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Chapter VI

Technology Acceptance and Performance: An Investigation Into Requisite Knowledge

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Organizations expend large amounts of educational and training resources to improve employee task and job performance. These resources must be allocated efficiently and effectively to increase the probability of organizational success. Information technology (IT) is one organizational area in which education and training are particularly important, largely because IT has redefined the requisite skills for functional competency in the workplace. Through an empirical study, this research investigates how knowledge bases contribute to subjects' attitudes and performance in the use of a CASE tool in database design. The study identified requisite knowledge bases and knowledge base interactions that significantly impacted subjects' attitudes and performance. Based upon these findings, alternatives are provided to management that may help organizations increase the performance benefits of technology use and promote more positive attitudes towards technology innovation acceptance and adoption. By structuring education and training efforts to increase performance and enhance positive attitudes, organizations will be better able to optimize their investments in information technology innovations.

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INTRODUCTION

Improving human performance in organizational tasks remains a primary goal for modern organizations to increase competitiveness. Goldstein (1993) estimated that organizations invest close to $40 billion in training per year. Within the Fortune 500 companies, 44% of their training investment relates to technical training (Goldstein, 1993). Organizations expend tremendous resources to improve employee task and job performance. Education and training are principal tools used to improve human performance and promote better decision making. In fact, many scholars argue that education and training are the main issues that need to be studied to understand human decision-making and problem-solving behavior. Indeed, Rouse and Morris (1986) observed:

> To the extent that it is reasonable to characterize any single issue as the central issue, this issue is instruction and teaching. For any particular task, job, or profession, what mental models should people have and how should they be imparted? (p. 357)

This statement suggests two significant implications for organizational success. The first implication acknowledges that individuals must have relevant knowledge bases to perform a work-related task or job competently. The second implication addresses the problem of how to identify these knowledge bases so that organizations can facilitate the necessary knowledge transfer. An individual's knowledge base refers to the mental model or structural representation stored in long-term memory about a specific domain or process. Many of the activities surrounding the completion of a job or task are influenced by the individual's relevant mental models or knowledge bases related to that domain or process (Goldstein, 1993; Perrig & Kintech, 1985; Shaft & Vessey, 1995).

Information technology (IT) is one organizational area in which education and training are particularly important, largely because IT has redefined the requisite skills for functional competency in the workplace (Goldstein, 1993; Todd, McKeen & Gallupe, 1995; Zuboff, 1985). In many cases, knowledge of how to complete the relevant task–task-domain knowledge–is essential, but not sufficient, for an individual to perform well in the workplace (Todd et al.). Frequently, the individual must also possess competencies in the use of IT to be successful in modern work environments. It is anticipated that the changes in job competencies resulting from technology shifts (e.g., computer-assisted software engineering; CASE) will increase the cognitive complexity for the worker (Goldstein, 1993). Therefore, in addition to task-domain knowledge, modern workers might also benefit from knowledge bases associated with the use of IT. This study investigates technology acceptance and adoption by examining how an individual's knowledge of a tool, in combination with his task-domain knowledge, influences attitudes and performance related to the use of an IT innovation.

Dramatic improvements in IT price-performance ratios have contributed to the enormous impact of IT on organizational success. One aspect of this impact is end-user computing, a phenomenon that is reshaping the way organizational tasks are