Chapter 1
Health Information Technology Spending on the Rise

Jinhyung Lee
Sungkyunkwan University, South Korea

Hansil Choi
Sungkyunkwan University, South Korea

ABSTRACT

In this chapter, the authors track health information technology by examining the factors affecting health information technology (IT) expenditure. The authors employed hospital- and patient-level data of the Office of Statewide Health Planning and Development (OSHPD) from 2000 to 2006. The generalized linear model (GLM) was employed with log link and normal distribution and controlled for clustering error. The authors found that not-for-profit and government hospitals, teaching hospitals, competition, and health IT expenditure of neighborhood hospitals were positively associated with health IT expenditure. However, rural hospitals were negatively associated with health IT expenditure. Moreover, the authors found that mean annual health IT expenditure was approximately $7.4 million from 2000-2006. However, it jumped 204% to $15.1 million from 2008-2014.

INTRODUCTION

The benefits of health information technology (IT) have been reported in many studies. The Health IT can increase the quality of care by increasing guideline adherence, improving aggregation, analysis and communication of patient information, supporting therapeutic and diagnostic decision and preventing adverse (Parente & McCullough, 2009; Costa et al., 2015) Moreover, health IT can increase productivity by improving efficiency and expand access to affordable care (Evans *et al*., 1998; Tierney *et al*., 1987; Mekhjian *et al*., 2002; Kuperman & Gibson, 2003, Furukawa et al., 2008; McCullough et al, 2010; Lee et al., 2013; Sharma et al, 2016).

Despite these potential benefits, the adoption rate of health IT has been low in the United States. Only 37 percent of community hospitals reported moderate or high use of health IT in 2005 (AHA, 2007). Only 20-25 percent of hospitals had adopted some version of an electronic medical record (EMR)

DOI: 10.4018/978-1-5225-5460-8.ch001

system (Health Affairs, 2005). About 7 percent of hospitals had installed Computerized Physician Order Entry (CPOE) and another 9 percent had contracted for it, implying that only 16 percent had fully implemented CPOE systems (Fonkych & Taylor, 2005). The American Society of Health-System Pharmacists (AHSP) annual survey shows that fewer than 5 percent of hospitals surveyed have adopted CPOE systems (Pedersen, Schneider, & Scheckelhoff, 2005). More recent study showed that only 1.5 percent of US hospitals had a comprehensive electronic record system and an additional 7.6% had a basic system (Jha et al., 2009). Moreover, the gross revenues of health IT comprise only 2% of health care industry spending, which is scant compared with other information intensive industries, which spend up to 10% (Raymond & Dold, 2001). In general, the U.S. is behind other countries by as much as a dozen years in the adoption of health IT. In 2004, the Office of the National Coordinator (ONC) for Health Information Technology was established in the US, which several organization for economic co-operation and development (OECD) nations such as Germany, Canada, England, Norway and Australia preceded by at least several years (Anderson et al, 2006). However, with the Health Information Technology for Economic and Clinical Health (HITECH) Act in 2009, the adoption of health IT increased significantly. Thus, to improve health IT adoption, the factors affecting health IT adoption need to be investigated. This study identifies factors affecting health information technology (IT) investment decision in hospitals using California Hospital and Patient level data of the Office of Statewide Health Planning and Development (OSHPD) from 2000 to 2006.

This study contributes to the literature on health IT adoption in a couple of ways. First, health IT was calculated to include the dollar amount which included all the expenditure related to IT. This measure may be more representative one. Second, the generalized linear model (GLM) with clustering error within hospitals was employed to control for the clustering error. This clustering error makes standard errors quite wrong, leading to incorrect inference (Nichols and Schaffer, 2007).

BACKGROUND

A number of studies have investigated the factors affecting health IT adoption and provided an important foundation to understand health IT adoption. Earlier studies often focused on the effect of the financial factor on health IT adoption. For example, Borzekowski (2002) investigated the connection between the financing of health care and the adoption of health IT. He found that state price regulations deterred the adoption of health IT during the 1970's. However, hospitals adopted more health IT in response to the implementation of Medicare's prospective payment system by the early 1980's. He concluded that hospitals with great interest in lower costs were more likely to adopt health IT. Cutler, Feldman and Horwitz (2005) examined empirically the reasons for low CPOE implementation using data on CPOE ownership from the Leapfrog Group. They concluded that CPOE adoption was not likely to be higher because of the concern of hospital executives about the financially non-benefit of technology. They also suggested that a short-term solution of increasing CPOE adoption is the changing to favorable reimbursement environment to adoption of CPOE systems.

Recent studies focused on a broader range of factors including market, financial and organizational factors. The organizational and financial factors were found influential in a study by Wang et al. (2005). They explored the effect of hospital market, organizational and financial factors on health IT adoption. They found that large, system-affiliated and for-profit hospitals are more likely to adopt managerial information systems. Also, they found that operating revenue is positively associated with health IT