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Psychological Mechanisms Underlying Individual Knowledge Learning and Contribution in Learning Organizations

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ABSTRACT

Although much has been written about how to set up learning organizations, there is a paucity of research on understanding employees' willingness to learn or contribute knowledge in such activities, a key element in the success of organizational learning. This paper presents models for understanding individuals' willingness to learn and individuals' willingness to contribute in organizational settings. Through the examination of the psychological mechanisms underlying individuals' willingness to learn and to contribute, we will further our understanding on the individual and contextual factors that affect employees' decision to learn and contribute in organizational learning activities. Drawing from the literature, we assert that in the learning model, willingness to learn would be affected by individual level variables such as learning orientation, risk-taking propensity and self-efficacy and contextual variables such as the quality of working relationship, organizational norms favoring learning and compensation systems favoring learning. For the contribution model, willingness to contribute would be affected by the same set of contextual variables while at the individual level, innovative cognitive style, expert power and self-efficacy are key to willingness to contribute.

INTRODUCTION

The capability to gather, leverage, and use knowledge effectively is a major source of sustainable competitive advantage of organizations in this knowledge era (Skyrme & Amidon, 1998; Trussler, 1998). Hence, concepts like knowledge management, organizational learning and learning organization have gained increased favor among academics and practitioners in recent years.

Knowledge management is concerned with ensuring that the explicit knowledge of individuals becomes a part of the organizational knowledge base and that it is used effectively; and that it contributes to changes in work practices, processes and products. Knowledge management is also concerned with ensuring that tacit knowledge is captured, mobilized and turned into explicit

knowledge which is then made accessible to others in the organization so that members do not have to relearn from the same stage all the time (Gore & Gore, 1999).

According to Crossan, Lane and White (1999), organizational learning has existed in our lexicon since Cangelosi and Dill (1965) discussed the topic over 30 years ago. Lately, although its popularity has grown dramatically (Crossan & Guatto, 1996), little convergence or consensus on what is meant by the term, or its basic nature, has emerged (Huber, 1991; Kim, 1993). In large part, the lack of convergence is due to the fact that different researchers have applied the concept of organizational learning, or at least the terminology, to different domains. Crossan et al. (1999) proposed that organizational learning be conceived of as a principal means of achieving the strategic renewal of an enterprise. Easterby-Smith (1997: 1086) argued that " ... there is a new tradition of literature on the learning organization which is largely distinct from literature on organizational learning. This new thread of literature, which is best characterized by Senge (1990) in the U.S. and by Pedler et al. (1989) in the U.K., contrasts with the established tradition in several ways. It has an action orientation, and is geared towards creating an ideal type, an organization in which learning is maximized. On the other hand, the literature on organizational learning is analytic and concentrates on understanding learning processes within organizational settings, without necessarily trying to change those processes."

We argue that knowledge management can be seen as a part of organizational learning. That is, organizational learning should be maximized and improved continuously in a learning organization, and knowledge management is one of the vehicles to facilitate organizational learning activities. The focus of all knowledge and learning is people, without whom knowledge can be neither generated, transmitted nor used. Knowledge only occurs to and resides in people's minds. One of the most important determinants of success in knowledge management and the quality of organizational learning is knowledge learning and contribution at the individual level. The critical question is: are employees ready and willing to learn and contribute in knowledge and learning activities of organizations? If not, what can organizations do to improve the situation and how?

According to the knowledge management literature, employees experience certain psychological barriers in knowledge learning and contribution (Davenport, Long & Beers, 1998; Trussler, 1998).

Employees are unwilling to learn. Learning entails costs. In addition to time and effort, those in a position to initiate learning behaviors may believe that they are placing themselves at image risk. Learning from mistakes is always easier said than done. When employees talk about their errors and failures, or ask for help from others, they may appear incompetent and dependent on another person, and thus suffer a blow to their images. Moreover, " such individuals may incur more tangible costs if their actions create unfavorable impressions on people who influence decisions about promotions, raises, or project assignments." (Edmondson, 1999: 351). Hence individuals in organizations are often reluctant to disclose their errors (Michael, 1976) or are unwilling to ask for help (Lee, 1997), even when doing so would provide benefits to the organizations.

Employees are unwilling to contribute. Employees may believe that their knowledge is critical to maintaining their own value in the organization and may thus be reluctant to share. There is a propensity to hoard knowledge, believing that their value and consequently their job security are inextricably tied to their personal expertise. Because of fear of layoffs, employees are reluctant to share information on mistakes or failures even though this knowledge is valuable to the company and could prevent others from committing the same errors. Alternatively, employees may be unable to share their knowledge with others because they just do not have the time to reflect on what could be valuable to others, and to codify and transfer it. Most people will make the daily trade-offs in favor of getting their day-to-day business done, rather than attempting to report and synthesize new learning.

Therefore we conclude that such attitudes in knowledge sharing and contribution could possibly be due to the lack of a conducive environment, an essential precondition in influencing the psychological environment of employees in individual knowledge learning and contribution

(Edmondson, 1999; MacDuffie, 1997). Jackson and Dutton (1988) found that individuals have a hard time seeing organizational events as "opportunities" unless they can rule out any sense of threat. According to threat rigidity theory (Staw, Sandelands & Dutton, 1981), threat is strongly associated with reduced search for external information and an increased likelihood of resorting to dominant, well-learned responses that may not be appropriate to the situation. The organizational context must both motivate individuals to frame issues as opportunities and convince them that it is feasible or reasonable to do so. Issues must be perceived as controllable, positive, and with potential gains. Therefore, in this paper, we will simultaneously examine the roles of organizational contextual factors and individual level factors in individuals' knowledge learning and contribution.

