A PANOPLY OF READINGS IN SOCIAL SCIENCES

Lessons for and from Nigeria

Edited by

David O. Imhonopi
Ugochukwu M. Urim

Table of Contents

ICT and Health Delivery System in Nigeria | 19

Idowu, A. E. PhD, Amusan, T. A. M.Sc.& Ozoya, M. M.Sc.

Chapter Summary

Health is increasingly being discussed in different fora globally and locally. Increasing the effectiveness of healthcare services, with the aim of making medical care more accessible to all citizenry, demands a more effective way of healthcare delivery. Against the backdrop of the Diffusion and Innovations Theory, this chapter essentially looks at healthcare delivery in 21st century Nigeria and the possibilities and challenges of applying ICT in healthcare delivery in the country. This chapter concludes that ICT application can be achieved through raising the general level of literacy in the country. Furthermore, for Nigeria to benefit fully from the application of ICT to healthcare delivery systems, there is need for people-centred development programmes, strong political will on the part of government and its representatives and sensitivity to and pragmatism in reducing the deleterious effects of corruption in the system.

Introduction

Health issues have generated heightened concern globally due to a preponderance of increasingly life-threatening ailments some of which have defied all curative measures (Ende, 2008). The nature of health problems related to health delivery system in Nigeria has made it expedient that the system is studied from various approaches.

Access to health services in developing countries is very uneven. Despite Nigeria's strategic position in the continent, the country is greatly underserved in the healthcare sphere (Osain, 2011). There are wide regional disparities in the health sector in terms of health status, mode of health service delivery, resources availability and workforce (Okuboyejo, 2013). As a report noted, health facilities are inadequate in Nigeria, especially in rural areas (HERFON, 2006). Beside the scantiness of facilities, the country is also facing deficiency of health workers. The few that are available are unevenly distributed with most of them concentrated in urban areas. Even in urban areas, where health facilities and personnel are concentrated, access to a minimal level of healthcare for large segments of the urban population continues to be a pressing public health policy concern (Fosu, 1989). Consequently, rural communities, where many Nigerians reside, find it difficult to have access to quality healthcare. Rural dwellers have limited access to basic amenities which include education, good roads, potable water and electricity. They have to travel long distances to get these resources. The lack of good and standard infrastructure has inhibited the timely delivery of quality healthcare service (Okuboyejo, 2013). The fact is that optimal performance of the Nigerian health delivery system is constrained by poor institutional arrangements, defective functional relationships, and management mechanisms. The rapid population growth in the country has overstretched extant social resources. This has made healthcare planning unrealistic and resulted in the inadequacy of facilities for Nigerian citizens who need quality healthcare services (Odusote, 2010).

Lule, Ramana, Epp, Huntington & Rosen (2005) have observed that dysfunctional health systems in developing countries are failing to save lives and meet the health needs of the people, and these inadequate systems are slowing progress. They identified shortage in human resources, especially in remote areas; poorly trained providers; poor quality of care; lack of drugs and equipment; and ineffective referral systems as responsible for the lack of progress in providing basic health services in Nigeria. Diffusion of ICT in healthcare offers the potential to address these concerns.

It has been observed that improvements in healthcare delivery in many parts of the developed world have continued to point to the fact that communication technology is central (Agbala, 2013; Odusote, 2010;Osain, 2011). The recent development of information and communication technology now brings about rapid changes to people's everyday lives. Daily lifestyle is now ICT-driven and over the next few years, it seems daily existence and experiences will be further defined and refined by the role of ICTs in the society. Health is closely related to people's everyday activities, such as working, eating, commuting, shopping, leisure-time activities, and sleeping. The conditions for these everyday activities will be radically changed by advanced technology (Nakamura, 2003).

Therefore, an attempt to create supportive environments for the health of the citizenry gives rise to a consideration of Information and Communication Technologies (ICTs) as viable tools that could successfully improve health delivery systems and make them more effective and responsive to the needs of the population in Nigeria. This chapter discusses ICT's prospective values in promoting healthcare delivery in Nigeria.

Theoretical Background

This study is situated against the background of the Diffusion of Innovations Theory. In his scholarly discussion of the theory, Rogers (2003) argued that the process of adopting an innovation depicts the mental process an individual passes through from first awareness about an innovation or technological breakthrough to the final application or adoption of such innovation.Between the time an individual hears about an innovation to the point of adoption, he or she may need to pass through four (4) stages. According to Rogers, these stages are as follows: (1) Innovation decision process; (2) Individual innovativeness; (3) Rate of adoption; and (4) Perceived attitude.In the first stage, which is referred to as innovation decision process, the main point is that diffusion of any particular innovation or technology always takes a long process and can be seen as having five distinct aspects. They include: knowledge, persuasion, decision, implementation and confirmation. In other words, potential adopters of an innovation or technology must learn about it, be persuaded

as to the benefit of such a technology, decide to adopt it, implement and confirm the decision to utilise such new technology and innovation.

