The Relationship Between Information Technology Professionals’ Skill Requirements and Career Stage in the E-Commerce Era: An Empirical Study

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ABSTRACT

Building on prior research, a field study of IT professionals is performed to determine if and how IT professionals’ technical skills requirement change as they gain experience in the workplace. Based on the results of this study, it appears that IT professionals: (1) are required to have different technical skills as their careers progress, and (2) do possess different technical skills at different stages in their careers.

Keywords: electronic commerce; end user computing, information technology

INTRODUCTION

Learning is an indispensable component of any job in today’s professional workplace. This is especially true for information technology (IT) professionals in the Web-based, Internet-driven e-commerce era. Changes in the market, technology, and work processes reduce and may even eliminate the need for old skills and demand the development of new ones. Performance standards are becoming more complex and demanding (Ilgen & Pulakos, 1997). So professionals should identify skill gaps, recognize areas to improve current performance, keep up with advances in their profession, and anticipate how changes elsewhere in the firm and the industry may affect work demands and skills requirements (Carnevale & Desrochers, 1999; London & Smither, 1999).

It is becoming more and more difficult to specify and prepare for the skill demands of professionals in advance of beginning work activities (Barley & Orr, 1997; Mirvis & Hall, 1996). Web-based applica-
tions that support e-commerce throughout the value chain may require different technical skills than those that experienced IT professionals possess. Not only are these new skills required, but the rate of skill and technology change is continuously increasing. Also, the number of factors influencing these changes is constantly increasing (Howard, 1995; Weick, 1990). Given these dynamic work environments, contemporary work roles require a significant amount of activity that is contingent and hard to predict (Darrah, 1994). As a result, skill deficiency in IT professionals has been found in various areas (Lee et al., 1995; Nelson, 1991; Trauth et al., 1993). To address this, IT professionals are continuously adding, replacing, and retrofitting their skill set to ensure an adequate stock of knowledge and expertise to perform their jobs (Alder, 1992; Carnevale et al., 1994). It should be noted that most of these issues and phenomena were observed prior to the push for Internet and web-based applications, this can only add to the changes and diversity in technical skills required by IT professionals.

A great deal of learning takes place without any connection to either trainers or training programs (Marsick & Watkins, 1990; Van der Krogt, 1996). Marsick and Watkins (1990) estimate that up to 83 percent of workplace learning occurs informally\(^1\) or ‘incidentally’. Learning results from training and development activities provided by employers as well. A few outstanding organizations sustain competitive advantage through training and development activities (Olian et al., 1998). The average organization, however, fails to provide adequate training and is improving its training investments and practices at a slow rate (Bassie & Van Buren, 1999). Computer skill training consumes a major part of training and development activities in organizations and is known to constrain training of other skills (Carnevale & Desrochers, 1999). Again, this can only be exacerbated by the new demands on IT professionals, and perhaps other business professionals, to develop skills to support e-commerce applications.

Organizations sometimes choose to buy desired skills through hiring. Todd et al. (1995) found that the relative frequency and proportion of stated technical skill requirements in recruiting advertisements for IT professionals have increased dramatically, while the relative frequency of requirements for business and systems knowledge has actually decreased slightly. This suggests that new IT-related skills are imported from outside by hiring, whereas development of business knowledge and other skills originates mainly from inside the organization. Regardless, the burden is clearly on the individual to maintain and develop the skills necessary to successfully perform their job and for career advancement.

The emphasis on human resource management and learning systems in the workplace is shifting from training to learning (Van der Krogt, 1998). Schools and universities should take this shift from training to learning in the workplace into explicit consideration to optimize their students’ life-long learning process. As it is not economical for organizations to train their personnel in areas where the personnel can learn the materials efficiently in an informal fashion in the workplace, it is also not economical for schools to instruct students on topics the students can learn more efficiently and effectively after graduation. In such areas, it is desirable to equip the students with the basis to learn upon (Couger, 1995). This argument is especially relevant when the skills and knowledge are not needed imminently, but are

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\(^1\) Informally refers to learning that occurs in the workplace without formal training programs.
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