Chapter 8.6
Charting Health Information Technology Futures for Healthcare Services Organizations

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ABSTRACT

As health organizations strive to improve operational efficiencies and increase worker productivity, new forms of health information technologies (HITs) are constantly being developed. This article surveys the extant HIT literature and adopts a case analysis approach to identifying emerging health information technologies. The understanding of HIT trend is further enriched through the applications of technology-forecasting techniques, specifically, scenario analysis and U.S. patent searches. The article focuses on five emerging HITs and their impact on the future of U.S. Healthcare Services Delivery.

INTRODUCTION

The advent of information technology (IT) and telecommunications has altered beyond recognition the traditional business processes in many industries. The impact of IT on the health industry is also gaining attention. In the past, researchers have noted the lag of IT diffusion across the health sector vis-à-vis most other industrial sectors. With the diffusion of health databases and automated data warehouses, routinely extracted health data from multiple sources can now be more fully integrated and mined to evolve a new type of knowledge that promises to transform the health industry. Physicians, aided by intelligent

clinical support systems and automated devices, for example, can now provide better patient care by drawing on programmed reminders and alerts and other computerized protocols of guided treatments for specific diseases. Emerging IT has made physician practices more efficient and effective while new research in the area of optimizing user interface designs for physicians and other health professionals promises to further enhance such capabilities (Zheng et al., 2005).

In this age of knowledge explosion, health information technology (HIT) is beginning to permeate many areas of human life. Tan (2005) documented the various strategies and speed with which emerging HITs are transforming the healthcare industry. Telemedicine today encompasses a common infrastructure including physical facilities, and equipment used to capture, transmit, store, process and display voice, data and images. Technological advances such as fiber optics, satellite communications, and compressed video have minimized expansion costs and limitations, thereby initiating a growth of public and private sector interests. These newer, alternative modalities of healthcare delivery are beginning to affect the cost, quality, availability and accessibility of healthcare. HIT has become a crucial part of the routine practices of healthcare professionals. It is not unusual nowadays for health consumers to check medical conditions of their own or those of their significant others on the Internet. A recent Forrester survey of 1,300 doctors reports that 80% of physicians believe technology "makes life easier."

Specific to changing the patient-physician relationship and the role of organizational health services delivery in the United States (U.S.), emerging technologies are clearly dictating people to take a greater and more active role in maintaining their own health. The result is a proactive prevention-oriented, consumer-driven model for healthcare that includes capabilities such as "smart devices" that can "think," customized wearable devices, electronic patient records, and wireless Internet-linked systems. Over time, these technologies are expected to deliver more convenient, user-friendlier, and more consumer-driven, home-healthcare services, unlike traditional services delivered at a physical and distant medical facility. For consumers, this could mean added convenience, reduced travel time and costs. They will enjoy easy-to-use homecare systems and products that teach them to monitor themselves with gizmos that give timely warnings of illness so that they can turn to their physicians early when appropriate interventions will do the most good. For doctors, it could mean more timely and effective patient care.

In this article, a selection of emerging HITs with a focus on their potential impact on the future of organizational health services delivery is reviewed. The analysis of emerging HIT applications is based on key observations of Providence Health & Services (PHS) organizations, one of the leading health providers in Pacific Northwest that implements cutting-edge technologies to improve patient care and reduce healthcare cost.

The review of PHS presents the necessity of HIT applications. Onsite formal and informal interviews and discussions with key experts helped identify emerging HITs deserving attention. Experts were also consulted to verify the interview results. A twofold approach followed the interviews. Specifically, a combination of technology forecasting tools including "Patent Analysis" and "Scenario Analysis" was used to predict the future of these emerging technologies.

Each of the technologies identified is either replacing an existing one or evolving as a new technology, for example, radio frequency identification (RFID) in healthcare is replacing barcode technology whereas e-health is an emerging paradigm. This article therefore, represents the initial steps of a larger research framework for assessing and forecasting the diffusion of particular HIT and their potential impact on the U.S. healthcare services delivery system.

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