Two models, namely, a model for individual knowledge learning, and a model for individual knowledge contribution are developed in order to provide a better understanding of the decision processes of such individual behaviors. For this purpose, we draw on the literature on discretionary activities in organizations such as help-seeking (Anderson & Williams, 1996; Lee, 1997), risk-taking and trust (Mayer, Davis & Schoorman, 1995), issue selling (Ashford, Rothboard, Piderit & Dutton, 1998), taking charge (Morrison & Phelps, 1999), organizational citizenship behavior (Organ, 1990; Organ & Ryan, 1995; Pearce & Gregersen, 1991), innovation (Howell & Higgins, 1990), creativity (Tierney, Farmer & Graen, 1999), individual learning (Hayes and Allinson, 1998), team learning (Edmondson, 1999), and training (Noe, 1986; Noe & Wilk, 1993; Colquitt & Simmering, 1998). As suggested by Morrison and Phelps (1999), there are two important starting points for a model of such discretionary activities. The first is that effortful, discretionary behavior reflects a calculated and deliberate decision process; the second is that both contextual and individual-level factors affect this decision process.

The objectives of the two models are: (1) to examine both individual and contextual variables as antecedents to willingness to learn/contribute, (2) to investigate expectancy (expectation of probability of effort leading to performance) and valence variables as mediators of the effects of individual and situational factors on willingness to learn/contribute and (3) to investigate the role of both skill and motivational variables of individuals in the psychological mechanisms underlying individual knowledge contribution behavior.

The literature on knowledge management, organizational learning and learning organization have highlighted the importance of individual knowledge learning and contribution, but most of the researchers discuss learning as a dynamic process in a general cognitive sense (e.g., Crossan et al., 1999; Jones & Hendry, 1994). Furthermore, when they do deal with individual learning, the emphasis is predominantly on the effectiveness of learning by discussing individual cognitive or learning styles (Hayes & Allinson, 1997; 1998) and the contextual and cultural factors that facilitate effective general learning (Garvin, 1993; Hayes & Allinson, 1998). So far, to the researchers' best knowledge, no study is done concerning individual knowledge learning and contribution as defined in this study, that is, learning and contribution of technical expertise at work. None of the studies has examined the psychological mechanisms underlying individual knowledge learning and contributing behavior except the issue-selling study (Ashford et al., 1998). Issue-selling is a type of organizational learning activity (Ashford et al., 1998) and can be therefore understood as individual knowledge contributing behavior. However, the issue-selling study is different from this study in that it mainly focuses on the strategic issues that call an organization's attention to key trends, developments, and events that have implications for its performance (Dutton and Ashford, 1993). The types of issues that are sold range from changes in an organization's environment (e.g., technological or demographic changes) to more internally generated conditions, such as increasing employee dissatisfaction or changed goal levels (Ashford et al., 1998). As was pointed out by Weick and Ashford (1998), the way to increase organizational learning is to focus on the barriers to its component activities. Therefore, this paper aims to fill this gap. Particularly, we will examine the antecedents of willingness to learn and willingness to contribute at the individual level in organization settings.

MECHANISMS IN INDIVIDUAL KNOWLEDGE LEARNING AND CONTRIBUTION

Despite the recognized importance of individual knowledge learning and contribution in the workplace, we know little about what motivates such behavior. The issue-selling study of Ashford and her colleagues (1998) examined a kind of knowledge contributing activity, but they mainly looked at the strategic issues and particularly, the knowledge contribution of managers. In this study, we will focus on studying individual learning and contribution of knowledge, that is, technical know-how and expertise, especially those tacit ones (e.g. mistakes and failures at job) and the sharing of which may involve potential risks to employees' image or even job security. Technical expertise is defined as any technically useful knowledge for maintaining or improving task performance, including information about errors and mistakes at work. We develop models for individuals' willingness to learn and to contribute technical knowledge separately. We define constructs of willingness to learn and contribute as behaviors. Willingness to learn refers to the amount of time, energy or effort that employees are willing to devote to knowledge learning in organizational settings. Willingness to contribute refers to the amount of time, energy or effort that employees are willing to devote to knowledge contribution in organizational settings.

Individual learning is defined as the learning from mistakes and failures at work, and learning for task accomplishment and enhancement, by discussing or consulting with colleagues. Individual contribution is specified here as contribution in the way of sharing information about mistakes and errors at work, and one's innovative technical expertise. We argue that in the same person, willingness to learn and willingness to contribute form a self-reinforcing circle. When we look at learning from mistakes and failures, and contribution in the way of sharing information about mistakes and failures, willingness to learn and willingness to contribute are actually similar except that the intent is different. As to learning for task accomplishment or enhancement, and contributing innovative technical expertise, willingness to learn and willingness to contribute are mutually reinforcing because when a person is willing to contribute, naturally he/she would expect that others be willing to learn to benefit from their contribution; similarly when a person is willing to learn, he/she would expect that others be willing to help using their own knowledge. According to social exchange principles (Blau, 1964) and norms of reciprocity (Gouldner, 1960), we expect that if a person has such an expectation towards others, the person himself/herself should be more willing to learn/contribute. Although learning and contribution behaviors are discussed respectively, the antecedent factors for both are similar, given that we focus on image risks and costs.

