



Full length article

Understanding the impact of nurses' perception and technological capability on nurses' satisfaction with nursing information system usage: A holistic perspective of alignment



Hsien-Cheng Lin ^{a, b}, Jeng-Yuan Chiou ^c, Chia-Chen Chen ^d, Chen-Wei Yang ^{e, *}

^a Department of Health-Business and Administration, Fooyin University, Kaohsiung City, Taiwan

^b Department of Planning, Fooyin University Hospital, Pingtung County, Taiwan

^c School of Health Policy and Management, Chung Shan Medical University, Taichung City, Taiwan

^d Department of Anesthesiology, China Medical University Hospital, Taichung City, Taiwan

^e Department of Information Management, Fooyin University, Kaohsiung City, Taiwan

ARTICLE INFO

Article history:

Received 26 January 2015

Received in revised form

6 October 2015

Accepted 1 December 2015

Available online 24 December 2015

Keywords:

Alignment

Nursing information system (NIS)

Satisfaction

Nursing care performance

ABSTRACT

Based on the holistic perspective of 'alignment', evaluating the alignment of human–computer interaction is crucial to ensure effective information system implementation and a positive impact on performance. This study aims to examine the impact of alignment between the nurses' perception of NIS (Nursing Information System) performability and technological capability of NIS achieving success on nurses' satisfaction and nursing care performance through the perspectives of alignment as covariation and alignment as profile deviation. A quantitative method and a cross-section design were used to collect data from 531 registered nurses in Taiwan. The results indicate that the coalignment of nurses' perception of NIS performability and the technological capability of NIS achieving success has a positive impact on nurses' satisfaction with NIS usage. Consequently, nurses' satisfaction will increase with the improved performance of nursing care. The results of this research will help the management of NIS application and development within the context of nursing care.

© 2015 Elsevier Ltd. All rights reserved.

1. Introduction

The use of a Nursing Information System (NIS) is widespread in modern healthcare organizations. Approximately 95% of healthcare organizations have adopted NIS to support nursing clinical practice and general administration in Taiwan (Lu, Hsiao, & Chen, 2012). NIS is defined as the emerging applications of information technology to help nurses deliver or acquire accurate and real time clinical information to or from patient, physician, or other healthcare providers to ensure quality healthcare (Ammenwerth, Rauegger, Ehlers, Hirsch, & Schaubmayr, 2011). Previous studies which have verified that NIS can assist nurses in making clinical decisions, as well as increasing their efficiency and effectiveness in their daily routines (Lee, Lee, Lin, & Chang, 2005; Lu et al. 2012). In past decades, there were three research streams concerned with individual adoption and behavioral outcome concerning information

system use in the research field of healthcare informatics. The first is measuring the user's perceptions from specific information system usage and how these perceptions affect individual use behavior through information system adoption (i.e. satisfaction or intention to use) (Ammenwerth et al., 2011; Kijisanayotin, Pannarunothai, & Speedie, 2009; Lee et al., 2005). Second, from the perspective of technological capability, these studies are followed by discussions on the characteristics of information system success and how these characteristics affect the individual willingness to adopt an information system (Chatterjee, Chakraborty, Sarker, Sarker, & Lau, 2009; Jen & Chao, 2008; Petter & Fruhling, 2011; Shoham & Gonen, 2008). Third, the two constructs (users' perception and technological capability) are combined to form one comprehensive framework for evaluating the performance outcome of information system application (Lin, Hsu, & Yang, 2014; Lu et al., 2012; Pai & Huang, 2011). These constructive studies have contributed to our understanding of how the performance of human–computer interaction is influenced by intrinsic and extrinsic factors in the health informatics field.

The underlying implication of the concept of alignment is that

* Corresponding author. 151 Jinxue Rd., Daliuo Dist., Kaohsiung City 83102, Taiwan, ROC.

E-mail address: u0028909@nkfust.edu.tw (C.-W. Yang).

performance outcome is a consequence of fit between two or more factors (Chen & Huang, 2012), such as technological function-individual need alignment affects users' continued use of technology. In the MIS (Management Information System) field, when good alignment is achieved between the users' perception and technological capability, it will achieve optimal use performance (Goodhue & Thompson, 1995; Parkes, 2013). Conversely, misalignment between users' perception and technology capability will lead to inefficiency and the decline in performance in information technology functions (Gold, Malhotra, & Segars, 2001). Healthcare professionals are information and knowledge management workers. In particular, nurses depend on information-intensive activities to complete patient care planning, implementation and several evaluation works through NIS-support (Lin, 2014). Yusof, Paul, and Stergioulas (2006) suggest that understanding the utilization and performance of health information technologies should be included the perspective of alignment. Moreover, from the perspective of the alignment concept, IT (Information Technology) capability (i.e. technological capability of NIS achieving success) should be included to fit users' perception/requirement (i.e. nurses' perception of NIS performability) to improve performance and outcome (Chang, Hsu, & Yen, 2012). Unfortunately, in the current literature there is a lack of exploration in the nurse perceived alignment of nurse perception-technological capability (NP-TC), thereby influencing nursing care performance, (i.e. quality of clinical care and patient safety). As discussed above, this study attempts to explore the impact of alignment of NP-TC on satisfaction and nursing care performance through the perspectives of alignment (i.e. alignment as covariation and alignment as profile deviation) for contributing to bridge this gap in the extant literature. Hence, this study tests the following three objectives:

