Chapter 2
Measuring Information Systems Success: A Comment on the Use of Perceptions

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ABSTRACT

Information System success is difficult to measure directly. Because of the influence of non-controllable variables, it actually seems to be impossible to directly compute or determine the contribution of Information Systems to organizational performance, or to overall organizational effectiveness. As an alternative, perception of system success is often used as a surrogate measure. However, this raises the question of the validity of this surrogate measure. In this chapter, the authors describe a survey aiming to investigate the validity of this surrogate measure. Results show that there is reason to doubt the usefulness and validity of surrogate measures for objective system success.

INTRODUCTION

Today, information technology plays an important role in almost every organization. Considerable budgets have been spent on IT in order to gain a (sustainable) competitive advantage in today’s markets. However, the measurement and explanation of information systems (IS) success has puzzled many researchers and practitioners for years. The prerequisites for the measurement of IS success has been a subject of controversy (e.g. Delone & McLean, 1992; Gelderman, 1998)). Because of the influence of non-controllable variables, it actually seems to be impossible to directly compute or determine the contribution of information systems to organizational performance or on overall organizational effectiveness. As an alternative, the perception of system success

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is often used as a surrogate measure. However, in the literature, a number of questions as to the validity of this surrogate measure arise. In this chapter, we describe a survey aimed at investigating the validity of this surrogate measure. A model that measures and explains the (perception of) success of an information system is also introduced and tested, using empirical data derived from the survey. This survey is described, and the resulting data are used to fit the model. Finally, the results are presented and discussed, ending with a number of conclusions.

INVESTIGATING SYSTEM SUCCESS

A notion of ‘system success’ that is widely used, was defined, by Delone and Mclean in their original 1992 paper (Delone & McLean, 1992), as ‘effectiveness’ and ‘organizational impact’. Similar definitions can be found in Doll and Tokzadeh (1998) and Ives et al. (1983). We will adopt the definition of Delone and Mclean (1992) and therefore assume that information system success indicates the degree to which the goals of the organization have been furthered. Assuming that an organization has decided on its goals, these can be translated into objective measures.

When investigating system success, direct measurement is therefore an obvious approach. However, empirical studies reported mixed findings. There is some evidence to support the idea that information systems (IS) improve the efficiency and effectiveness of a firm’s operations (e.g. Li, 1997), and that IT-related resources have indeed a potential for competitive advantage (e.g. Lünебorg & Nielsen, 2003; Mata et al., 1995). However, most research in this area found little evidence for a convincing, consistent relationship between IT investment and organizational performance (e.g. Farbey et al., 1999; Gallagher, 1974; Hitt & Brynjolfsson, 1996; Raymond et al., 2001; Saunders & Jones, 1992). Many publications underscore the proposition, that the benefits of IT investments are very difficult to measure (e.g. Bharadwaj et al., 1999; Davis et al., 2003; Gelderman, 1998). Because of the influence of non-controllable variables, such as changes in competitive offering or technology developments in the current product mix, it actually seems to be impossible to directly compute or determine the contribution of information systems to organizational performance or on overall organizational effectiveness (e.g. Gallagher, 1974, Kusters et al., 2002; Skok et al., 2001). As a consequence of these measurement problems, proxy measurements for IS evaluation purposes have gained considerable acceptance. In the absence of objective measures, many researchers and practitioners have turned to perceptual surrogates (McHaney et al., 2002) by focusing on perceptions of IS success.

Many studies have been aimed at developing and validating (multiple-item) constructs for describing and evaluating perceptions of IS success. For instance, Bailey and Pearson (1983) identified 39 factors that constitute a user satisfaction measure, Li (1997) added another 7 items to this instrument, Doll and Torkzadeh (1988) proposed a 5-factor model of end-user computing satisfaction, Delone and Mclean (1992) proposed 6 major dimensions or categories of IS success, and Saarinen (1996) identified 4 main dimensions of IS success.

Another related stream of research provides a number of studies based on these proxy measures and developed models, that identified a number of explanatory variables which are believed to impact and explain (perceptions of) IS success. Table 1 provides an overview of a number of explanatory studies.

In each case, the information used to quantify and validate these models has been derived from surveys and interviews. This means that the models did not show the existence of relationships between explanatory variables and system success, but the existence of a relationship between the perceptions of the explanatory variables on the perception of system success. This in itself does