There are three mediating factors in both models of learning and contribution; perceived probability of success, perceived benefits and perceived image risks. These three mediating factors are the key judgments underlying the decision to learn and contribute technical expertise in organizations.

Motivational theories suggest that effort exerted is related to expectancy beliefs (Ajzen, 1991; Vroom, 1964) and hence employees will actively assess the probability that learning/contribution will be successful when deciding whether to learn or contribute. Potential learners and contributors may have different expectations regarding the likelihood that efforts invested in learning or contributing will result in expected performance. Noe (1986) argued that Vroom's notions concerning effort perceptions as causes of behavior have particular relevance for employees' motivation to learn in training situations. Evidence from the extrarole behavior literature has demonstrated that willingness to engage in issue-selling (Ashford et al., 1998) and willingness to take charge (Morrison & Phelps, 1999) are related to expectations of likely success of employees. These beliefs capture, in part, the expected efficacy of action (Withey and Cooper, 1989). Thus if potential learners and contributors perceive major obstacles to their discretionary actions, they will estimate a low probability of learning/contributing success and should, therefore, be less willing to initiate such actions.

Proposition 1: Employees perceptions of the probability of learning success are positively related to (a) their willingness to learn, and (b) their willingness to contribute.

Perceived probability of learning/contributing success will be measured based on modifications of the work done on issue-selling (Ashford et al., 1998). For perceived probability of learning, employees would be asked the extent to which: (1) They are confident that they could carry out learning successfully in their work organization; (2) They believe that they could get the needed responses and help from their coworkers in their work organization; (3) They are confident that their efforts made in learning will lead to expected mastering of new technical knowledge. For perceived probability of contributing success, employees are asked similar questions; the extent to which: (1) They are confident that they could carry out knowledge contribution successfully in their work organization; (2) They believe that they could get the expected responses and recognition from their coworkers in knowledge contribution in their work organization; (3) They believe that they could get the expected responses and recognition from their supervisor(s) in their work organization in knowledge contribution; (4) They are confident that their efforts made in knowledge contribution will lead to expected adoption of the innovative technical knowledge in work practices.

Subjective expected utility frameworks such as expectancy theory (Vroom, 1964) suggest that employees will also consider the valence of the outcomes in deciding to engage in certain effort. In some cases it means a joint consideration of relative costs and benefits, if there exists any cost in the intended behavior. In the literature on individual learning in training programs (Noe, 1986), desirable outcomes such as promotions, salary increases, or prestige resulting from skill and knowledge acquisition were argued to influence motivation to learn. In the issue-selling study of Ashford and her colleagues (1998), they considered the costs involved in issue-selling such as impression management risks and have argued that employees will be less likely to sell issues if they sense a threat to their images from doing so, without discussing explicitly about the role of anticipated benefits in the decision process. Individual knowledge learning and contribution clearly involve both potential risks and positive consequences for the learners and contributors. Therefore the second key judgment, an assessment of likely consequences in this study implies that employees will weigh anticipated costs against anticipated benefits when deciding whether to engage in learning or contribution. Perceived risks in learning/contribution will lower willingness to learn/contribute: whereas perceived benefits will help enhance willingness to learn/contribute. It therefore follows that:

Proposition 2: Employees' perceptions of benefits in learning are positively associated with (a) their willingness to learn and (b) their willingness to contribute.

Proposition 3: Employees' perceptions of risks in learning are negatively associated with (a) their willingness to learn and (b) their willingness to contribute.

Based on the research on training (Noe & Wilk, 1993), perceived benefits in learning/contribution are operationalized as personal, job and career benefits. Employees would be asked if learning and contributing activities at work would increase the chances of getting a promotion, getting a salary increase etc. Drawing on the research on feedback-seeking (Ashford, 1986), perceived risks in learning/contribution are operationalized as potential image costs that employees perceive such as lower ability as perceived by supervisors.

Based on evidence from the stress and coping and cognitive dissonance literatures, Ashford and her colleagues (1998) have found that (1) perceived image risks influence employees' decisions about selling an issue, and (2) employees take image risk into account in their cognitive assessments of the probability of selling success. In other words, when people are fearful of perceived risks, they cognitively reassess their expectations for success. In so doing, they justify their fears and unwillingness to sell issues by rationalizing that the probability of success is already low. We expect that this would also be the case in individual knowledge learning and contribution. Potential learners and contributors choose to use a rational rather than an emotional explanation for justifying their unwillingness to learn/contribute. They reduce the distress resulting from figuring out how much perceived image risk is allowed to guide their behavior by convincing themselves to believe that they will be unsuccessful. They cope by rationalizing or intellectualizing their stress. Hence, the following propositions are offered.

Proposition 4a: Employees' perceptions of risks in learning are negatively associated with the perceived probability of success in learning.

Proposition 4b: Employees' perceptions of risks in contribution are negatively associated with the perceived probability of success in contribution.

