December 2001

IT-Induced Adaptation and Individual Performance: A Coping Acts Model

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Abstract

Recent IS literature stresses the importance of IT-related adaptation behaviors and points out our lack of understanding of them. Drawing on coping theory in individual psychology, this paper attempts to shed new light on this phenomenon. Our model suggests that user adaptation behaviors can be conceptualized as coping acts, which are mainly determined by an initial assessment a user makes of a new IT. Coping is hypothesized to be positively associated with levels of integration of IT and with user task performance. The main premise of this study is that higher levels of integration between the user, IT, and the working system will be related to higher individual performance at work. A survey of 262 account managers was conducted in two large Canadian banks to test our conceptual model.

Keywords: User behavior, IS impacts, psychology.

RESEARCH OBJECTIVES AND QUESTIONS

Empirical evidence indicates that users are quite active in appropriating IT: they adapt, reinvent, modify, and adjust IT (DeSanctis and Poole 1994; Nelson 1990; Tyre and Orlikowski 1994; Orlikowski 1996). Adaptation can take place between IT and the users (Clark 1987; Majchrzak and Cotton 1988), between IT and the working system (Poole and DeSanctis 1988 1990; Rice and Rogers 1980), or between IT and both, the user and the working system (Majchrzak et al., 2000; Tyre and Orlikowski 1994; 1996). Higher adaptation has been found to lead to higher levels of integration and to a better alignment between IT, the users, and the working system (Cooper and Zmud 1990; Leonard-Barton 1988). Although important, we know very little about the nature of these adaptation behaviors and about their antecedents (Majchrzak et al. 2000).

This paper draws on coping theory (Lazarus 1966) to provide some new insights into this phenomenon. Coping theory is widely used in individual psychology to explain and predict the behaviors of individuals facing disrupting events. This paper suggests that the implementation of a new IT can be seen as a disruptive event (positive or negative) in the habits and work system of users and that the behaviors of users facing such events can be analyzed using the coping theory. The present study aims at answering three main questions. First, does one's appraisal of a new IT determine one's coping acts or adaptation behaviors? Second, do different coping behaviors lead to different levels of integration of IT? Finally, does integration of IT in one's habits and work system affect individual performance?

THEORETICAL FOUNDATIONS

Coping is defined as all thoughts and behaviors performed by a person in order to manage (minimize, reduce, master, tolerate) demands emanating from a specific change in the person-environment relationship (Lazarus 1966). Lazarus argues that an individual faces an event that disrupts his/her life or daily routine by performing coping acts. For instance, coping acts were observed when employees were laid off (Leana et al. 1998), in organizational downsizing (Shaw and Barrett-Power 1997), in mergers (Cartwright and Cooper 1996), and in new stressful working conditions (Dewe 1992; Erera-Weatherley 1996).

The theory asserts that coping has two major functions: the management of the problem and the regulation of emotion. *Problem-focused* acts are oriented at changing or altering environmental pressures, barriers, resources, procedures, and the like (Lazarus and Folkman 1984). *Emotion-focused* acts are directed at motivational or cognitive changes such as modifying the level of aspiration, reducing ego involvement, finding alternative channels of gratification, developing new standards of behaviors, or learning new skills (Lazarus and Folkman 1984).

Empirical research suggests that individuals use both types of coping acts in most disrupting situations, but that their importance varies based on one's appraisal of a situation (Folkman and Lazarus 1985; Folkman et al. 1986). Hence, key to understanding the extent and nature of one's coping acts is the notion of appraisal, which is the subjective assessment of a situation made by someone facing a disruptive event (Folkman 1992). Lazarus and Folkman argue that an appraisal is performed in two steps. First, one evaluates the personal importance of the event in order to determine what is at stake for him/her in this situation. Second, one evaluates the available options and assesses what he/she can do to manage the situation.