In the second stage which Rogers (2003) referred to as individual innovativeness, he emphasises that individuals who are predisposed to being innovative will adopt an innovation much earlier than those who are less predisposed. He further illustrates this by guiding a bell-shaped distribution model of individual innovativeness and the percentage of potential adopters theorised to fall into each category. The next stage according to this theorist is that of rate of adoption. It is emphasised here that innovation or technology is diffused overtime in such a way that it looks like an s-shaped curve. Rate of adoption means that an innovation or technology goes through a period of slow and gradual development before experiencing a period of relatively dramatic and rapid growth.

In the last stage, which is referred to as "perceived attitude", Rogers (2003) emphasises that potential adopters judge an innovation based on their perception with regard to the 5 attributes of the innovation. These are: trialability, observability, relative advantage, complexity and compactability. According to Imhonopi & Urim (2012), this aspect holds that the technology or innovation (1) can be tried on a limited basis before adoption (2) offers observable results (3) has an advantage relative to other innovations (4) it is not overly complex and (5) is compatible with existing practices and results. Therefore, diffusing or cascading ICTs within the health sector in Nigeria could help to improve existing health systems, correct the present inefficiencies and challenges while supporting the existent corps of health professionals in the diagnosis, prognosis, cure and prevention or management of diseases. Through ICTs, e-consulting can be harnessed to increase access of health workers in rural areas to the latest health information or practices as they are being applied in developed societies or urban areas. Also, ICTs can provide technology platforms for e-training of health workers, e-conferencing and e-seminar opportunities which would reduce the cost of travelling for such training, while offering the prospect of updating the knowledge of health workers and exposing them to global best practices in healthcare delivery. What may limit

the effective diffusion of ICT tools in the health sector may be factors such as the endemic power crisis, poor funding, corruption within the governance environment and infrastructural deficits, among others, which have almost succeeded in crippling the sector.

Information and Communication Technology: Meaning and Imperative for Health Delivery

ICTs have to do with the convergence of computer technology and telecommunication technology (Agba, 2001). Nwodu (2003) describes ICTs a generic name used to refer to a number of communication hardware adopted in ensuring instantaneous dissemination of information and social values across the globe. Ike (2005) further observes that ICTs are a combination of technologies that have been modernised to enhance the process of communication and information dissemination. They have to do with the application of modern technologies in the functioning of communication devices. In the same line, Olise (2008) contends that ICTs are new communication technologies that combine computer and telecommunication technologies (technological convergence) and are used as channels for the dissemination of information to heterogeneous audiences regardless of time, space and distance through such media as the internet, mobile phones and others. ICTs when properly harnessed are capable of creating an atmosphere conducive for speedy, wide, as well as effective communication for development (Imhonopi, Urim & Igbadumhe, 2013; Olise, 2008).

It is pertinent to reiterate the position that ICTs can make a lot of impact on healthcare delivery in Nigeria. In contemporary times, ICTs have been useful and indispensable in the dissemination of news contents, providing directives and instructions to people who are spatially separated and filliping social networking opportunities and important events between and among people (Okoye, 2009). Consequently, the adoption of ICTs in the health sector could enhance the capacity to monitor and report on outbreaks of diseases, disseminate guidelines for controlling and treating such diseases, and share scientific knowledge and research findings among professionals in the health community (Lee, 2003). Specifically, here

are some of the ways ICT has helped to facilitate efficient health care delivery:

> *ICT has been seen to have the potential to promote telehealth. The provision of health-promotion information, patient education, consumer education, and related items is sometimes referred to as "telehealth". Within the telehealth schema, access to easily understandable medical information and to information regarding medical institutions by general consumers and patients using the Internet and other information technology is also referred to as 'e-health', and this field is exploding into a large profitable market (Nakamura, 2003). The development of personal skills through the provision of information, education for health, and other enhancement of life skills has the potential of helping people exercise more control over their own health and over their environment and to make choices promotive of health. Telehealth could also foster urgent intervention to save lives, speed up access to hard-to-reach areas, and also reduce morbidities by way of influencing behavioural change.*

