Factors Influencing the Success of National Healthcare Services Information Systems: An Empirical Study in Taiwan

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ABSTRACT

By extending the updated D&M IS success model, this study examines the multi-dimensional aspects to identify influential factors and construct a suitable model for explaining NHSS success in Taiwan. Through the empirical results from the perspective of 1215 public healthcare workers, this study has arrived at several findings. First, eight salient factors were found which influenced NHSS success from the dimensions of user characteristics, organizational context, and system characteristics. Second, the factors of user experience, user training, information quality, service quality, and user satisfaction have a strong positive effect on system use, whereas user attitude and facilitating conditions have a significant and negative effect. Further, user attitude, user training, top management support, system quality, information quality, and service quality are also significantly correlated to user satisfaction. The results of this study can assist governments in other countries in developing more effective NHSS and better e-Government practices.

Keywords: Healthcare Information Systems, IS Success Model, Multi-Dimensional Evaluation, National Healthcare Services Systems (NHSS), Structural Equations Modeling (SEM)

INTRODUCTION

National healthcare services (NHS) is the management policy of healthcare services affairs that deals with the issues of long-term healthcare, disease prevention, and generic health services at the national level. It can be considered as a large scale application that can influence the well-being of people from different social levels. In the U.S., the healthcare expenditure consumed 16% ($1.9 trillion) of the nation’s gross domestic product (GDP) in 2004; and is further projected to grow to 17.7% by 2012 (Bhattacherjee, Hikmet, Menachemi, & Kayhan, 2007; Smith Cowan, Heffler, & Catlin, 2006). In the U.K., £12-£20 billion was spent on the national programme for IS to facilitate...
the applicability of global healthcare and the performance of NHS (Avison & Young, 2007). Investment in IS for handling NHS affairs is prevalent in developed countries.

Likewise, in terms of the developing countries, for improving the quality and effectiveness of the national services to their citizens, the governments in most countries are raising a modern administration to conduct national information exchange (Ndou, 2004). The government in Taiwan, also, has invested a huge amount in NHS from 2000 to 2004, and the expenditure rapidly increased from $569,236 to $664,698 (in millions) (Bureau of Health Promotion, 2006). However, for governing such huge national healthcare expenses, the lack of IS assistance has caused many kinds of troublesome management issues (Avison & Young, 2007; Khoumbati, Themistocleous, & Irani, 2006).

Despite the information system having been commonly applied in many areas, with many failed applications, its development is relatively slow and difficult in the management of NHSS (Avison & Young, 2007; Hendy, Reeves, Fulop, Hutchings, & Masseria, 2005). National healthcare services systems (NHSS) is a type of e-Government information system in modern administrative practices for providing information needed by public healthcare workers, and helping the managers in NHS have better control (Jeffcott & Johnson, 2002; Khoumbati et al., 2006). Recently, there have been vast amounts of research concerning traditional admin/business IS and healthcare information systems (HIS) (Chang, Chang, Ho, Yen, & Chiang, 2011; Lee & Shim, 2007), but few of them focus on NHSS. To understand and measure the factors affecting the success of NHSS is becoming increasingly important for managing the government’s national healthcare services affairs, and it is thus necessary to conduct research on this issue. Yet, measuring NHSS success is a complex and difficult task because the implementation of NHSS has the characteristics of user heterogeneity and inter-organizational features at different levels of public healthcare centers.

The development of NHSS is driven by the needs of public healthcare workers and the impact of complex organizational functions. Numerous studies suggest that the D&M model has become a prevalent and popular mean for measuring IS success (DeLone & McLean, 2003; Iivari, 2005; Wu & Wang, 2006). From the viewpoint of quality perspective, the DeLone and McLean IS success model (D&M model) seems to be a sound framework and the basis of measuring NHSS success. However, the implementation of NHSS is different from other IS in business and distinct from HIS in common hospitals since it possesses the NHSS feature of user heterogeneity and inter-organizational collaboration. Therefore, the assessment of NHSS success is more than the story of evaluation from a system characteristics, the ability of the updated D&M model in explaining the complex factors of NHSS success is questionable.

This study focuses on the multi-dimensional aspects because this can give managers a more comprehensive view of NHSS success. Scholars have suggested that both user personality and organizational contexts can significantly affect IS success (Holsapple, Wang, & Wu, 2006; Igbaria, Guimaraes, & Davis, 1995; Sabherwal, Jeyaraj, & Chowa, 2006). Similarly, in the circumstance of NHS, the user’s characteristics, organizational condition, and information technology also have been considered highly relevant to NHSS success (Avison & Young, 2007; Hendy et al., 2005; Jeffcott & Johnson, 2002; Smith, 2002). In regard to the content of updated D&M model and the suggestions mentioned previously, researchers believe that in addition to the system characteristics, the individual and organizational determinants also make a significant impact on influencing NHSS success, and neither has been prudently examined.

The Foreign Origins Reproductive Health Management System (SFORHMS) is considered as one of the best NHSS among the e-Government initiatives in Taiwan and has been chosen for study. By extending the updated D&M IS success model, this study focuses on the multi-dimensional aspects to
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