CONTEXTUAL FACTORS

Context favorability has been suggested as a critical influencing factor in the literature on discretionary employees' behavior, such as help-seeking (Anderson & Williams, 1996; Lee, 1997), risk-taking and trust (Mayer et al., 1995), issue selling (Ashford et al., 1998), taking charge (Morrison & Phelps, 1999), OCB (Organ, 1990; Organ & Ryan, 1995; Pearce & Gregersen, 1991), innovation (Scott & Bruce, 1994), creativity (Tierney et al., 1999), individual learning (Hayes and Allinson, 1998), team learning (Edmondson, 1999), and training (Noe, 1986; Noe & Wilk, 1993). In the interest of parsimony, only those variables that could be directly related, at a theoretical level, to the judgments underlying the decision to learn/contribute, are proposed as antecedent factors. They are (a) quality of work relationships, (b) norms and (c) the compensation systems.

Quality of Work Relationships. In the issue-selling study by Ashford et al. (1998), perceived organizational support, top management's openness, and relationship quality have been found to be pivotal in prompting or discouraging the selling of gender-equity issues. Their work suggests that if employees perceive top management to respond favorably (or at least not negatively) to a risky change-oriented activity, they will feel more confident of success and less concerned about political and image risks. The literature on individual learning and organizational learning (Edmondson, 1996, 1999; Garvin, 1993; MacDuffie, 1997; Noe & Wilk, 1993) emphasized open communication, social support for individual learning initiatives that are linked to the organization's goals and values, tolerance for errors, and support of experimentation and risk taking from management as key favorable environmental factors for learning. Studies on help-seeking (Anderson & Williams, 1996), employees' innovative behavior and creativity (Basu & Green, 1997; Scott & Bruce, 1994; Tierney et al., 1999) have proposed that high quality Leader-Member Exchange (LMX) is positively related to employees' innovative behavior or creativity because employees would perceive more support, fairness and trust in such relationships. High LMX employees are also more likely to engage in job-related risk taking (Graen & Cashman, 1975). In addition, Anderson & Williams (1996) also found a positive relationship between the quality of relationship and help-seeking, and a negative relationship between the quality of relationship and the perceived costs associated with seeking help.

Considering the above evidence, the quality of work relationships in this study will focus on three levels; the relationship between employees and top management, the relationship between employees and their direct supervisors, and the relationship among peers. High quality work relationships in these three areas will enhance employees' perceptions of probability of success and benefits, and will reduce perceived risks in learning/contribution. In particular, the relationship between employees and top management will be operationalized as top management's openness. Employees will assess the attitudes of the top management towards suggestions and recommendations from employees at their level in the organization. A sample item is: " Good ideas get serious consideration from top management." (Ashford et al., 1998). Scales from the Leader-Member Exchange (LMX) literature will be used to measure the relationship between employees and their supervisors and one sample item is: " I usually know where I stand with my supervisor" (Basu, 1997). Relationship quality among peers is operationalized by asking employees about their feelings about the working relationship between their peers and them. One sample item is: " Regardless of how much formal organizational authority this co-worker has built into her/his position, what are the chances that she/he would be personally inclined to use power to help you solve problems in your work?" (Anderson & Williams, 1996).

Norms. The second aspect of context favorability is one in which there are norms favoring individual knowledge learning and contribution. Organizational norms exert strong influence on

individuals within organizations as they define what are appropriate and inappropriate behaviors, and more importantly provide cues about what the organization values (Feldman, 1984; Orlikowski, 1992; Schein, 1993). Both organizational culture researchers and innovation researchers argue that norms supporting risk taking or speaking out can encourage innovation and creative behaviors (Bunce & West, 1995; Kanter, 1983; O'Reilly 1989; Scott & Bruce, 1994). When such norms exist and expectations are clear, they provide guidelines for people about the appropriateness of an activity. Previous research has found that proper norms can encourage desired discretionary behavior of employees in the field of help seeking (Lee, 1997), issue selling (Ashford et al., 1998) and extra-role behavior (Morrison & Phelps, 1999). Particularly, in the latter two studies, the authors proposed that favorable norms could make employees perceive higher likelihood of success, more benefits and lower risks. Therefore, the presence of norms promoting individual knowledge learning and contributing should enhance employees' expectations of success, increase perceived benefits, and reduce perceived risks in learning and contribution.

Based on research on issue-selling (Ashford et al., 1998), norms favoring learning/contribution are operationalized by asking employees if they feel that they are encouraged to learn/contribute as specified in this study. For example, " In my work organization, people are encouraged to learn/contribute by discussing errors and failures at work with coworkers."

Compensation Systems. The final aspect of context favorability is compensation systems favoring individual knowledge learning and contribution. Hansen et al. (1999) and Davenport et al. (1998) argued that a compensation system favoring knowledge sharing was an indispensable antecedent of successful knowledge management in organizations. Employees need incentives to participate in the knowledge sharing process. Hence if there are compensation systems encouraging employees to learn and contribute as defined in the present study, they should be more likely to learn or contribute with a higher estimate of direct benefits. Davenport et al. (1998) provided an example of Buckman Laboratories where upon the introduction of its new knowledge-sharing network, executives rewarded the top 150 " knowledge sharers" (judged by knowledge managers and knowledge network facilitators) with a new laptop computer and an elaborate company trip to a resort. The high-profile event generated considerable discussion among those not chosen and immediately increased participation in the new knowledge-sharing network. The existence of such a compensation system will also convey information to employees that prompts learning and contribution, which implies a higher likelihood of success and a reduced sense of threat. In the literature on individual risk behavior in organization settings, the organization's control system is one of the organizational characteristics that have been suggested as influencing decision-maker risk behavior (March & Shapira, 1987). When the outcomes of risky decisions are rewarded or punished, or the willingness to take risks is encouraged or discouraged as part of an effective decision-making process, the organization is viewed as ultimately channeling the decision maker's risk behavior by monitoring, evaluating, and rewarding the outcomes achieved and processes used (Ouchi, 1977). These arguments suggest that compensation systems should influence employees' perceived probability of success, benefits, and risks in learning and contribution.

