INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) IN INDIAN HEALTHCARE INDUSTRY - A GLOBALIZED SCENARIO

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 Abstract
The Indian health care industry comprises of hospitals, medical infrastructure, medical devices, clinical trials, outsourcing, telemedicine, health insurance and medical equipment. India's healthcare system is developing rapidly and continues to expand its coverage, services and expenditure in the public as well as private sectors. This is creating a large market for hospital information systems and other healthcare-related IT solutions. India's medical device market is currently the fourth largest in Asia with 700 medical device makers, and ranks among the top 20 in the world, as per data from India Semiconductor Association. The need to have advanced technology to be mingled with communication and health care arises to help the patient and to have e-records. This paper describes the possibilities of information and communication technology in healthcare sector, and also highlights as how ICT can support the communication between health care professionals mutually as well as the communication between professionals and patients. Besides this some barriers that hamper implementation in everyday healthcare practice are described. The globalized structure in health care involving information flow from one country to another will only hold good for the modern world as diseases are emerging like mushrooms day by day. In this juncture, telemedicine, health information exchanges are playing a vital role in spreading of information to various parts of the world, which are all focused here.

Keywords: ICT in Health Care; Health Care in India; Globalized Health Care; Electronic Health Records.

1. Introduction
Information and Communication technology plays a vital role in the health care sector. As the saying goes that health is wealth, it is the greatest wealth for any nation. Healthy people are the need of the hour. As the people are healthy, their contribution towards the country will be very high in terms of National income and per capita income, which will automatically raise the standard of living of the people of that country. Hence, concentrating on health care aspects through the help of information and communication technology are gaining much more importance in the present day context.

1.1 Information and Communication Technology (ICT)
ICTs stand for information and communication technologies and are defined, for the purposes, as a "diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information." These technologies include computers, the Internet, broad casting technologies (radio and television), and telephony.

1.2 Health Care
Health care (or healthcare) is the diagnosis, treatment, and prevention of disease, illness, injury, and other physical and mental impairments in humans. Health care is delivered by practitioners in allied health, dentistry, medicine, nursing, optometry, pharmacy and other care providers. It refers to the work done in providing primary care, secondary care, and tertiary care, as well as in public.

1.3 Indian Health Care Industry

India has a life expectancy of 64/67 years (m/f), and an infant mortality rate of 46 per 1000 live births. The Indian healthcare industry, which comprises hospitals, medical infrastructure, medical devices, clinical trials, outsourcing, telemedicine, health insurance and medical equipment, is expected to reach US$ 160 billion by 2017, as per Frost & Sullivan. India's healthcare system is developing rapidly and continues to expand its coverage, services and expenditure in the public as well as private sectors. This is creating a large market for hospital information systems and other healthcare-related IT solutions.

2.The Indian Medical Device and Equipment Market

It is expected to grow to around US$ 5.8 billion by 2014 and US$ 7.8 billion by 2016, growing at a CAGR of 15.5 per cent, according to a report by Grant Thornton India. India's medical device market is currently the fourth largest in Asia with 700 medical device makers, and ranks among the top 20 in the world, as per the data from India Semiconductor Association.

3.Globalized Scenario in Health Care

Advanced information technologies have the ability to restructure the health care industry's data collection mode from a "collect many times, use once" system to that of a "collect once, use many times" arrangement. Some of the leading information technology developments that will assist health care organizations in achieving their objectives are in the following areas:

3.1 Computer-based Patient Records

A digitized compilation of all clinical and administrative information relating to the care of a single patient. The term electronic health records (EHR) and electronic medical records (EMR) has come to be used interchangeably. While all these acronyms refer to the same consent, "EHR" implies broader functions and features, which include the "EMR" components. Such e-records are convenient for patients and doctors alike and can significantly reduce medical errors and help track public health problems.

3.2 Document Imaging

The process of scanning and storing images that are pictures of a paper form. The electronic image has the ability to be shared and accessed more readily by clinicians and administrators in various geographic locations.

3.3 Internet Solutions

Internet and Intranet developments allow providers to integrate clinical and financial information from numerous sites without having to invest in enterprise-wide systems.

3.4 Expert Information Systems

Every health care organization has a series of rules that are instrumental to the delivery of care for that particular enterprise. Clinical decision support systems apply these rules in order to assist physicians in the administration of health care services.

3.5 Telemedicine

The use of information technology to deliver medical services and information from one location to another. It helps eliminate distance barriers and can improve access to medical services that would often not be consistently available in distant rural communities. It is also used to save lives in critical care and emergency situations.

4. Health Information Technology

Health information technology (HIT) is "the application of information processing involving both computer hardware and software that deals with the storage, retrieval, sharing, and use of health care information, data, and knowledge for communication and decision making" It involves the following:

1. Increases health care productivity or efficiency;
2. Prevents medical errors and increase health care accuracy and procedural correctness;
3. Reduces health care costs.

