

## Chapter 84

# Tracking Future Path of Consumers' Empowerment in E-Health

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### ABSTRACT

*Developments in ICT have created a new generation of networking technology that affects all areas, including healthcare. The use of ICT in healthcare organizations, for example in health information systems (HIS), has developed the same way as the wider landscape, and includes the use of Internet-based technology. The adoption of social network features as the 'front end' of electronic health (e-health) systems is believed to boost sharing between consumers, leading to greater satisfaction. E-health is likely to become more consumer-centric, accommodating consumers' participation in the healthcare process, including decision-making. The government of Taiwan has successfully implemented a National Health Insurance (NHI) system as the foundation for e-health. Improvements in technology may drive changing consumer behavior concerning healthcare services. This paper addresses some important concepts, milestones, challenges, and future direction of consumer empowerment in Taiwan, and proposes that empowerment will be personal, social, and medical.*

### INTRODUCTION

Information and communications technology (ICT) now permeates almost all facets of life, including healthcare. ICT is able to improve consistency, accuracy, and efficiency of processes and detailed clinical information flow (Conrick, 2006).

Healthcare organizations, with their requirements for knowledge and an educated workforce, are considered likely to be rapid adopters of ICT (Erl, 2005), but in practice, many healthcare providers are slow to adopt it, and healthcare as a whole is one of the sectors that invests least in it (CSC, 1999; E-Health Ontario, 2009).

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A health information system (HIS) processes data, and provide information and knowledge in healthcare environments to support high-quality and efficient patient care (Haux et al., 2006). An HIS can be successfully adopted when it integrates people, processes (procedures), strategies (effective implementation), and technologies appropriately to support operations and management, and deliver essential information to improve the quality of healthcare (Almunawar & Anshari, 2014). The HIS has evolved through several stages that have been primarily influenced by the advancement of ICT.

There are several other technologies closely related to HIS. *Health information technology* (HIT) is computer hardware and software that deals with the storage, retrieval, sharing, and use of healthcare information, data, and knowledge for communication and decisions (Goldschmidt, 2005). *Health informatics* is concerned with the cognitive, information-processing, and communication tasks of medical practice, education and research, using information science and technology to support those tasks. Health informatics tools include computers, clinical guidelines, formal medical terminologies, and information and communication systems. The emphasis is on clinical and biomedical applications with the added possibility of integrating clinical components together or with administrative health information systems (Conrick, 2006).

Electronic health (e-health) has been described as the single most important revolution in healthcare since the advent of modern medicine, vaccines, or public health measures such as sanitation and clean water (Silber, 2003). Electronic health records (EHRs) reside at the centre of any health information system. An EHR is an individual patient's medical record in a digital format. EHRs are the building blocks of an HIS that substitutes for the traditional paper record. An EHR system (EHR-S) coordinates the storage and retrieval of individual records with the aid of computers. EHRs are usually accessed via computer, often

through a network, enabling telemedicine. This enables the remote practice of medicine through the exchange of clinical information where patients and providers are geographically separated (Gustafson et al., 1993).

Consumer empowerment in healthcare is a feature of e-health deployment. Empowerment can be considered as a new paradigm in healthcare scenarios, allowing patients to make their own health-related decisions (Anshari & Almunawar, 2012). Consumer empowerment can be supported by allowing customers to control the process of their interactions with their healthcare providers, such as in accessing online services, booking online consultations, and paying online. Empowerment allows patients and their families to access their medical records online, which helps to create individual awareness of health.

In Taiwan, an e-health system called the National Health Insurance (NHI) system has achieved availability, accessibility, and utilization by providers, as shown by the high percentage of online claims and digital records (Chunhuei, Lee & Schoon, 2012). Its low administrative costs, 1.51% of its total expenditure for 2009 (BNHI, 2010), are strong evidence of its high impact.

This paper reviews literature on the healthcare system in Taiwan, identifies the current state of knowledge about e-health systems, and discusses emerging trends and their effect on consumer participation and empowerment. In Section 2, we discuss the background to the study. In Section 3, we focus on some challenges in the recent development of e-health. Future trends in e-health are discussed in Section 4, and Section 5 is the conclusion.

## **BACKGROUND**

In their early stages, in the 1960s, HIS were primarily used for financial accounting of medical transactions and computerized medical record-keeping (Haux, 2006). By the mid-1970s, most

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