- (1) This study tests whether nurses' perception of NIS performability and technological capability of NIS directly impact nurses' satisfaction with NIS usage through the perspective of alignment as covariation.
- (2) This study tests the degree of coalignment between nurse's perception of NIS performability and technological capability of NIS success through the perspective of alignment as profile deviation.
- (3) This study tests that relationship between the nurse's satisfaction with NIS usage and nursing care performance.

Finally, as the perceptions of users' satisfaction lies with nurses, it would be important to include demographic characteristics of nurses as control variables to determine if they have any impact on use satisfaction.

2. Theoretical background

2.1. Nurses' perception of NIS performability

In adopting NIS, nurses' requirement regarding the technological capability of NIS whether or not they obtain satisfaction will be reflected in their perceptions of NIS performability. Davis developed the Technology Acceptance Model (TAM; Davis, 1989; Davis, Bagozzi, & Warshaw, 1989) which has been widely used as a powerful model of behavior intention toward adopting information systems in the field of health informatics management. For example, Lu et al. (2012) have applied TAM to explore the factors influencing the acceptance of hospital information systems by 277 nurses in Taiwan. Lin et al. (2014) used TAM to explore the influences of computer technology success and users informatics competencies on organizational intellectual capital in the context of nursing management.

TAM includes four main dimensions: perceived usefulness, perceived ease of use, behavioral intention to use and actual system use. TAM proposes that perceived usefulness and perceived ease of use are two major antecedents that impact users' acceptance behaviors on a specific information technology. Thus, this study applies perceived usefulness and perceived ease of use as two factors of nurses' perceptions of NIS performability. In this study, *perceived usefulness* refers to nurses' subjective estimate of the degree to which using NIS will improve their work performance (Hung, Tsai, & Chuang, 2014). *Perceived ease of use* refers to nurses' subjective estimate of the degree to which using NIS will be effortless (Lu et al., 2012).

Besides, previous literature found that perceived trust is a strong factor determining healthcare professional quality perception, which influences individual satisfaction and intention (Hung et al., 2014; Song & Zahedi, 2007). For instance, through an empirical research by 768 primary healthcare nurses, Hung et al. (2014) found that perceived trust has a significant influence on nurses' acceptance of NIS. Tung, Chang, and Chou (2008) suggested that the role of trust is a critical element in nurses' adoption of the electronic logistics information system, and showed that it has a positive impact on usage motivation as well as perceived usefulness. The study results of Montague, Asan, and Chiou (2013) indicated that perceived trust can have a significant impact on how NIS is used. Moreover, they stated that a trustworthy NIS will enhance their working quality and performance. In short, perceived trust is therefore posited as an essential individual characteristic in the context of NIS usage. In this study, *Perceived trust* refers to nurses' confidence in the functions that NIS will perform (Hung et al., 2014).

Understanding these factors could provide helpful information to establish a comprehensive concept of nurse inner perceptions concerning the context of NIS usage. Based on the above discussion, nurses' perception of NIS performability is defined as the measure of NIS performability that are perceived by nurses. This study incorporates perceived usefulness, perceived ease of use and perceived trust into the construct of the nurses' perception of NIS performability.

2.2. Technological capability of NIS achieving success

During the age of information technology, the computer-based technologies were powerful devices for increasing healthcare affairs efficiency and effectiveness within healthcare organizations (Bates et al., 1999). Previous studies have been concerned about the determining factors of success in healthcare information systems. The majority of these studies adapted a well-known theoretical framework of information systems success model (ISSM) developed by DeLone and McLean (1992). For instance, Chatterjee et al. (2009) used ISSM as a theoretical framework to understanding the success factors associated with mobile healthcare work. Petter and Fruhling (2011) exported the success factors of Emergency Response Medical Information System (ERMIS) employing ISSM. Booth (2012) has adopted that ISSM's framework to analyze and evaluate the information systems success factors through a total of 39 papers related to information technology adopted by nurses in clinical practice from 1995 to 2008. ISSM has six dimensions: system quality, information quality, service quality, intention to use, user satisfaction and net benefits. System quality, information quality and service quality are three critical antecedent variables affecting individual use of an information system. This study applies these three factors of ISSM as the technological capabilities of NIS success. *System quality* refers to evaluating the strength of the NIS by itself (Lu et al., 2012). *Information quality* refers to evaluating information ambiguity and uncertainty of NIS output (Petter &

Download English Version:

<https://daneshyari.com/en/article/350223>

Download Persian Version:

<https://daneshyari.com/article/350223>

[Daneshyari.com](https://daneshyari.com)