5. E-Health Records

 Electronic health record (EHR), previously known as the Electronic medical record (EMR), can reduce several types of errors, including those related to prescription drugs, to preventive care, and to tests and procedures. Recurring alerts remind clinicians of intervals for preventive care and track referrals and test results. Clinical guidelines for disease management have a demonstrated benefit when accessible within the electronic record during the process of treating the patient. A 2005 report noted that medical practices in the United States are encountering barriers to adopting an EHR system, such as training, costs and complexity, but the adoption rate continues to rise.

6. Barriers to Implementing Health Care Related Information

6.1 Technological Barriers
Lack of Industry Standards

Technological barriers, such as the health care sector's lack of general adoption of industry standards, are often cited as a significant obstacle to the widespread use of advanced information technologies. A standard is a clearly defined and agreed upon convention for the operation and behavior of specific computing functions, formats, and processes.

Administrative Simplification

Administrative simplification is the establishment of standards for the electronic transmission of certain types of information. Specifically, the adoption of standards for the identification of individuals, employers, health plans, and providers within the health care system. In addition, there is a need for standards for security, electronic signatures, and the transmission of specified financial and administrative information.

6.2 Human and Social Barriers

 In addition to the previously mentioned technological barriers, there also exist human and social barriers that have to be addressed prior to the health care industry's widespread adoption of information technologies. The health care industry's use of advanced information technologies to complete administrative and financial transactions meaningfully alters the institution's traditional norms and practices.

6.3 The Need to Protect the Privacy, Security, and Confidentiality of Computerized Information through firewalls

 Many patients believe that the electronic transmission and storage of patient related information places the integrity and confidentiality of such information in serious issue and the patients feel that there is misuse of information regarding their health. To address these concerns, health care information technology companies will have to ensure that information networks provide the desired level of

privacy, security, and confidentiality.

6.4 Physicians and Nurses Inexperience in Dealing with Advanced Information Technologies
The implementation of advanced information technologies within the health care sector significantly alters the organizational culture of the industry. Advanced information technologies require physicians and other health care practitioners to move beyond an environment accustomed to documenting administrative and clinical information in a paper-based format – and into one that supports the seamless flow of information.

6.5 Political and Legal Barriers
The widespread adoption of IT by the health care industry is also limited by political and legal constraints. Governments maintain a great deal of responsibility over the regulation of health care providers. Unfortunately, many of these governments use this authority to enact legislation and establish regulatory schemes that do not fully appreciate ensuing technological advances.

7. Recommendations for Improving Health Care Information Technologies
WITSA suggests that the health care community, information technology providers, and government institutions consider ways to make better use of information technology resources. In particular.

7.1Build on and Complement Information and Communication Technologies already being used. No single technology will be suitable for all situations. Innovative and creative combinations of old and new ICTs will provide added value and new possibilities.

7.2 **Ensure a Legal and Regulatory Environment** that allows information and communication services, innovation and entrepreneurship and free flow of information. To be effective and efficient, the health care industry must operate in a digital environment that includes connectivity, commerce, community/content and information sites.

7.3 **Work with Interested Stakeholders** to identify and address laws that forestall the implementation and utilization of health care related information technologies such as telemedicine.

7.4 **Establish Private And Public Sector Partnerships** to ensure patient privacy, security, and confidentiality concerns are addressed.