Similarly, ICT can help in the quick synchronisation of ineffective and fragmented information systems in place in the nation's health sector. Indeed, a coordinated and cohesive health information system is essential as the foundation for sound programme development and implementation and as a prerequisite for strategic decision-making. Without adequate and accurate information on relevant benchmarks, targeting resources, improving health services, and identifying inefficiencies in programme and public expenditure management may not be possible (HERFON, 2006). Often, information from the private sector is not captured, thus making comprehensive planning difficult (Odusote, 2010). With the aid of ICTs, patients' records can be stored in computer-aided database, and at the click of a button, patients' medical history such as prescribed drugs and what illness the patient has suffered from can be tracked easily. In fact, the database of patients can now be used to track trends in illnesses. And so access to patients' records is now quicker, takes up less space, makes reading easier as well as makes transfer of cases between doctors and hospital quicker and less cumbersome(Agbala, 2013).

ICT will also facilitate networking and collaboration between healthcare service delivery practitioners.This will enhance knowledge sharing and better health delivery results. Robust scientific research is usually undertaken to generate reliable data that enable authorities to make hard choices in a timely manner, either for effective action or for sound policy formulation on problems that affect them or are likely to arise. Health researchers devote their efforts to addressing issues that affect the health and well-being of the populations in the country (HERFON, 2006). There now exists a substantial body of information and research analysing the production and nature of various diseases. With ICT, new drugs can now be easily modelled to test its effects on the ultimate consumers, facilitate clinical trials online as well as facilitate collaboration, information and knowledge sharing between international teams of medical researchers' within real time (Agbala, 2013). Consequently, it is possible to access information on any particular issue whether regardingthe health system, how to develop a sustainable health financing system, policy research and even getting support for sufferers on a particular ailment and access relevant research results from other professions, which can be adopted to help cure an ailment.

Medical Equipment -Over the past few years, there has been some amazing development in diagnostic tools and equipment relevant for the health sector. Today, equipment such as the body scanner is now ICT-aided and can be used to process data into readable formats. Also, microprocessors can now be used to control a variety of medical devices such as blood pressure, while a computer monitor can take reading at preset intervals, anything from one minute to a few hours. Electrocardiogram measures electrical activity generated by the heart, blood oxygen monitors to watch the amount of oxygen in a patient's blood, pacemakers and computer-guided lasers are used in very delicate operations such as removal of brain tumours. These tools can make diagnosis much more accurate and faster (Agbala, 2013). For instance, the University of Benin now has a modern piece of health equipment which corrects sickle cell anaemia in sufferers. This equipment helps to make these

sufferers lead normal lives. Thus, the advantages of adopting modern equipment in healthcare delivery are numerous. These include: computer-aided equipment which saves a lot of time, increases performance and reduces patients' waiting time. Interestingly, as Agbala (2013) observed, surgeons can now perform operations remotely through tele-conferencing and prescribe drugs through tele-medicine.

Referral system

ICT also helps to facilitates a robust referral system in the health sector. The lengthy time it takes to refer and transfer patient from one health facility to another with the required technical capacity makes emergency interventions come late (ODI, 2012). But in a situation in which hospitals are connected, patients' diagnostic results and tests can be sent electronically to another hospital where the consultant that will handle the patient's case will be able to examine the tests and results so he/she can propose right treatment regimen. With store and forward system, all relevant documents and test results are sent directly to the referral hospital; this prevents loss of documents and the failure on the part of patients to be able to explain to referral doctors what they have been diagnosed with and which preliminary drugs they have been given (Agbala, 2013).

Setback to Full Engagement of ICT in Healthcare delivery in Nigeria

Common denominators in literature have identified the challenges to ICT application in the Nigerian health sector as: epileptic power supply, illiteracy, high cost of ICTs, lack of clear-cut policy and lack of expertise(Amodu, 2008; Olise, 2008; Odusote, 2010). These without a doubt are major challenges in Nigeria. Aside from all these challenges, other obstacles that are crucial to the successful application of ICT in healthcare delivery are as follow:

