

# Chapter 8.1

## The Past, Present, and Future of End–User Performance

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### INTRODUCTION

Over the last decade, end-user computing has become an integral part of the organizational landscape. The emergence of end-user computing can be attributed to the necessity to manage and to effectively use information to function in a knowledge-based economy. Because of the increased organizational computing needs, computer literacy requirements have skyrocketed for clerical and support staff and for many middle and senior management positions (Bowman, Grupe, & Simkin, 1995). The proliferation of microcomputers and the availability of sophisticated user application tools (Shayo, Guthrie, & Igbaria, 1999) have facilitated the widespread implementation of end-user computing technology.

End-user computing has the potential to enhance productivity. However, for this potential to be realized, end users must learn EUC skills and perform at high levels. Given the significance of end-user performance to organizations, literally hundreds of studies have examined factors with potential to influence end-user performance. The purpose of this review is threefold: to review what

we know about end-user performance, discuss some of the limitations of research on end-user performance, and to offer suggestions for future research on end-user performance.

### BACKGROUND: FACTORS KNOWN TO INFLUENCE END-USER PERFORMANCE

Research in the areas of psychology and organizational behavior has clearly established that characteristics of the individual and the environment influence behavior and performance (e.g., Terborg, 1981). This approach, labeled the interactional approach, is an effective framework to review the factors that influence end-user performance (Jawahar, 2002).

### Characteristics of End Users

To be sure, research has examined a variety of individual difference factors with potential to influence end-user performance. For instance, previous research has investigated the influence

of attitudes (e.g., Jawahar & Elango, 1998; Kernan & Howard, 1990; Szajna, 1994), aptitudes (e.g., Evans & Simkin, 1989), learning styles (e.g., Bohlen & Ferratt, 1997), cognitive styles (e.g., Davis & Davis, 1990), self-efficacy (e.g., Jawahar & Elango, 2001), goal setting (e.g., Jawahar & Elango, 2001), experience (e.g., Dambrot, Silling, & Zook, 1988), education (e.g., Davis & Davis, 1989), and sex (e.g., Harrison & Rainer, 1992) on end-user performance. Organizations and managers can influence some of these individual difference factors, such as attitudes, aspiration or goals, and self-efficacy, more than other factors (e.g., aptitudes, learning/cognitive styles, and demographics). Therefore, this review focuses on the former set of factors.

**Attitudes.** The preponderance of research on end-user performance has focused on attitudes toward computers to predict end-user performance. However, these studies have generally reported inconsistent results. About one half of the studies that examined the relationship between attitudes and end-user performance have reported a relationship. While some of these studies reported a positive relationship (e.g., Nickell & Pinto, 1986), others have reported a negative relationship (e.g., Hayek & Stephens, 1989). Alternatively, roughly one half of the studies failed to find a relationship between attitudes and end-user performance (Kernan & Howard, 1990; Szajna, 1994). After reviewing these studies, Jawahar and Elango (1998) attributed the inconsistent results to the fact that many of these studies had *incorrectly* used the constructs of computer anxiety and negative attitudes toward computers interchangeably (see Kernan & Howard) and had relied on global attitudes to predict end-user performance.

Drawing on Ajzen and Fishbein's (1980) behavioral intentions model, Jawahar and Elango (1998) theorized that behaviors or outcomes could be best predicted by attitudes that specifically relate to those behaviors than by more global and general attitudes. They proposed that attitude

toward working with computers is much more specific and relevant to performance of tasks which require the use of computer skills than the more general attitudes toward computers. Individuals who hold favorable attitudes toward working with computers are more likely to practice and learn end-user computing skills, and evidence higher levels of performance on tasks that require the use of those skills than those who hold less favorable attitudes. As expected, Jawahar and Elango found that attitudes toward working with computers but not attitudes toward computers explained unique variance in end-user performance. These results were replicated in a follow-up study (Jawahar & Elango, 2001). These two studies together with previous research indicate that attitudes that are specific to the task of working with a computer or a particular software package or packages are more likely to be predictive of end-user performance.

**Goals.** The positive effect of goal setting on task performance is one of the most robust and replicable findings in the psychological literature (Locke & Latham, 1990; Locke, Shaw, Saari, & Latham, 1981). Literally, hundreds of studies have been conducted on goal setting in a variety of settings and with a wide range of subjects including managers, engineers, and scientists (Locke & Latham). Research on goal setting has documented that specific and difficult or challenging goals lead to higher levels of performance than the absence of goals, easy goals, or "do your best" goals (Locke et al.). Locke and Latham have shown that goal setting, when combined with feedback or knowledge of results, leads to high levels of performance. Thus, goal setting is most likely to improve task performance when the goals are specific and sufficiently challenging, and feedback is provided to show progress in relation to the goal. In a series of two studies, Jawahar and Elango (Jawahar, 2002; Jawahar & Elango, 2001) found that end users' goals to learn and master a software package is in fact strongly related to their performance with the software package.

**Self-Efficacy.** Self-efficacy is the belief in

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