Compensation systems are operationalized by asking employees if they agree that learning/contribution is encouraged by compensation systems in the organization. One sample item is: " Learning/Contribution by discussing errors and failures at work is encouraged by compensation systems throughout the organization" .

In conclusion, propositions are offered as follows:

Proposition 5ai: The favorability of the organizational context (indexed by higher quality of working relationship, the existence of norms and compensation systems favoring individual knowledge learning) is positively associated with employees' perceived probability of success in learning.

Proposition 5aaii: The favorability of the organizational context (indexed by higher quality of working relationship, the existence of norms and compensation systems favoring individual

knowledge learning) is positively associated with employees' perceived benefits in learning.

Proposition 5aⁱⁱⁱ: The favorability of the organizational context (indexed by higher quality of working relationship, the existence of norms and compensation systems favoring individual knowledge learning) is negatively associated with employees' perceived risks in learning.

Proposition 5bⁱ: The favorability of the organizational context (indexed by higher quality of working relationship, the existence of norms and compensation systems favoring individual knowledge contribution) is positively associated with employees' perceived probability of success in contribution.

Proposition 5bⁱⁱ: The favorability of the organizational context (indexed by higher quality of working relationship, the existence of norms and compensation systems favoring individual knowledge contribution) is positively associated with employees' perceived benefits in contribution.

Proposition 5bⁱⁱⁱ: The favorability of the organizational context (indexed by higher quality of working relationship, the existence of norms and compensation systems favoring individual knowledge contribution) is negatively associated with employees' perceived risks in contribution.

INDIVIDUAL LEVEL FACTOR COMMON TO BOTH MODELS

The two individual level antecedent constructs in both models are individual learning propensity and individual contributing propensity. Individual learning propensity consists of learning orientation, risk taking propensity and self-efficacy; and individual contributing propensity consists of innovative cognitive style, self-efficacy and expert power. Self-efficacy is the common individual level factor in both models.

Self-efficacy is derived from social cognitive theory. It refers to one's belief in one's capability to perform a specific task (Bandura, 1977, 1978). Although self-efficacy has been primarily conceptualized as a situation-specific belief, there is evidence that the experiences of personal mastery that contribute to efficacy expectancies generalize to actions other than the target behavior (Bandura, et al., 1977). Sherer, Maddox, Mercandante, Prentice-Dunn, Jacobs, and Rogers (1982) argued that individuals also possess generalized self-efficacy beliefs that apply across situations and they provided proof of the construct validity of generalized self-efficacy. In the empirical study on personal initiative (Speier & Frese, 1997) and taking charge (Morrison and Phelps, 1999), generalized self-efficacy has been found to increase personal initiative and willingness to take charge.

Individuals with a high level of self-efficacy will exert considerable effort in order to cope with situations that may demand new behavior patterns or higher performance levels. Individuals with low self-efficacy tend to dwell on their personal deficiencies (Bandura, 1991). They become more self-diagnostic than task diagnostic (Kanfer, 1987), which leads to diminished learning. Noe and Wilk (1993) have argued that self-efficacy indirectly influences development activity of employees through its effects on learning attitudes, perceptions of development needs, and perceptions of benefits resulting from development activity. Evidence from extra-role-behavior literature (Graham, 1986; Morrison & Phelps, 1999; Speier & Frese, 1997; Withey & Cooper, 1989) suggest that individuals with high self-efficacy will tend to attach a higher likelihood of success to calculative discretionary behavior and will thus be more likely to attempt such behavior. There is also evidence that self-efficacy affects the perceived benefits and costs associated with risky behavior. Sitkin and Pablo (1992) demonstrated that individuals with high self-efficacy tend to underestimate the risks associated with any given course of action and tend to overestimate their ability to overcome those risks. Thus the higher one's self-efficacy, the higher the perceived probability of learning/contribution success, the more perceived benefits and the fewer perceived risks in learning/contribution.

Generalized self-efficacy is operationalized by asking employees about their beliefs about their own abilities in specific technical areas. Sample items include: " When I make plans, I am certain I can

make them work" and "If I can't do a job the first time, I keep trying until I can" (Morrison and Phelps, 1999; Sherer et al., 1982).

INDIVIDUAL LEVEL FACTORS SPECIFIC TO THE LEARNING MODEL

In the learning model, at the individual level, individual learning propensity as indexed by learning orientation, risk taking propensity and self-efficacy is hypothesized to affect one's evaluation of learning outcomes.

Individual learning propensity is defined as individual level qualities that make one more likely to learn technical "know-how" through discussing mistakes or failures, to learn in need of task accomplishment or improvement, from others in an organization.

