Chapter IX

Understanding Physicians' Acceptance of Computerized Physician Order Entry

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Abstract

Computerized physician order entry (CPOE) holds potential of reducing medical errors, improving care quality, and cutting healthcare costs. Yet its success depends on physicians' acceptance and usage. We test if TAM can be used to explain physician acceptance of CPOE. A survey study was conducted on physicians who have access to CPOE in a large general hospital in China. Data analyses based on 103 responses support all of the relationships predicted by TAM except the one between perceived ease of use and attitude. With additional data analyses, we find that the PEOU-attitude relationship is negatively moderated by physicians' experience of using CPOE. PEOU does not affect attitude for experienced physicians, whereas

when physicians are inexperienced, PEOU has a positive impact on attitude. Our findings suggest that TAM can be applied to explain physicians' acceptance of CPOE, yet its application should be performed with caution.

Introduction

Ample evidence shows that CPOE systems can substantially reduce medication error rates, reduce costs, and improve the quality and efficiency of medication utilization (Bates et al., 1998; 1999; 2001; Kaushal et al., 2003; Kuperman & Gibson, 2003). However, healthcare organizations cannot assume that these benefits will automatically accrue after they implement a CPOE system. This is because IT assimilation is typically influenced by decision processes at two levels: top management decides whether to adopt an IT at the organizational level and employees decide whether and how to integrate the technology into their job routines (Fichman, 2000). It is possible that despite top management's advocacy of CPOE usage, physicians refuse to use the system, leading to project failure. User resistance of IT has long been a problem troubling organizations (Lapointe & Rivard, 2005). Compared to other users, physicians are characterized by a high level of job autonomy (Sharma, 1997) and are less willing to change their behavior to adapt to the usage of IT. Even after CPOE is adopted at the organizational level, physicians may resist it from the beginning or discontinue using it if they perceived the system as problematic (Anderson, 1997). For example, it is reported that during the CPOE implementation at a large healthcare system, some clinicians wanted to go back to manual order entry when they discovered the CPOE's drawbacks (Ahmad et al., 2002). Therefore, physician acceptance is critical to CPOE success. The promised benefits of CPOE cannot be realized unless physicians accept and use the system.

As an important aspect of medical informatics, user acceptance has drawn increasing attention from researchers and practitioners (Lorenzi et al., 1997; Kaplan et al., 2001). It has been recognized that efforts to introduce information systems (IS) into medical practice settings will result in failures and unanticipated consequences if their technical aspects are overemphasized and their social and organizational characteristics are overlooked (Anderson, 1997). The IS discipline has a rich tradition concerning user acceptance of information technology (Davis, 1989; Davis et al., 1989; Moore & Benbasat, 1991; Adams et al., 1992; Agarwal, 1999; Karahanna et al., 1999; Venkatesh, 2000a; 2000b; Venkatesh & Davis, 2000; Venkatesh et al., 2003). The technology acceptance theories applied in the IS field can certainly shed light on user acceptance issues in the medical informatics field given that theory should be generalizable. Among these acceptance theories, technology acceptance model (TAM) is the most widely used, dominant model (Davis, 1989; Davis et al.,