

## Chapter XVI

# Predicting Patients' Use of Provider-Delivered E-Health: The Role of Facilitating Conditions

**E. Vance Wilson**

*Arizona State University, USA*

**Nancy K. Lankton**

*Michigan State University, USA*

### ABSTRACT

*This chapter presents a new rational-objective (R-O) model of e-health use that accounts for effects of facilitating conditions as well as patients' behavioral intention. An online questionnaire measured patients' behavioral intention to use a new e-health application as well as proxy measures of facilitating conditions that assess prior use of and structural need for health services. A second questionnaire administered three months later collected patients' self-reported use of e-health during the intervening period. The new model increased predictions of patients' e-health use (measured in  $R^2$ ) by more than 300% over predictions based upon behavioral intention alone, and all measured factors contributed significantly to prediction of use during the three-month assessment period.*

### INTRODUCTION

Increasingly, healthcare provider organizations offer provider-delivered e-health<sup>1</sup> to supply patients with health information and advanced capabilities, such as appointment scheduling, prescription refilling, and online communication with physicians and clinical staff (Hsu, Huang,

Kinsman, Fireman, Miller, Selby, & Ortiz, 2005; Wilson & Lankton, 2004). Because designing, developing, and deploying e-health represents a substantial investment by providers, it is important that these applications are actually used by patients. If providers can predict levels of patient e-health use at early stages in the design process, this will help them to be more effective in allocat-

ing resources and managing risks associated with e-health delivery.

In this chapter, we propose and test a predictive model of e-health use that accounts for both situational factors (facilitating conditions) that are typically outside patients' direct control and behavioral intention that patients form toward using e-health. In the following sections, we review the background literature that motivates and supports this study, present the research model, and develop hypotheses to test relationships within the model.

## BACKGROUND

Wilson and Lankton (2004) studied factors that contribute to initial acceptance of e-health among new registrants to a prototype e-health application. That study found patients' behavioral intention (BI) toward e-health use is predicted well by three prominent models of IT acceptance: the technology acceptance model (TAM) (Davis, Bagozzi, & Warshaw, 1989), the motivational model (Davis, Bagozzi, & Warshaw, 1992), and the integrated

model (Venkatesh, Speier, & Morris, 2002). All are examples of *rational* models (Ajzen, 2002; Kim & Malhotra, 2005), so named because predictions are based upon individuals' beliefs regarding such factors as ease of use and usefulness of the IT. Within these models, effects of beliefs upon IT use behaviors are theorized to be fully mediated by BI that individuals form through rational processes. Wilson and Lankton (2004) also report that belief factors in the models are significantly predicted by three patient characteristics that are developed prior to use of e-health: satisfaction with the provider, information-seeking preference, and Internet dependence. This finding is important, as it implies that patients' BI toward e-health use can be predicted early in design stages of application development.

Rational models of behavior have performed well in predicting individual behaviors across a wide range of research domains. In the preponderance of published studies, a positive association is reported between BI and behavior (see reviews by Ouellette & Wood, 1998; Sheppard, Hartwick, & Warshaw, 1988). Based on this substantial literature most IT acceptance studies do not

Table 1. Review of associations between BI and self-reported IT use

Reference	IT Type	Variance in IT Use Explained by BI
Davis et al. (1989)	Word processor	12-40 %
Dishaw & Strong (1999)	Software maintenance tool	36%, including direct effect of perceived usefulness
Hartwick & Barki (1994)	Business IS application	35-74%
Horton, Buck, Waterson, & Clegg (2001)	Intranet	11%
Lai (2004)	Short message services	15%
Limayem & Hirt (2003)	Communication application	47%, including direct effects of habit and facilitating conditions
Moon & Kim (2001)	World wide Web	38%
Morris & Dillon (1997)	Netscape Web browser	19%
Shih & Fang (2004)	Internet banking	24%
Stoel & Lee (2003)	Web-based courseware	4%
Suh & Han (2002, 2003)	Internet banking	3%
Szajna (1996)	E-mail	6-32%

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