Learning orientation is one form of goal orientation, originally derived from Dweck's work with children in the education domain (e.g. Dweck, 1986, 1989). Goal orientation is a relatively stable dispositional variable that assumes two forms: (a) a learning orientation in which increasing competence by developing new skills is the focus and (b) a performance orientation in which demonstrating competence by meeting normative-based standards is deemed critical (Colquitt & Simmering, 1998). While Dweck (1986) seems to describe the two orientations as ends of a continuum, evidence suggests that they are two separate dimensions (Farr, Hofmann, & Ringenbach, 1993). Subsequent research has supported the construct validity of learning and performance orientation as distinct constructs (Button, Mathieu, & Zajac, 1996; Colquitt and Simmering, 1998; Phillips & Gully, 1997). In this study, the latter theoretical position is taken. Furthermore, only the role of learning orientation is considered in individual knowledge learning activities because empirical evidence from the study of Colquitt and Simmering (1998) on employees' learning in training programs demonstrates that learning orientation is positively related to motivation to learn by the mediation of both expectancy and valence, whereas performance orientation is negatively related to motivation to learn by means of expectancy only.

According to Dweck and her colleagues (1993), entity theorists believe that ability levels are fixed, whereas incremental theorists believe that ability levels are malleable and can be increased. Meanwhile, "studies have shown that if employees conceive of ability as an incremental skill, they tend to spend more time diagnosing the task, are less prone to the negative impact of failures (e.g., stress, anxiety), and ultimately maintain higher levels of personal efficacy. However, when the employee perceives ability as a given entity, he or she will likely see mistakes as indicative of intellectual (in)capacity, which may imply lack of personal control. The perceived lack of control leads to anxiety which, in turn, diminishes learning" (Stajkovic & Luthans, 1998: 71).

Previous research has demonstrated that the more learning oriented individuals are, the more they subscribe to the incremental theorists' position that ability levels can be increased to achieve success (Dweck, 1986, 1989) and to correct poor progress (Button, Mathieu & Zajac, 1996). Such beliefs should buffer these individuals against large decreases in expectancy (Bobko & Colella, 1994) and suggest a positive relationship between learning orientation and expectancy. Moreover, individuals who are strong in learning-orientation are more likely to seek challenges and view high performance as indicative of increased mastery. Such individuals are also more likely to engage in problem solving and altering of strategies when they encounter low performance levels (Dweck & Leggett, 1988; Elliott & Oweck, 1988). So, one would therefore expect that the more learning oriented a potential learner is, the more he or she would place value on continuous learning at the workplace and the less risks he/she would perceive in doing so. That is, the higher one's learning orientation, the more one would believe that successful outcomes are likely and would tend to perceive more benefits and less risks in knowledge learning. Learning orientation is measured by asking employees their attitudes towards the opportunity to do challenging work and to learn new things. One sample item is: "I prefer to work on tasks that force me to learn new things." (Button et al., 1996)

The second dispositional quality of individual learning propensity is risk-taking tendency. Lee (1997) and Edmondson (1999) argued that those employees who ask for help, initiate learning, or

admit errors and failures at work may believe they are placing themselves at image risk. Similarly, research has shown that the sense of threat evoked in organizations by discussing problems limits individuals' willingness to engage in problem-solving activities (Dutton, 1993; MacDuffie, 1997). Previous research suggests that people with a higher risk-taking tendency enjoy risk taking and tend to take more specific risks than others (Kogan & Wallach, 1964). In contrast to risk-averse people who attend to and weigh negative outcomes more heavily than positive outcomes (Schneider & Lopes, 1986), people with a tendency toward risk taking are thought to perceive risks to be lower (Brockhaus, 1980; Sitkin & Pablo, 1992) and benefits to be more. These arguments suggest that employees' risk taking propensity is positively related to their perceived probability of success and benefits in learning, and is negatively related to perceived risks. Risk-taking propensity is operationalized by asking the attitudes of employees towards risk at work. Sample items include: " I am not willing to take risks when choosing a job or a company to work for" and " I prefer a low risk/high security job with a steady salary over a job that offers high risks and high rewards." (Gomez-Mejia & Balkin, 1989). In conclusion, the following proposition is offered:

Proposition 6a: Employees' learning propensity (indexed by higher levels of learning orientation, risk-taking propensity, and self-efficacy) is positively associated with (i) their perceived probability of success in learning, (ii) their perceived benefits in learning and (iii) negatively associated with their perceived risks in learning.

INDIVIDUAL LEVEL FACTORS SPECIFIC TO THE CONTRIBUTION MODEL

In the knowledge contribution model, individual contributing propensity is defined as individual level qualities that make employees more likely to contribute through talking about one' s mistakes or failures at work, or to contribute innovative technical ideas directly/indirectly to organizational knowledge base. Individual contributing propensity consists of innovative cognitive style, self-efficacy, and expert power.

Kirton (1976) defines cognitive style as a natural orientation or preferred means of problem solving which can range from innovative to adaptive. A person with an innovative cognitive style will seek and integrate diverse information, redefine posed problems, and generate ideas likely to deviate from the norm. Creativity researchers have recognized it as a creativity-relevant skill (e.g., Amabile, 1983, 1988).