Corruption is regarded as a social problem. A social problem connotes an act of a form of behaviour which constitutes concern to a significant proportion of the society to warrant a common solution by that society. Social problems are serious behavioural

deviations hindering the functioning of society and inhibiting the needs and goals of society (Aluko, 2002). As Imhonopi & Urim (2012) noted, social problems are problems that are widespread within society; they create intense worries, disquiet and unrest within citizens and collectively demand the intervention and focus of leadership, societal attention and even intervention.Corruption in Nigeria is not without its telling effects on every aspect of development. According to Ribadu (2006), corruption is responsible for perpetual collapse of infrastructure and institutions; it is the cause of the endemic poverty in Africa; it is behind the underdevelopment and cyclical failure of democracy to take root in Africa. Imhonopi & Urim (2012) also consider corruption as dishonesty or dishonest exploitation of power or position or both for personal gain. They contend that it is a wrongdoing committed by those in a special position of trust, hence the application of the term to describe the self-benefiting conducts by public officials and others dedicated to public service. The effects of corruption on a nation's socio-political and economic development are myriad. Dike (2005) opined that these negative effects impact economic growth and especially reduces public spending on vital areas as health and education. For instance, the important factor militating against the effectiveness of ICT application in any sector is literacy. To access information and make meaningful decision out of information received, the parties involved must be educated with some level of proficiency in computer or digital education. Most rural dwellers are illiterate and have never come in contact with computer or ICT tools. Even the urban dwellers, most of whom are only concerned with basic necessities of life and are not even enlightened on the benefit of ICT (Amodu, 2008).

Literacy goes beyond the mere skill of reading and writing. It is a process of transformation that empowers the individual and broadens critical thinking (Mustapha, 2013). There are also problem of low level of education and illiteracy among government officials, which has created scarcity in skills and expertise (Olise, 2008). The effect of corruption on growth is in part, a result of reduced level of investment, as it adds to investment risk (Dike, 2005). Mustapha (2013) further noted that, there is no denying the fact that education

as a whole is insufficiently funded in Nigeria, and the country is yet to comply with the UNESCO recommendation that 26 percent of annual budget be spent on the sector. The effect of corruption on education comes from the fact that the government spends relatively more on items to make room for graft. And corrupt government officials would shift government expenditures to areas which they can collect bribes easily. Large and hard-to-manage projects make fraud easy. Development projects are often made unnecessarily complex in Nigeria to justify the corrupt and huge expense on it (Dike, 2005). This leaves the health sector in the lurch.

Lack of Political Will is another grave challenge to consider. Quite often the lack of good quality leadership within the public service has been more closely linked to poor performance of the public sectors than to a lack of national resources (Nyamtema, *et al* 2011). Many developed countries that have successfully improved healthcare delivery have had strong political commitment, creating policies and devoting resources to ensure improvement in healthcare delivery.

The problem of irresponsible commitments and lack of accountability are visible within the governance ecosystem and traceable to leaders at the state and national levels, key healthcare managers down to even the care providers' levels. As a result, the health sector in resource-limited countries particularly in sub-Saharan Africa require more proactive leaders with stronger internal desire for change to turn commitments and promises into resources and actions in order to invest in ICT application as well as human capacity building. Leadership is a change agent; it is all about getting things done and taking on the responsibility to influence others (Nyamtema, *et al* 2011). Corruption will be greatly diminished in Nigeria the moment leaders at the federal, state and local government levels muster the physical, political and mental will required to refrain from corrupt practices so as to institute a change in the society.

Conclusion and Recommendations

In conclusion, this chapter contends that the full application of ICTs in the health sector has the potential of advancing healthcare delivery

in Nigeria. This chapter further argues that there are issues/factors which have been seen to be critical for effective application of ICT in healthcare delivery in Nigeria. However, the challenge remains how to address existing structural impediments. Effort by government to provide enabling platforms for ICT application can be achieved through raising the general level of literacy in the country. Information, education and communication are very significant to successful application of ICT in Nigeria. In developed nations where the literacy level is high, little effort is needed for application of ICT in any sector and at any level. For Nigeria to benefit fully from ICT, it requires people-centred development programmes, which should be supported by an appropriate mix of adequate resources, good policies, and strong political will for implementation.

Government and its representatives also need to be sensitive to the destructive effect of corruption in the system because it has become institutionalised in the country. And since any social problem deserves societal attention and collective solution, it is high time Nigeria was rebranded through the cultural orientation of the people to destroy the cankerworms of corruption in the system. Supporting the words of Ribadu (2006), making corruption history may be the surest way of making all the problems of Nigeria history including health problems.

References

Agba, P.C. (2001). *Electronic Reporting: heart of New Communication Age.* Nsukka: University of Nigeria Press.

Agbala, C. F (2013). *Health Care Delivery Via ICT: Where is Nigeria on the Radar?* A publication in the Punch News On July 14, 2013. Source: www.punchng.com/business/ict-clinic/health-care-delivery.

Aluko, M. A. O. (2002). "The Institutionalisation of corruption and Its Impact on Political Culture and Behaviour in Nigeria." *Nordic Journal of African Studies*; 11(3): 393-402.