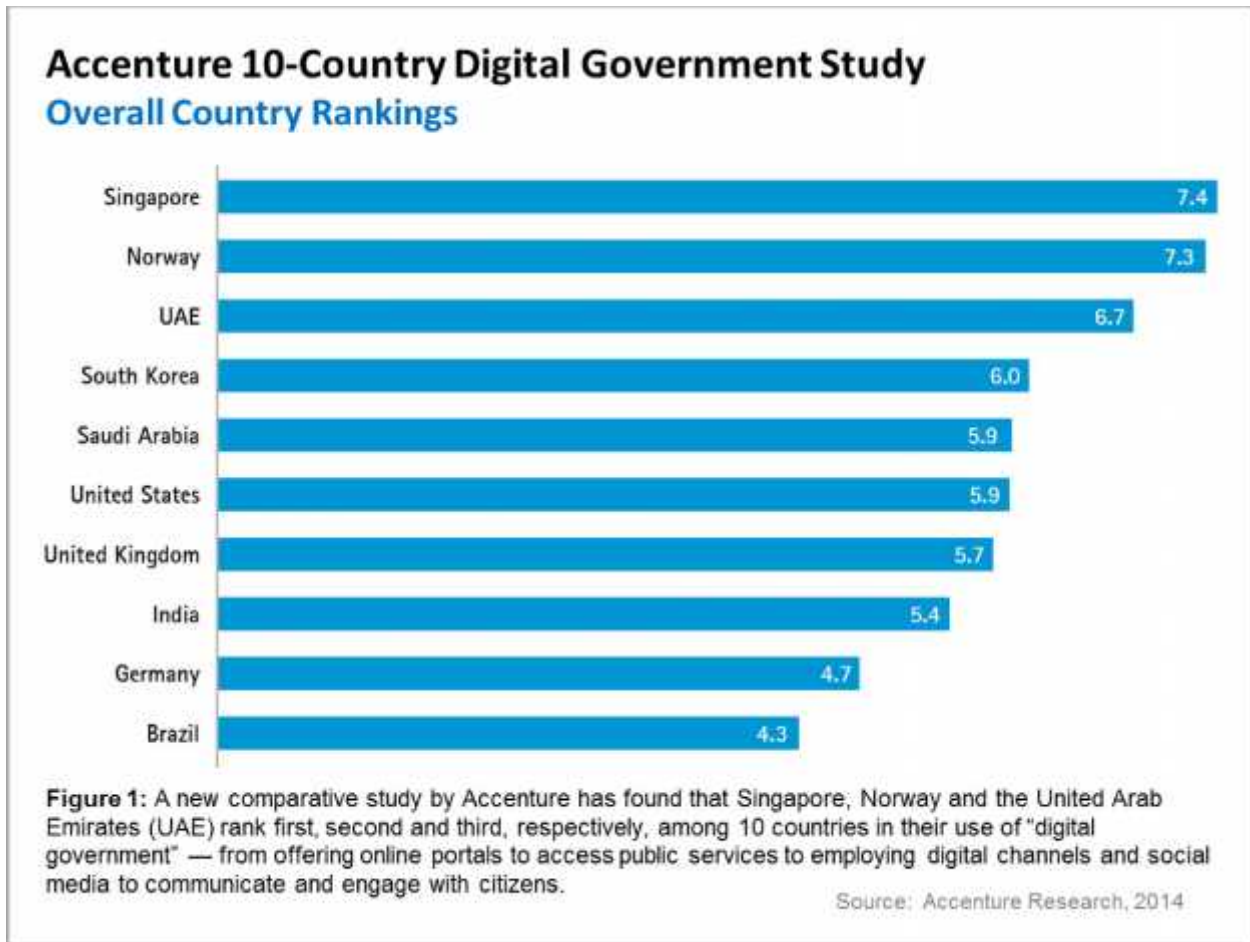**8. Case study about Accenture**
Accenture is a global management consulting, technology services and outsourcing company, with approximately 281,000 people serving clients in more than 120 countries. The company generated net revenues of US$28.6 billion for the fiscal year ended Aug. 31, 2013. To determine citizens' perceptions of digital government, Accenture surveyed 5,000 people across the 10 countries in the study. It is depicted in (Fig.No.1) given below.

8.1 Overall Ranking of digital Governments among the Countries
According to Fig 1. Top-ranked Singapore will be one of the first countries to ensure that every citizen has an electronic health record. In Norway, 78 percent of citizens believe that government should consult with them in the design and delivery of public services, which indicates a highly engaged population. The survey found that the majority of respondents – 81 percent – would like their

government to provide more services through digital channels and most, 64 percent, would like to use social media to engage with government. "Citizen demand for digital services is even stronger in emerging markets, such as India, Brazil, Saudi Arabia and the UAE, where 80 percent of citizens said they would like to communicate with government via social media and on their mobiles." Thus, digital governments will only help the health care industries to maintain very high e-records.

Fig 1. Overall ranking of the Countries for Digital Government

Accenture 10-Country Digital Government Study
Overall Country Rankings

Country	Score
Singapore	7.4
Norway	7.3
UAE	6.7
South Korea	6.0
Saudi Arabia	5.9
United States	5.9
United Kingdom	5.7
India	5.4
Germany	4.7
Brazil	4.3

Figure 1: A new comparative study by Accenture has found that Singapore, Norway and the United Arab Emirates (UAE) rank first, second and third, respectively, among 10 countries in their use of "digital government" — from offering online portals to access public services to employing digital channels and social media to communicate and engage with citizens.

Source: Accenture Research, 2014

9. Conclusion
In light of the strong growth prospects of the Indian healthcare industry and the foreign players displaying eagerness for investment and setting up their base in India, the Government of India and the Ministry of Finance have allocated a substantial amount for health sector. The Budget thus falls short of direct tax clarifications on the issues faced by the healthcare sector. Thus every country must strive hard to have an E-health record and they should give priority to health of the people in the nation, which is the greatest wealth. The above said issues will definitely bring in a change in the Country to maintain globalized information and communication technology in health care sector, whereby a critical operation performed in one Country will be viewed by the doctors in another country through live video conferencing, which will serve as an instrument for developed globalized medical scenario.

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