In their study of technological innovation champions in 25 companies, Howell and Higgins (1990) found that risk-taking and innovativeness are the two most predominant personality characteristics of champions. In the issue-selling study, Ashford and her colleagues (1998) also argued that risk-taking propensity would have a positive effect on issue-selling by elevating expectations of success and decreasing image risk assessments. Although their empirical research findings did not support this argument, it is nevertheless important. It should be noted that in the Ashford et al. study, they specifically focused on selling gender-equity issues, whereas in this study, we focus on knowledge contributing behavior that would involve more potentially perceived risks in today' s organization settings.

On the other hand, Goldsmith (1984; 1986; 1989) also pointed out that compared with adapters, innovators are more likely to identify themselves as greater risk takers and argued that innovators have greater need to take risks and seek external stimulations. Adaptation-innovation is the result of the interaction of many traits, especially risk-taking and sensation seeking. Goldsmith (1989) pointed out the role of personal traits such as that of tolerance for regret, willingness to take risk and the ability to imagine alternative outcomes for decisions in one' s tendency towards consistent innovative decisions. Therefore employees with an innovative cognitive style will be more likely to contribute by sharing information about mistakes and failures at work and by contributing innovative technical know-how because they are more capable, motivated and ready to do so. Innovative cognitive style is operationalized by asking employees to indicate the degree of difficulty if they are asked to present, consistently and for a long time, a certain image of themselves to others. Sample items include " I have original ideas" and " I proliferate ideas."

(Kirton, 1976).

Morrison and Phelps (1999) argued in their study that expert power is positively related to taking charge. Expert power is defined as the degree to which the employing organization is dependent on the employee for critical knowledge or skills (French & Raven, 1959; Salancik & Pfeffer, 1977). Because power implies greater discretion and credibility and less resistance from others, employees with high levels of expert power should feel more confident that they can bring about change successfully (Ashford & Taylor, 1990; Dutton & Ashford, 1993; Frese et al., 1996; Morrison & Phelps, 1999; Staw & Boettger, 1990). Expert power is also likely to encourage employees to initiate changes at work by lowering the perceived costs and increasing the perceived benefits associated with that activity. Expert power is operationalized by asking employees about their colleagues' dependence on them for work-related technical expertise. One sample item is: " My colleagues approach me for advice on work-related problems because I am usually right." (Rahim, 1988)

The following proposition is offered:

Proposition 6b: Employees' individual contributing propensity (indexed by innovative cognitive style, self-efficacy, and expert power) is positively associated with (i) their perceived probability of success in contribution, (ii) their perceived benefits in contribution and (iii) negatively associated with their perceived risks in contribution.

THEORETICAL AND PRACTICAL IMPLICATIONS OF THIS PAPER

We have developed a theoretical model on how individuals decide to learn and contribute to organizational learning activities. Empirical work is needed to identify the extent to which our identified factors affect such activities.

Theoretically, this study will contribute to the literature in two ways. First, it will shed light on the psychological mechanisms underlying individual knowledge learning and contributing behaviors in organization settings. Potential learners or contributors often feel in conflict around whether to learn or contribute. From learning and contributing, employees can acquire certain favorable career benefits. Moreover, individuals can use such a chance strategically to develop interpersonal alliances. On the other hand, however, there are also potential negative effects in such learning and contributing activities. Learning and contributing by sharing information on mistakes and errors at work will enable individuals and organizations to achieve efficiency and/or effectiveness through cost reduction from no or low error repetition. But self-revelation of mistakes and failures at job may incur image costs and even tangible costs to the individual. With reference to task achievement and improvement, Lee (1997) and Edmondson (1999) asserted that those in a position to initiate learning behavior may believe they are placing themselves at risk because an individual may appear incompetent and dependent on another person and thus suffer a blow to his/her image. Contribution of innovative technical expertise has potential risks too; a damaged reputation if the proposal is taken as inappropriate or threateningly dysfunctional, or even job insecurity because an individual may believe that one will lose one's value as an employee in an organization by such contribution. Moreover, knowledge learning and contribution as specified in this study takes time and effort. In conclusion, there exist both costs and benefits associated with individual knowledge learning and contribution that are effortful and discretionary behaviors at workplace. As such, the psychological mechanisms underlying such decision processes are calculated and deliberated.

Secondly, the testing of the two models will reveal the relative salience of not only individual level variables and contextual level variables, but also distal and proximate contextual variables in individuals' decision processes concerning knowledge learning and contribution. The quality of working relationship in our models comprises three levels of relationships, the relationship between employees and top management, the relationship between employees and their direct supervisors, and the relationship among peers. According to Pierce, Dunham, and Cummings (1984), people are influenced to a greater degree by more salient and proximate stimuli (e.g., one's immediate work space, those with whom one interacts on a project) than they are by more distal

stimuli (e.g., organizational structure, top managers at other locations). The testing of these two models will go further in improving our understanding in this respect by revealing the relative salience of two different proximate contextual variables; the relationship quality between the direct supervisor and an employee, and that between peers.

