Chapter XV

Success Surrogates in Representational Decision Support Systems

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When corporate difficulties arise, technology and new software development are often embraced as part of the solution. The modern manager has a wide variety of decision making aids at his or her disposal. One such aid, classified as a representational decision support system, is discrete event computer simulation. In order to assess the organizational impact of discrete event computer simulation, an instrument capable of measuring success is required. The importance of such assessment cannot be overemphasized. While empirical measurement of various information system inputs or independent variables such as information system budget expenditures or user participation is relatively straightforward, the development of corresponding output or dependent variables has been difficult. In an attempt to overcome these difficulties, researchers have suggested a variety of measurable surrogates. Work in this area has paved the way for the development of instruments used to assess success.

This chapter focuses on external validity aspects of two popular information system instruments, the Davis measure of User Acceptance of Information Technology and the Doll and Torkzadeh measure of End-User Comput-
ing Satisfaction (EUCS). These instruments were designed for general purpose use and tested across a variety of settings, times, and persons. To ensure this generalizability extended to a very specific form of information technology, these instruments were administered to discrete event computer simulation users and tested for psychometric stability. This study provides additional evidence that the Doll and Torkzadeh measure of End-User Computing Satisfaction retained its psychometric properties when applied to users of discrete event computer simulation and therefore provides a reasonable surrogate measure for success in the implementation of this technology. An initial assessment of the Davis measure of User Acceptance of Information Technology (Perceived Ease-of-Use, Perceived Usefulness) returned poorer scores on the fit indexes but the evidence did indicate the expected factor structure was supported to some extent. The managerial implications of these findings are discussed.

INTRODUCTION

End user application of representational decision support systems is a popular technology that is in widespread use in business and industry (McHaney and White, 1998). A primary manifestation of the representational DSS is computer simulation (McHaney and Cronan, 2000). A computer simulation involves the modeling of a process or system in such a way that the model mimics the response of the actual system to events that take place over time” (Schriber, 1987). In other words, simulation is simply using a computer to imitate the behavior of a complicated system and thereby gain insight into the performance of that system under a variety of circumstances. Within this context, computer simulation can be classified as a decision support tool.

Discrete event computer simulation can be broken into two categories, simulation languages and simulators. A simulation language is a versatile, general purpose class of simulation software that can be used in a multitude of different modeling applications. These languages are comparable to FORTRAN, BASIC, COBOL or C, but have specific features to facilitate the modeling process. Some examples of simulation languages are GPSS/H, SLAM II, SIMSCRIPT II.5, and SIMAN V.

Simulation language features aid in the modeling process and free the simulation analyst from the drudgery of recreating certain software procedures used by virtually all modeling applications. As a result these specialized languages have become powerful tools for modeling. Most simulation languages provide the features illustrated in Table 1.
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