

Chapter 4.18

Exploring the Adoption of Technology Driven Services in the Healthcare Industry

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ABSTRACT

Recent developments in information and communication technologies have helped to accelerate the diffusion of electronic services in the medical industry. Health information services house, retrieve, and make use of medical information to improve service quality and reduce cost. Users—including medical staff, administrative staff, and patients—of these systems cannot fully benefit from them unless they can use them comfortably. User behavior is affected by various factors relating to technology characteristics, user characteristics, social environment, and organizational environment. Our research evaluated the determinants of health information service adoption and analyzed the relationship between these determinants and the behavior of the user.

Health information service adoption was found to be influenced by service characteristics, user characteristics, intermediary variables, facilitating conditions, and social factors.

INTRODUCTION

The healthcare industry has grown rapidly over the past three decades and projected growth is likely to continue or even expand in the coming decades. As a result it is facing significant challenges on a number of fronts: healthcare reimbursement is decreasing, demand for larger volumes of healthcare services, and increased pressure to publicly report quality data are a few of the factors driving change. While the healthcare

industry has been slow to adopt technology, it will be forced to do so in the coming decade to meet not only the known challenges identified above but also other challenges that have not yet been identified in this rapidly changing marketplace.

Health expenditures per capita, as a percent of gross domestic product (GDP), doubled between 1970 and 2001 in the United States for a total expenditure of \$14.1 trillion in 2001 (Levit, Smith, Cowan, Lazeby, Sensening, & Catlin, 2003). This growth is driven by a number of factors, the primary drivers being increased demand for healthcare services and increasing cost of services. The number of Americans over the age of 65 is projected to increase by a factor of 2.5 by 2040 (Lee & Tuljapurkar, 1994). As a result of improved economic and technical environments, these “baby boomers” will not only increase the total volume of healthcare services provided (Reinhardt, 2000) but also drive the type of healthcare services required. Baby boomers also have more disposable income than previous generations and as a result elect to have more elective procedures than any generation before them (Knickman, Hunt, Snell, Marie, Aleczih, & Kennell, 2003).

In the healthcare sector, electronic information and communication technologies are intensively used to provide and support healthcare operations (Hsieh, Hjälm, Lee, & Aldis, 2001). However, compared to other industries diffusion of such technologies have been slow in the healthcare sector. This article focuses on this problem and identifies factors that may influence the adoption of such services. Telemedicine, and specifically remote monitoring, was picked as the case to analyze in this article. Telemedicine systems were deployed in many medical fields. Remote monitoring systems were developed to capture disease specific measurements electronically. For example, data from insulin-dependent diabetes (Biermann, Dietrich, Rihl, & Standl, 2002) and asthma patients (Glykas & Chytas, 2004) are being captured remotely. Also, some systems are used

for consultation purposes (Berghout, Eminovic, Keizer, & Birnie, 2007).

Therefore, this research will have the following objectives

1. To search and find major determinants of health information service adoption among users (medical staff, administrative staff and patients)
2. To find individual, social, service and technological components of adoption
3. To assess desirability of a service electronic interface prototype
4. To establish a more general framework that can be tested statistically in future studies

In this study, we developed an electronic health service prototype for patients suffering from diabetes and obesity where its foundation had been set in preliminary work (Topacan, Basoglu, & Daim, 2008). Patient data is collected through various devices, such as a mobile phone, stethoscope, and glucose meter. Collected data is then stored on a medical server. Healthcare providers can monitor the patients through this system and make suggestions as necessary. As a result, we found that health information service adoption decisions of users were influenced by service characteristics, user characteristics, intermediary variables, facilitating conditions, and social factors.

LITERATURE REVIEW

Adoption Theories

Service adoption is influenced by various factors including user characteristics and requirements, service characteristics, and social factors. During the past decades, many theoretical models were developed by researchers to explain the human behaviors in the adoption process. Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975) is one of the well known models. Fishbein and Ajzen (1975) used two main constructs, namely attitude toward behavior and subjective norm,

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