Testing the Technology-to-Performance Chain Model

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ABSTRACT

Goodhue and Thompson proposed the technology-to-performance chain (TPC) model in 1995 to help end users and organizations understand and make more effective use of information technology. The TPC model combines insights from research on user attitudes as predictors of utilization and insights from research on task-technology fit as a predictor of performance. In this article, the TPC model was tested in two settings - voluntary use and mandatory use. In both settings, strong support was found for the impact of task-technology fit on performance, as well as on attitudes and beliefs about use. Social norms also had a significant impact on utilization in the mandatory use setting. Beliefs about use only had a significant impact on utilization in the voluntary use setting. Overall, the results found support for the predictive power of the TPC model; however, the results show that the relationships among the constructs in the model will vary depending on if the users have a choice to use the system or not.

Keywords: information systems performance; IS effectiveness; mandatory system use; task technology fit; technology to performance chain model; voluntary system use.

INTRODUCTION

The purpose of the study reported in this article was to test the technology-to-performance chain (TPC) proposed by Goodhue and Thompson in their 1995 paper published in MIS Quarterly. The technology-to-performance chain model seeks to predict the impact of an information system on an individual user’s performance. One of the main objectives of information systems research is to help end users and organizations make more effective use of information technology. Understanding and measuring the success of investments in information systems is important to both researchers and practitioners. Practitioners naturally want to learn about ways to make their investments more effective and ways to improve their decision-making about which investments to make. Researchers desire to build and test theories that explain and predict performance. The TPC model potentially helps us do that; however, it has not been tested fully. Contributing to the understanding of the predictive validity of the TPC is our goal in this article.

Goodhue and Thompson’s (1995) technology-to-performance chain model (Figure 1) combined insights from research on user attitudes as predictors of utilization and insights from research on task-technology fit as a predictor of performance. Past research on user attitudes as predic-
tors of utilization is largely based on theories of attitudes and behaviour (Fishbein & Ajzen, 1975; Triandis, 1980). Aspects of the information technology lead to user attitudes about the system and these attitudes, along with social norms and other situational factors, lead to utilization. Task-technology fit theory suggests that information systems affect performance depending upon the fit or correspondence between the task requirements of the users and the functionality of the system. Task-technology fit theory also suggests that the impact on performance depends upon the fit between individual characteristics of the users and functionality of the system. The basic argument of the model is that for an information technology to have a positive impact on individual performance, the technology must fit with the tasks it is supposed to support and it has to be used (Goodhue & Thompson, 1995).

Goodhue (1995) and Goodhue and Thompson (1995) tested part of the technology-to-performance chain model (see dotted paths in Figure 1). They found support for the link between task-technology fit and performance impacts, as well as some support for the proposed antecedents of task-technology fit. They did not test the linkages proposed in their model between task-technology fit and the precursors of utilization, which is one of the main objectives of our article. Our article builds on Goodhue's work and adds to it by investigating additional links in the technology-to-performance chain that have not been previously explored. Although the impact of task-technology fit has been investigated by several researchers in various settings (e.g., Dishaw & Strong, 1998a, b; Ferratt & Vlahos, 1998; Goodhue, Klein & March, 2000; Goodhue, Littlefield & Straub, 1997; Kanellis, Lycett & Paul, 1999; Lim & Benbasat, 2000; Pendharkar, Rodger & Khosrowpour, 2001; Shirani, Tafti & Affisco, 1999), no one that we are aware of has tested the proposed TPC model directly.

Referring to the link between users' evaluations of task-technology fit and performance, Goodhue (1998) suggested:

*Conceptual and empirical research is critically needed to address the issue of whether there is a link, and if so, under what circumstances it is strong or weak. (p. 128)*

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*Figure 1: Goodhue and Thompson’s Technology-to-Performance Chain Model (Adapted from Goodhue & Thompson, 1995, p. 216)*

![Technology-to-Performance Chain Model](image-url)
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