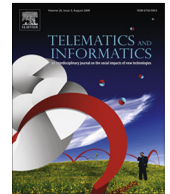




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## Assessing the performance of long-term care information systems and the continued use intention of users

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## ABSTRACT

The needs of long-term care (LTC) have increased substantially worldwide. In particular, Taiwanese society has experienced an increasing aging population because of the sharp decline in the birth rate and advanced medical technology. Some LTC facilities have introduced information technologies to satisfy the substantial demand. Compared with the high level of informatization observed at Taiwanese hospitals, LTC facilities still exhibit low informatization levels despite belonging to the same industry. Therefore, this study evaluated the system use performance and continued use intentions of the long-term care information system (LTCIS) by applying the well-known theories of the task-technology fit, system satisfaction, and postacceptance continuance models used in information systems area. The results showed that users' assessment of whether the LTCIS fulfilled their work and task needs primarily depended on the system quality, locatability of data, timeliness, ease of use, and system-user relationship. These factors also exerted a crucial influence on system use performance and user satisfaction. Moreover, the system use performance and user satisfaction further affected intentions of continued use.

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### 1. Introduction

The social problems caused by aging populations pose formidable challenges for both developing and developed countries. In the United Kingdom, the proportion of people aged over 80 years is estimated to increase by 82% in 2031 compared with that in 2011, and the population of disabled elderly people who require home care is expected to exceed 3.5 million in 2041 (Wittenberg et al., 2008). The potential results of such an increase are nursing staff shortages at long-term care (LTC) facilities and increased financial burdens for governments (Yu et al., 2009).

Demands for LTC in Taiwan have increased from 24% in 2001 to 36% in 2011 (Li et al., 2011), with the number of LTC facilities increasing from 74 in 1997 to 1056 in 2012. Because of the top-ten ranking of Taiwan's e-government over the past consecutive 10 years (Waseda University International E-Government Ranking, 2013) hospitals have expedited the adoption rate of electronic medical records. However, in contrast to hospitals linking hospital information systems (HIS) to their daily operations for reimbursements, most LTC facilities install the long-term care information system (LTCIS) to attain accreditation credits.

In other words, the use of the LTCIS is infrequent, although the LTCIS is relatively mature and provides functions that support operations management, evaluation assistance, nursing care, nursing projects, nutrition care, social work services, rehabilitation therapy, health management, drug management, quality management, facility management, financial

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management, and resident management. The topic of users' cognition regarding the match between the system and their work, the system performance, and user satisfaction of the LTCIS requires further research. Consequently, this study applied the theories of task-technology fit (TTF), system satisfaction, and postacceptance model of IS continuance to evaluate the system performance and continued use intentions of facilities that employ the LTCIS. The results can provide a foundation for LTC facilities to enhance the use of the LTCIS.

## 2. Theoretical constructs

In the domain of information management, many well-known models have been applied in investigating the impact of IS on the healthcare industry. The TTF model has been used to evaluate the successful implementation of IS in organizations. The TTF model emphasizes the importance of fit between information technology and user tasks, and the influence of this fit on user performance (Goodhue and Thompson, 1995). Junglas et al. (2009) applied the TTF model to investigate the relationship of the medical environment, tasks, and mobile information communication technologies. El-Gayar et al. (2010) examined the TTF for nurses in using electronic health record system and Lepanto et al. (2011) conducted similar research among radiologists for determining the perceived net benefit of the revised picture archiving and communication system.

Doll and Torkzadeh (1988) argued that user satisfaction involves two parts, information satisfaction and applied software satisfaction, for which applied software satisfaction is divided into the content, accuracy, format, ease of use, and timeliness dimensions. Park et al. (2014) employed satisfaction as a factor to study the player acceptance of mobile social network games. Chang (2013) used user satisfaction as a determinant to explain continuance intention to use social network games. In healthcare industry, Aggelidis and Chatzoglou (2012) investigated user satisfaction with a hospital IS using variables obtained from the satisfaction variable proposed by Doll and Torkzadeh (1988). The expectation-confirmation theory (ECT) proposed by Oliver (1980) is the most frequently applied basic theory of general consumer satisfaction research. In this theory, confirmations of expectations before consumption and perceived performance after consumption are applied to determine consumer satisfaction with products and services, and as an indicator of subsequent repurchase intention. Bhattacharjee (2001) asserted that users' decisions to continue IS use resembled decision behaviors related to repurchasing other goods and services and proposed a postacceptance model of IS continuance. He argued that system satisfaction and user IS experiences determined users' continued use intentions, and applied the model to explore physicians' resistance to using healthcare information technology (Bhattacharjee and Hikmet, 2007).

Most of the aforementioned research has used IS models to evaluate hospital IS. Because of the substantial needs in LTC facilities, an evaluation is necessary to explore user acceptance, satisfaction, and continued use intentions of the LTCIS.

## 3. Research model and hypotheses

The research framework of this study is based on the theory of TTF, the information system success model (ISSM), user satisfaction, and intentions of continued use and is shown in Fig. 1. Hypotheses that corresponded to the research framework were developed, and a questionnaire was adapted based on the dimensions, variables, and items from the related theories.

The theoretical construct of TTF in TTF model (Goodhue and Thompson, 1995) can be considered as beliefs related to using IS. Both the ISS and TTF models have been used to examine the relationship among beliefs, utilization, and impact of IS use. Bhattacharjee (2001) adopted a broad perspective to examine the relationship among confirmation, beliefs, satisfaction, and continuance intention. Because this study explored the critical factors that influence the continuance intention of using the LTCIS, the aforementioned models were integrated to provide a comprehensive view. Concurrently, related hypothesis was adapted and modified from these models.

The construct of TTF involves measuring the match of LTCIS capabilities and the tasks that the LTC facilities personnel must perform. Junglas et al. (2009) investigated the fit between the frontlines of patient care and mobile technology and found that TTF had positive impacts on utilization and performance. Lepanto et al. (2011) found that the fit between task and technology was an important determinant of an upgrade of picture archiving and communication system. Therefore, this study proposes the following hypothesis:

H1: The TTF perceived by LTCIS users exerts a positive influence on the utilization impact of using the system (TTF → UI).

A good fit between technology and tasks has a direct and significant effect on user satisfaction of technology adoption (Jarupathirun and Zahedi, 2007; Lin, 2012). The theoretical construct of TTF in the TTF model (Goodhue and Thompson,

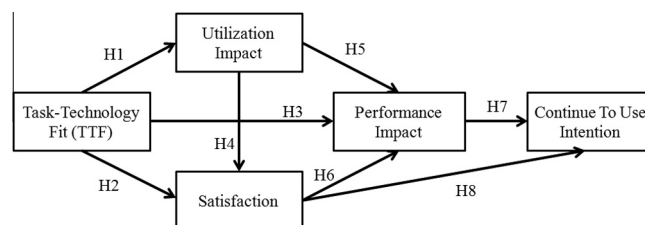


Fig. 1. The research model and corresponding hypotheses.

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