have ventured fully into telemedicine and the outcomes of the implementation of telemedicine can be felt. In developing countries, implementation has taken place as well, albeit with challenges. For instance, countries like Bangladesh are working hard towards the use of telemedicine to improve the provision of healthcare to its people. This study is as a result of the evaluation of literature to establish the challenges faced in the implementation process by developing countries. The study has pointed out challenges in telemedicine implementation that will assist developing countries to find the best ways implementing of implementing telemedicine systems.

Keywords

Telemedicine, ICT, implementation, healthcare, developing countries.

1. INTRODUCTION

Norish (2002) defines Telemedicine as the use of telecommunication to provide medical information and services. The definition by Norish limits Telemedicine to provision of medical information and services using Telecommunication, However, Basshur (1997) goes further in the definition and his gives more details, he posits that “Telemedicine involves the use of modern information technology, especially two-way interactive audio/video communications, computers, and telemetry, to deliver health services to remote patients and to facilitate information exchange between primary care physicians and specialists at some distances from each other.”

The WHO (1997) defines it as “the delivery of health-care service, whereby distance is a critical factor, by health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, and for continuing education of health care providers as well as research and evaluation, all in the interest of individuals and their communities.”

Technology uptake has created immense possibilities for both doctors and patients, computers are used in the medical field to send live videos, sound and high resolution images to

distant locations as well as for examining patients in clinics that are in remote areas.

The implementation of telemedicine is not only a challenge in developing countries, but also in developed countries. However, having things done right from the onset of the implementation can lead to a successful implementation. Peter (2005) argues that successfully developing telemedicine systems is primarily about effective change management within an already rapidly changing health-care environment.

This study seeks to address challenges faced by those who have tried to implement telemedicine in developing countries through a review of literature related to telemedicine implementation. The researcher believes the findings of this study will go a long way in mitigating problems and myriad of challenges that developing countries face in their efforts to give quality medical services to their masses.

2. THE HEALTHCARE SITUATION IN DEVELOPING COUNTRIES

Challenges that have to do with constrained resources in the health sector are becoming synonymous with developing countries. Lack of medical equipment and medicine are some of the issues that developing countries are still fighting. The effects of brain drain do not make the situation any better. It is estimated that the number of international immigrants increased from 75 million in 1960 to around 190 million in 2005. The issue of brain drain affects even the medical field harder. It has become a concern of scholars that medical professionals from developing countries are moving to developed countries in masses. In Africa alone, where health needs and problems are greatest, 2001 report indicate that around 23 000 qualified academic professionals emigrate annually (International Herald trib., 2001). Weiner, R. et al (1998) states that Information from South African medical schools suggests that a third to a half of its graduates immigrate to the developed world. The loss of nurses has been even more extreme—for example, more than 150 000 Filipino nurses (Corcega T.et al ,2000) and 18 000 Zimbabwean nurses (Mangwende B., 2001) work abroad. A recent report from the United Kingdom estimated that 31% of its doctors and 13% of its nurses are born overseas. With such statistics that are not even a reflection of the recent past then it’s a clear indication that there is a serious crisis in developing countries. This situation now leads to a concentration of the few medical personnel that are available to urban areas and thus forcing masses to jostle for the few who are available after having to travel miles away to receive that much needed attention.



The reports in the World Health organization paint a situation that is not good in terms of the number of medical practitioners in the African region. In a report that divides the world into six regions (African region, Region of the Americas, South-East Asia region, European region, Eastern Mediterranean region and western pacific Region), Africa seems to be having the least of the medical practitioners compared to the other regions. Some regions like the Americas and European region that have the highest population seem to be having immigrant medical practitioners most of whom are from the African region. This is not only a worrying trend, but one that spells doom for Africa and indeed most of the developing countries.

