A Model of the Motivation for IT Retraining

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The skill-sets of many information technology (IT) professionals are becoming obsolete as IT changes accelerate. Organizations are retraining many software developers with legacy systems skills to skills required in the new Internet-based, client-server and object-oriented paradigms. This type of retraining is not incremental, but entails major cognitive, methodological and procedural shifts. Given its importance, cost, and currency, processes that impact the effectiveness of training should be considered. Trainee motivation is one such process that should be investigated because it is more malleable than other aspects, such as trainees’ cognitive ability. This paper proposes a model of motivational intentions and antecedents in this information technology retraining context. Theoretical background for the model is described. In addition, the implications of the model and its potential utilization in influencing motivational intentions, and ultimately improving retraining outcomes is discussed.

Advances in information technology are providing organizations with exciting new opportunities. Organizations today can expand their market reach through globalized networks, augment their product lines with knowledge-based products and services, and use more agile organizational structures such as virtual teams. Yet, to leverage these new opportunities, firms are finding that they are requiring new and different skills from their information technology professionals. Most staffs are skilled in legacy systems application development, but are not versed in newer technologies (Chabrow, 1995; King, 1997). Because of the tremendous technological transitions, companies with in-house IT professionals are increasingly finding their skills obsolete (Gottlieb, 1993). Many companies, therefore, are retraining existing employees with skills that are appropriate for this new computing environment.

Because of the increased requirement for retraining due to technical advances and other environmental factors, it is now more critical than ever that researchers examine the underlying processes that determine the effectiveness of IT retraining. Trainee motivation is one such process. Maier (1973) has maintained that training performance will most likely be poor if motivation is low, even if individuals possess the requisite ability to learn the content that is presented. Recently, researchers have focused on pretraining motivation because of the belief that, at least compared with general cognitive ability, motivation is more subject to marked change (Wlodkowski, 1985).

This paper proposes a model of the individual motivation to retrain in IT, casting it as an intentional process, and specifying the antecedents of retraining intentions. This is an extension to prior research in several ways. First, this research specifically investigates retraining. That is, the training of employees whose current jobs, knowledge and skills have begun obsolesce and will require significant, rather than incremental, change. The proposed model of motivation in this retraining context highlights salient antecedents that are proposed to be more intense than in a training environment in which the targeted skills to be acquired are incremental in nature. Next, this research specifically addresses the IT professional. Previous research concerning IT training and motivation has primarily concentrated on the end-user (e.g., Igbaria et al., 1996). However, in today’s dynamic environment where technologies are rapidly changing, focus must also be given to the retraining of IT professionals. This research helps to fill the existing void. Finally, this paper proposes a theoretical basis for further investigation of IT retraining. Many researchers have argued that much IS research lacks theoretical grounding (Lucas, 1991; Jarvenpaa et al., 1985). As suggested by Lucas (1991), this paper draws upon existing studies from the information systems literature, as well as the reference disciplines of organizational behavior and human
resource management.

This paper will first investigate skill obsolescence issues. Second, prior research on the motivation to retrain will be reviewed. Third, the proposed model of motivation intention to retrain and its antecedents will be presented and discussed in an IT context.

**Skill Obsolescence**

For many years, the IT environment was centered around the mainframe. As organizations are shifting to newer, more flexible technologies, such as Internet based technologies, client/server and object-orientation, they are finding that their developers’ skills are not sufficient to meet changing demands. For example, Chabrow (1995) indicates that only 30% to 50% of the applications developers in the U.S. possess the requisite client-server skills. Yet, industry surveys have shown that 75% of new multi-user applications are predicted to run on client/server platforms by 1999 (King, 1997).

This type of technological obsolescence is a key human resource (HR) dilemma (Gist et al., 1988). Fossum et al. (1986) define obsolescence as occurring “when the person requirements of a job which are demanded by its duties and responsibilities become incongruent with the stock of knowledge, skills and abilities currently possessed by the individual.” In the context of the shift in software development from legacy systems to that of Internet based, client/server and/or object-oriented, software developers are finding that the job requirements, and the requisite skills for essential job functioning, have indeed shifted. To implement technologically current systems, organizations must either retrain existing IT personnel or hire new IT professionals.

The human resource issues surrounding this staffing dilemma are complex. However, several salient factors are causing organizations to consider the retraining option. First, firms are finding that the availability of qualified programmers and developers with the requisite skill-set is inadequate to meet current market demands (Gottlieb, 1993; King, 1997). Second, hiring from outside the organizations brings individuals who may have certain technical competencies, but lack valuable company-specific knowledge regarding work processes and the competitive environment (Chabrow, 1995). Therefore, retraining has become a critical HR strategy for eliminating technological obsolescence and enabling employees with the requisite skills to fulfill future job-related requirements.

Retraining existing developers, however, is expensive and time consuming. The Gartner Group estimates the cost of retraining a programmer that earns $50,000 a year to be approximately $18,000. In terms of time, it is estimated that legacy developers require as much as 40 days of training to acquire new client/server skills (Chabrow, 1995), and between 6-18 months when moving to object-oriented methodologies (Scholtz et al., 1993). Part of the reason that the training time is so long is that the change in mindset required to move from a mainframe-based procedural programming background to that of newer environments is significant. Some indicate that the paradigm shift is the single biggest obstacle that IT professionals must overcome (Due, 1993). Especially in the case of object-orientation, Pinson (1994) found a strong resistance towards moving to the new paradigm. Because of the time, expense, and effort involved, it is important for organizations to consider ways in which retraining outcomes can be enhanced.

**Training Motivation Research**

In industry, retraining program strategies have focused on content, largely ignoring other factors such as motivation (Del Vecchio, 1994). Recently, however, academic researchers have focused on pretraining motivation because of its potential malleability (Wlodkowski, 1985). A number of studies have shown positive relationships between motivation and training outcomes. In a training program designed to improve skills in conducting performance appraisals and in providing feedback, Baldwin et al. (1991) found that pretraining motivation was related to learning. Facteau et al. (1995) found a significant relationship between pretraining motivation and trainee perceived skills transfer in a large-scale study of state government supervisors and managers. Also, Warr and Bunce (1995) found a significant correlation between pretraining motivation and a learning score in an open learning environment. While not all studies showed a significant relationship between learning outcomes and motivation (e.g., Noe & Schmitt, 1986), there is enough supporting evidence to indicate that training motivation is a useful dimension to study.

**Motivation Theories Applied in Training Research**

**Expectancy Theory**

Vroom’s (1964) expectancy model has been used in several studies as a theoretical basis for investigating the consequences of pretraining motivation. Expectancy theory consists of two types of probabilistic estimates that impact behavior: an effort-to-outcome evaluation (Expectancy I), and an outcome-to-outcome contingency (Expectancy II). These expectancies were described by Fossum et al. (1986) for a training context by stating that individuals would learn and apply relevant knowledge and skills if the individuals believed (Expectancy I) they were capable of acquiring such skills and knowledge and (Expectancy II) if having the skills and knowledge was instrumental in attaining valued rewards. Based upon expected relative costs and benefits, an individual may or may not be motivated to acquire new knowledge and skills. Employees are thus more likely to acquire and maintain...
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