Amodu, L. O. (2008). "The Role of the Internet in Achieving Sustainable Development of Rural Africa: A fact or A Farce?" In Mojaye, E.M.; Oyewo, O. O.; M'Bayo, R. and Sobowale, I. A. *Health Communication, Gender Violence and ICTs in Nigeria.* Ibadan: University Press; pg 15-26.

Dike, V. E (2005). "Corruption in Nigeria: A new Paradign for Effective Control." *Africa Economic Analysis.* Source: www.Africaeconomicanalysis.org/articles.

Fosu, G. B. (1989). "Access toHealth Care in Urban Areas of Developing Societies." *Journal of Health and Social Behaviour;* 30: 398-411.

Health Reform Foundation of Nigeria (HERFON) (2006). *Nigerian Health Review 2006.* Abuja, Nigeria: HERFON.

Imhonopi, D. & Urim, U. M. (2012). "Information and Communication Technology (ICT) and Governance in Nigeria: Challenges and Prospects." *Journal of Humanities, Social Sciences and Creative Arts*, Vol. 6, No. 1, Federal University of Agriculture, Abeokuta.

Imhonopi, D. & Urim, U. M. (2012). *Sociology, Culture and Social Problems: Essays and Insights.* Lagos: Institute of Communication and Entrepreneurship Development.

Imhonopi, D., Urim, U. M. & Igbadumhe, F. A. (2013). "Information and Communication Technologies and Human Development in Nigeria: Forging the Nexus." *International Journal of Information Communication Technologies and Human Development*, Vol. 6, No. 1. Pennyslvania, USA: IGI Global.

Lule, E., Ramana, G.N.V., Epp, J., Huntington, D. & Rosen, J. E. (2005). "Achieving the Millennium Development Goal of Improving Maternal Health: Determinants, Interventions and Challenges." *The International bank for Reconstruction and Development/ The World Bank: Health, Nutrition and Population* (HNP) Discussion Paper.

Mustapha, T. (2013). *Sustaining Mass Literacy Efforts in Nigeria.* Voice of Nigeria Broadcast, Saturday, February 04, 2013.

Nakamura, k. (2003). "Applicability of Information Technologies for Health." In Takan, T. *Healthy Cities & Urban Policy Research.* New York: Spon Press, pg 131-137.

Nyamtema, A. S.; Urassa, D. P. & Roosmalen, J. V. (2011). "Maternal Health Interventions in Resource limited Contries: A Systematic Review of Packages, Impacts and Factors for Change." *BMC pregnancy Childbirth*; 11(30) doi: 10.1186/1471-2393-11-30.

ODI (2012). "Delivering Maternal Health: Why is Rwanda doing better than Malawi, Niger and Uganda?" *Overseas Development Institute Briefing Paper.*

Odusote, A. O. (2010). *ICT for Public Health Care Delivery in Nigeria: Challenges, Opportunities and Milestones.* Paper Presented at the e-nigeria 2010 Conference.

Okoye, D. F. C. (2009). "The Impact of Information and Communication Technology (ICT) in an Increasingly Globalising World." *BASSEY Andah Journal of Cultural Studies*; (2) pg 115-128.

Okuboyejo, S. R. (2013). *Mobile Technology and Outpatient Adherence in Nigeria: Theorising Outcome Expectation and Self-Efficacy.* Unpublish Ph.D. Thesis Submitted to the School of Postgraduate, Covenant University, Ota.

Olise, F. P. C. (2008). "Communication for Development and modern ICTs: Nigeria at a Crossroads." In Mojaye, E.M.; Oyewo, O. O.; M'Bayo, R. and Sobowale, I. A. *Health Communication, Gender Violence and ICTs in Nigeria.* Ibadan: University Press; pg 15-26.

Osain, M. W. (2011). The Nigerian Health Care System: Need for Integrating Adequate medical Intelligence and Surveillance Systems. *Journal Pharmaceutical Bioallied Science.* 3(4): 470-478.

Ribadu, N. (2006). *Nigeria's Struggle with Corruption*. Paper Presented at the US Congressional House Committee on International Development, Washington, DC.

Rogers, E. M. (2003). *Diffusion of Innovations.* (5th edition). New York, NY: Free Press.

Ternenge, S.E (2008). "Health Communication and New Media in Nigeria." In Mojaye, E.M.; Oyewo, O. O.; M'Bayo, R. and Sobowale, I. A. *Health Communication, Gender Violence and ICTs in Nigeria.* Ibadan: University Press; pg 15-26.