

## **Evaluating the Factors Affecting Adoption of Hospital Information System Using Analytic Hierarchy Process**

Mehrbakhsh Nilashi <sup>a,\*</sup>, Hossein Ahmadi <sup>a</sup>, Ali Ahani <sup>a</sup>, Othman Ibrahim <sup>a</sup>, Alireza Almaee <sup>b</sup>

<sup>a</sup> Faculty of Computing, Universiti Teknologi Malaysia, Johor, Malaysia

<sup>b</sup> Organization of Technical and Vocational Training, Lahijan, Guilan, Iran

\* Corresponding author email address: [nilashidotnet@hotmail.com](mailto:nilashidotnet@hotmail.com)

### **Abstract**

The aim of this study is to provide more insight within the context of Malaysia to understand the potential factors that importantly driving or inhibiting the HIS adoption. In this study, an Analytic Hierarchy Process (AHP) model is developed to determine the most important factors among the four categories, which are based on the integrated Information System (IS) theories for HIS adoption in the context of Malaysian public hospitals. These factors are identified and compared by hospital experts and decision makers, who are fully familiar with HIS technology in the healthcare industry. Then AHP is applied to compute the weights of incorporated factors in the HIS adoption model. This can result at fostering the uptake of HIS and facilitating its reluctant trend by improving the decision of hospitals towards HIS adoption in Malaysia, however not limited to other countries.

Keywords: Public hospitals, HIS, Adoption decision, DOI theory, TOE framework, Institutional theory, HOT-fit model, AHP.

### **1. Introduction**

According to Talmon et al. (Talmon et al., 2009), "health Informatics is a significant area of health systems investment, and potentially affects every professional and patient." Physicians and patients today encounter an extensive amount of pressure from the healthcare industry. From 'physicians' perspective, the pressure originates from various causes such as heavy responsibilities for patients, excessive managerial assignments, and loss of control over patients' decision on healthcare (Lee, Ramayah, & Zakaria, 2012). Along the same vein, patients also complain that more consideration should be provided for them during medical interaction (Kassirer, 2000; Sulaiman & Wickramasinghe, 2014). Unfortunately, the straggle in healthcare industry's technology adoption to support delivery of care has been strongly criticized (Menachemi, Burke, & Ayers, 2004; Stegwee & Spil, 2001; Suomi, 2001; Wager, Lee, & Glaser, 2005; Wickramasinghe, 2000). In this regard, a 2009 report showed that in the United States hospitals, only 17% percent of them have the equipment of Computerized Physician Order Entry (CPOE) (Menachemi et al., 2004). Therefore, there is an increase in patients' demand on electronic services to be dispensed by physicians.

In Malaysia, people can acquire a broad range of healthcare services at low prices. However, according to Lee et al. (Lee et al., 2012), "factors like changing pattern of death causing diseases from infectious diseases to chronic diseases, population structure, lifestyle, and healthcare service expectation from the people have distorted the status quo." Furthermore, this is compounded by an increasing rate of healthcare expenses in Malaysia annually. Hence, the Malaysian government faces an imposing pressure to enhance the healthcare quality and reduce patients' medical costs (H. W. Lee et al., 2012). In order to overcome these two major issues, the Malaysian government has embarked on several projects with the aim of promoting and maintaining the citizens' wellbeing, apart from providing additional access to healthcare information.

Consequently, in the quest to overcome and solve recent aforementioned challenges, the Malaysian government had initiated several medical care projects. One of the projects is the National Telehealth Policy (NTP) (Abdullah, 2008). NTP comprises four attractive schemes namely, Telemedicine, Mass Customised/Personalised Health Information and Education (MCPHIE), Lifetime Health Plan (LHP), and Continuing Medical Education (CME) (Abdullah, 2008; J. Li, 2010) which ultimately aim to promote Information System (IS) in the healthcare industry. Telemedicine is one of the domains that has been targeted