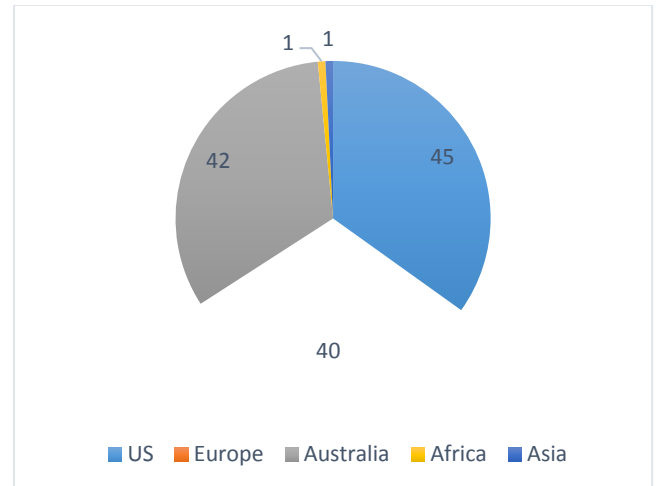
With this in mind, telemedicine is not only going to assist in augmenting but it will be a panacea, and indeed a necessity to make it possible for patients to access cheap and quality medical attention and like we have mentioned earlier on, a healthy economy is a prosperous economy. There is a relationship between health and economy for a nation that can't be wished a way, but instead be given a very special attention.

Table 1: Source: Who, 2012:130

WHO Region*	Number of doctors/10,000	Density	Number of nurses and midwives/10,000	Density	Total density doctors, nurses and midwives
African Region	118,621	2.2	467,487	9.0	11.2
Region of the Americas	1,555,428	20.0	4,749,397	72.5	92.5
South-East Asia Region	901,006	5.6	1,736,755	10.9	16.4
European Region	2,942,286	33.2	5,766,646	65.0	98.2
Eastern Mediterranean Region	626,923	10.9	856,744	15.6	26.5
Western Pacific Region	2,507,843	14.8	3,112,221	18.4	33.3

3. CHALLENGES FACED BY ORGANIZATIONS IN IMPLEMENTING TELEMEDICINE IN DEVELOPING COUNTRIES

Wootton et al (2006) posits that the rate of telemedicine deployment in developing countries has gone down or even stalled compared to developed countries. According to the figure below, continents with the most developing countries have the least telemedicine initiatives.



Telemedicine deployment globally (Redrawn from data in wootton et al., 2006)

Some of the challenges facing telemedicine implementation in developing countries have been discussed below.

4. FINANCIAL CHALLENGES

Implementation of telemedicine systems in developing countries has been hampered by lack of enough financial allocation. A few of those initiatives in existence according to Heinzlmann et al. (2005) are mainly grant supported and are and will continue facing the challenge of sustainability. Since telemedicine projects are expensive to implement (Wootton et al., 2005; Khan et al., 2007), the source of funding for these projects should be greatly taken into account before the actual implementation for longevity (LeRouge et al., 2010). The cost of acquisition and maintenance of equipment for telemedicine is so high which does not help either.

To enable developing countries to import medical devices used in telemedicine applications, World Trade Organization (1996) which deals with global rules of trade between nations concluded that all telemedicine devices to be used in developing countries be reduced to zero tariff as well as having duties and charges bound at zero.

5. ADMINISTRATION RELUCTANCE TO ACCEPT CHANGE

For success of any project, support from the administration is paramount, without which no much will be done. According to Jennet et al. (2009) administrative readiness to accept change facilitates the adoption of new technology. This according to Bashshur (1999) has been necessitated by the fear that telemedicine will replace the physician or relegate him to a less important role. Again, Christensen et al. (2000) posits that organizations providing expensive healthcare tend to fight simpler healthcare innovations since they threaten their livelihoods.