Research indicates that situations can be perceived either as a threat, a loss, or a challenge (Lazarus 1966; Lazarus and Folkman 1984). When a situation is perceived as a threat or a loss, emotion-focus forms of coping predominate because an individual tends to be more defensive, focusing mainly on protecting him/herself. Conversely, when a situation is perceived as a challenge, problem-focused acts prevail because when one sees an opportunity, he/she will try to master the situation in order to benefit from it. Research also indicates that the appraisal is an iterative process. An initial appraisal leads to coping acts that can alter the situation bringing one to a reappraisal and to the performance of new coping acts (Stone et al. 1992). Alternatively, an individual can appraise a situation as being too difficult or too demanding and decide to withdraw from it (Lazarus 1966; Lazarus and Folkman 1984).
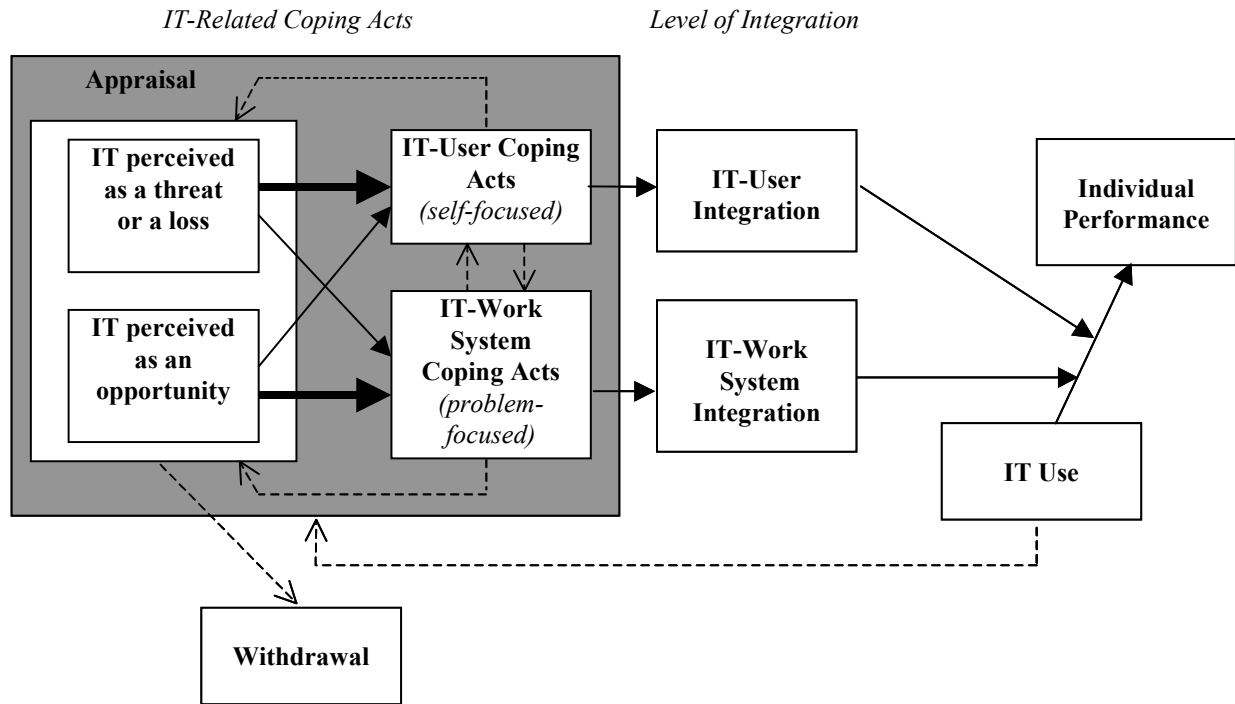
A COPING ACT MODEL OF IT-INDUCED ADAPTATION

Figure 1 presents our coping acts framework as applied to IT implementation. It suggests that an IT implementation can be conceptualized as a disruptive event (positive or negative) and that users' adaptation will be mainly determined by their individual appraisal of the situation. Various adaptation activities, similar to coping acts, have been reported in the IS literature (DeSanctis and Poole 1994; Nelson 1990; Orlikowski 1996; Tyre and Orlikowski 1994). These studies suggest that IT-related adaptation behaviors can take place between IT and the user and/or between IT and the working system. Based on coping theory and on prior research in IS, our model suggests that IT-related coping acts can be of two types. On the one hand, between IT and the user where one adapts him/herself to the new IT or adapts the IT to his/her own preferences. On the other hand, IT-related coping acts can take place between IT and the working system where one adapts his/her tasks and routines to the new IT or adapts the IT to his/her functional needs. Our model also suggests that various IT related coping acts can lead to different levels of integration of IT. Finally, it is hypothesized that the level of integration intervenes in the relationship between IT use and individual performance. Higher levels of IT integration are expected to be positively associated with individual performance.

