Modeling User Training and Support for Information Technology Implementations: A Bayesian Test of Competing Models

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ABSTRACT

Information technology implementations continue to be significant endeavors for both research and practice. Although prior studies have extensively examined user training and user support, a consensus is lacking on their conceptualizations. Prior research has argued for direct, as well as indirect, effects of user training and user support on perceived benefits while appealing to different theoretical perspectives. This study clarifies the roles of user training and user support in information technology implementations using data on 302 software implementations. Using a Bayesian model comparison strategy, the authors found that the effects of user training and user support on perceived benefits are mediated by individuals' perceptions regarding the characteristics of the information technologies. These findings suggest that user training and user support should be treated as enablers in the process of implementing information technologies.

Keywords: Bayesian Model, Implementation, Information Technology, Perceived Benefits, User Support, User Training

INTRODUCTION

Implementations of information technology (IT) innovations in organizations are known to induce changes in user perceptions of the work environment (Barki & Hartwick, 1994; Cooper & Zmud, 1990; Davis, 1989; Doll & Torkzadeh, 1988; Finlay & Mitchell, 1994). User perceptions of the outcomes of an IT implementation are also dependent on the implementation process and the extent to which components of the implementation process such as user training and user support are deemed effective by individuals (Igbaria, Guimaraes, & Davis, 1995; Lee, Kim, & Lee, 1995; Shaw, 2001b; Venkatesh & Davis, 1996).
Prior studies on IT implementation issues have adopted contrasting approaches in modeling the impacts of user training and user support: one approach has been to model user training and user support as direct influences on perceived outcomes of individuals while the other approach has been to model user training and user support as indirect influences on outcomes perceived by individuals (Sabherwal, Jeyaraj, & Chow, 2006; Speier & Brown, 1997; Taylor & Todd, 1995; Venkatesh & Davis, 1996). While both approaches have received empirical support and yielded useful insights on the underlying relationships, prior literature has not really dwelt on whether one of the two approaches may be more appropriate in understanding the roles of user training and user support in IT implementations.

We construct and employ a Bayesian test for choosing the most plausible model of explanation of the effects of user training and user support when Structural Equation Modeling (SEM) techniques reveal multiple competing models that fit the data equally well. More specifically, we examine the roles of user training and user support in IT implementations by constructing a direct effects model and an indirect effects model, evaluate their explanatory power against a baseline model, and determine one model to be more plausible than the other. Our research provides initial evidence on how these two components of IT implementation processes may impact the outcomes perceived by individuals affected by IT implementations.

The remainder of the article is organized as follows. The next section provides descriptions of the alternative approaches to modeling user training and user support based on prior literature. The following section presents the research methods employed in this study. The last section presents the results, discussion, and implications.

THEORETICAL DEVELOPMENT
Perceived Benefits of Information Technology Implementations

IT implementations refer to a variety of installations such as the deployment of new software, upgrades to current versions of existing software, or replacements of obsolete software, that may alter the functionalities available to individuals (Birsan, 2005; Lassila & Brancheau, 1999). Such implementations generally have considerable impacts on the human, organizational, and technological infrastructures (Shaw, 2001a). Since the impacts of IT implementations on human and organizational infrastructures have received considerable attention in prior literature, we focus on only the technological infrastructure in this study. Specifically, we argue that IT implementations necessarily alter the existing IT infrastructure and hence we use the concept of “perceived changes in software” to model IT implementations.

*Perceived changes in software* refers to the extent to which an individual believes that the new information system contains changes in functionality, user interface, technical quality, and external compatibility relative to the old information system in use previously (Shaw, 1999; 2001a). Changes in functionality represents the inclusion, exclusion, or modification of features between the old and new systems (Jasperson, Carter, & Zmud, 2005; Shaw, 2001a). Changes in user interface refers to the reorganization of input and output activities between the old and new systems (Doll & Torkzadeh, 1988; Shaw, 2001a). Changes in technical quality represents the extent to which the new system is free of bugs compared to the old system (Igbaria et al., 1995; Shaw, 2001a). Changes in external compatibility represents the extent to which the new system interacts well with other systems in the environment relative to the old system (Rogers, 1995; Shaw, 2001a). These four categories relate to the various aspects of the new system that can provide challenges to potential users.
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