6. LACK OF SUFFICIENT LITERATURE

According to Clark and Goodwin (2010), literacy levels, awareness and understanding of the benefits of a new technology to be adopted has a great impact on the degree of acceptance of the technology by the adopters. However, Wootton et al., (2005) claims that low levels of literacy has

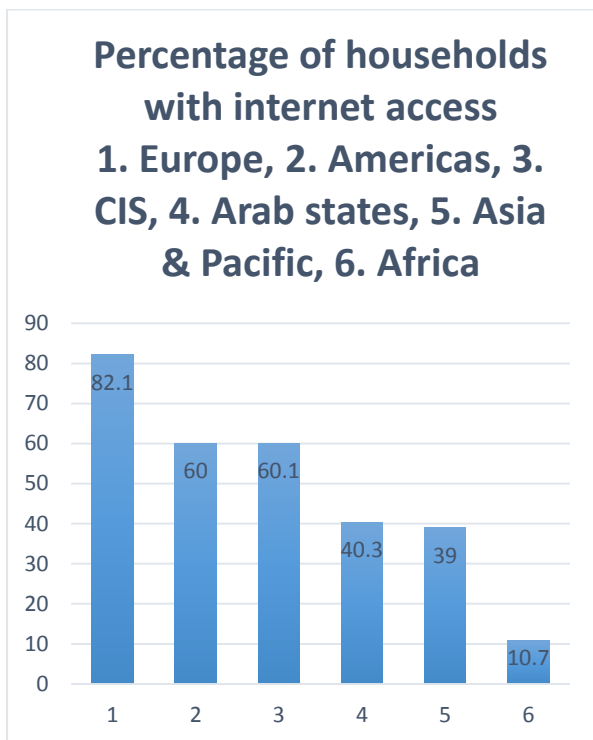


excluded the majority of communities in developing countries from attempting to adopt new technologies.

7. INTERNET PENETRATION AND MOBILE TELEPHONY UPTAKE

There is a direct relationship between the success or failure technology innovation adoption and Internet penetration and mobile telephony uptake. Non-availability to high speed internet connections in some locations is a serious hindrance to achieving telemedicine coverage

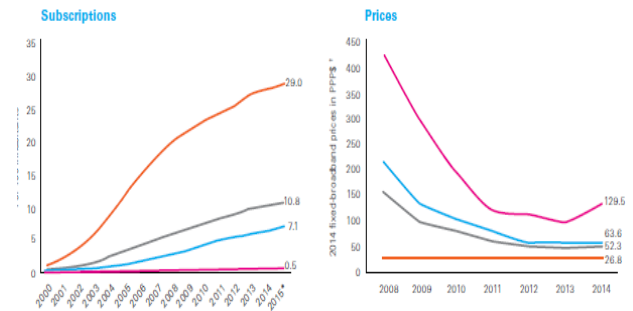
According to statistics from the ITU Telecommunication Development Bureau, ICT facts & figures (2015), there is a clear indication that internet penetration and mobile uptake is very low in those continents that have the most number of developing countries like Africa and Asia, the graphs below give a glimpse of how things are.



Source: Redrawn from the ITU Telecommunication Development Bureau, ICT facts & figures (2015)

Subscriptions to Internet services especially fixed broadband subscriptions which would have helped spur growth in implementation of telemedicine is wanting in developing and least developed countries according to the ITU 2005 report. They go on to say that Fixed-broadband

uptake remains slow in developing countries and particularly in LDCs, where penetration rates are now at 7% and less than 1%, respectively.



Source: Redrawn from the ITU Telecommunication Development Bureau, ICT facts & figures (2015)

8. CONCLUSION AND RECOMMENDATIONS

The potential of telemedicine systems to transform medical care practice has been recognized over the past decades including their ability to enhance healthcare delivery and facilitate decision-making processes. Most of the challenges facing the implementation of telemedicine are surmountable with determination from stake holders. It is high time the developing world re-thinks its commitment towards giving better health care to its masses by embracing innovation and enhancing financing towards such initiatives as telemedicine and generally ICT in solving human problems. Partnerships with people and nations of good will also help in unleashing the potential that is in telemedicine and generally technology to improve human lives. If this is taken to consideration then there is hope for developing countries.

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