Appraisal and Coping Acts

The model suggests that one's appraisal of a new IT affects one's coping behavior. Following Folkman et al. (1986), it is hypothesized that a new IT appraised as a threat or as a loss will lead one to perform more *IT-user coping activities* (self-focused[1]). These acts are directed at motivational, behavioral, or cognitive changes, and/or at learning new skills. They can also involve adapting the new IT to one's preferences. Examples of such behaviors are acquiring new IT skills, seeking help from experienced and skilled colleagues, and modifying the technology in order to accommodate one's preferences (e.g., screen layout, macros, templates). On the other hand, a new IT appraised as an opportunity would lead one to perform more *IT-work system coping acts* (problem-focused). These acts include modifying the technology itself and/or adapting the working system (tasks, operating procedures, and functional needs) to the new IT. Among others, they can include changing the IT utilization procedures, adding or modifying IT functionalities, and/or changing one's work routines.

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[1]Several broad conceptual categories of coping have been suggested in addition to the problem-focused and emotion-focused distinction. Folkman (1992) considers that the challenge is to identify stable aspects of the coping process, which can be done by repeatedly assessing coping across contexts and over time. In this study, we chose to use the label "self-focused," which is more encompassing than "emotion-focused," which we found too restrictive considering the wide range of "user-focused" adaptation actions performed by users as reported in the IS literature.

IT-Related Coping Acts   *Level of Integration*

Dotted links are not tested in this study.
The size of the arrows between appraisal and coping acts indicates expected relative importance of relations.

Figure 1. Coping Acts Model of IT-Induced Adaptation

Level of Integration and Individual Performance

Similar to the notion of IT infusion (Cooper and Zmud 1990), which was applied at the organization level, the level of integration refers to the degree to which a particular IT application is embedded into one's work system and/or work habits. It is expected that greater integration will be achieved when a user performs more coping acts because, by doing so, he/she is adapting the IT application to his/her needs and preferences or vise versa. More specifically, IT-user coping acts are hypothesized to be associated with a higher level of integration between IT and the user. In the same manner, IT-work system coping acts are expected to lead to a higher level of integration between IT and the working system.

The model further suggests that the level of integration moderates the relationship between IT use and individual performance. The main premise being that for any given level of use, higher integration will facilitate the accomplishment of the key tasks of a user.

RESEARCH METHOD

A questionnaire was sent by internal mail to 529 account managers in two major Canadian banks. In both banks, new systems were implemented two years ago to better support the account managers with their daily tasks. These systems were chosen for three main reasons. First, they provide similar functionalities to account managers of both banks. Second, the two systems were customizable, which was important given the fact that we wanted to study how users adapted them. Third, usage of the systems in each bank was voluntary. Account managers were chosen because their job offers them the flexibility needed to be able to modify their tasks quite freely. They are considered entrepreneurs who are rewarded on their performance and who are given latitude in terms of how they fulfill their roles. A total of 262 usable questionnaires have been returned for a response rate of 49.5%.

IT appraisal was measured using a 15-item instrument adapted from Folkman and Lazarus (1985). Measures of IT-user and IT-work system coping acts as well as a measure of level of integration were developed specifically for the present study. The method used to develop these measures was inspired from Moore and Benbasat (1991) and Pinsonneault and Heppel (1997). IT use was measured in terms of both the variety of applications used and its intensity. Individual performance was measured using a 25-item scale adapted from Torkzadeh and Doll (1999). Validation of instruments was conducted with 60 respondents of the two banks and yielded satisfactory results (Cronbach alphas ranged from .66 to .95). A series of *t*-tests revealed no significant differences between respondents from the two banks. Hence the questionnaires will be pooled to conduct further analyses using structural equation modeling (EQS).

Acknowledgments

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