Practitioners can also reap useful prescriptive information from the models of individual knowledge learning and contribution. This is because we not only shift the emphasis on the examination of individual knowledge learning and contribution from a general cognitive sense to a more particular technical expertise level, but also delineates the different antecedents of learning and contribution. By doing so, the study can be of great practical help to practitioners who are interested in exploring people's initiative in organizations' knowledge management and organizational learning programs. Learning and contributing are processes that feed into each other and that which forms a reinforcing cycle. However, in a learning organization, knowledge learning and contribution are two separate activities. An organization can use the above models as diagnostic tools in understanding which aspects of the process to improve on. For example, there are selection implications on individuals' antecedents to learning and contributing such as risk taking propensity, innovative cognitive style as delineated in the models. In addition, organizations that aim at maximizing organizational learning can enhance perceived expert power of employees through providing training programs and encouraging individual knowledge learning; organizations can also enhance perceived self-efficacy of employees through motivation or training programs (Gist & Mitchell, 1992; Latham & Frayne, 1989; Parker, 1998). In particular, organizations can increase employees' self-efficacy by providing information that gives them a more thorough understanding of the task attributes, complexity of task environment, and the way in which these factors can be best controlled (Gist & Mitchell, 1992). Other than focusing on the individual level, organizations can foster and enhance individual's willingness to learn and contribute by cultivating relevant contextual factors in the way of improving quality of working relationship, establishing norms that favor individual knowledge learning and contribution, and adopting compensation systems that encourage individual knowledge learning and contribution. In other words, with a better understanding of the roles of individual and contextual variables in the two models, practitioners can see how and what they can do in improving organization's knowledge management and learning activities.

In sum, by separate specific examinations of individual's willingness to learn and contribute in terms of sharing information about mistakes and failures at work, the models will facilitate the process of "learning from mistakes" in organizations. In Garvin's (1993) article "Building a Learning Organization", he observed that a study of more than 150 new products concluded that "the knowledge gained from failures is often instrumental in achieving subsequent successes - in the simplest terms, failures are the ultimate teacher." IBM's 360 computer series, for example, one of the most popular and profitable ever built, was based on the technology of the failed Stretch computer that preceded it. Both individual employees and organizations can benefit from improving core competencies and capabilities by doing so, and thus claiming a sustainable competitive advantage in today's dynamic economic world. Thus we believe the models will prove useful in helping organizations minimize employees' unwillingness to learn or contribute with respect to mistakes and failures at work.

Figure 1
Model of Individual Knowledge Learning

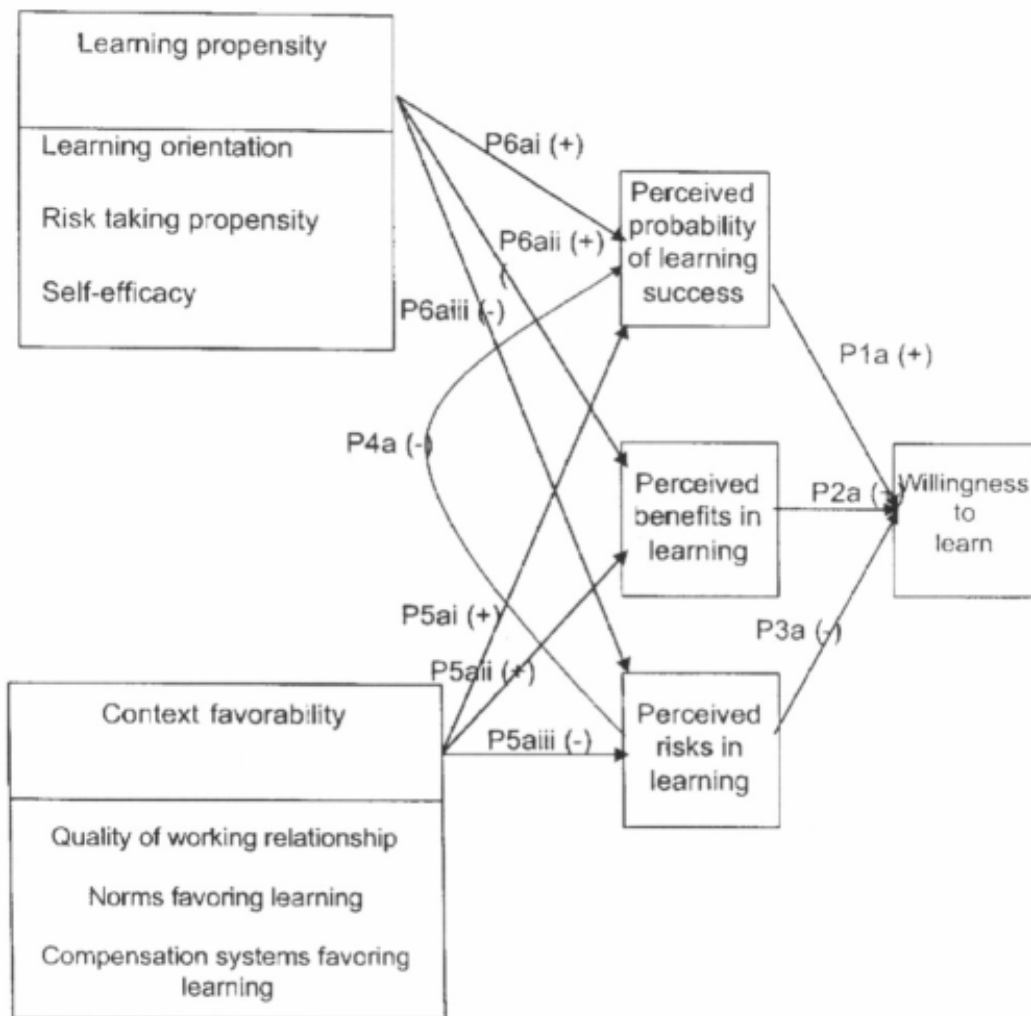
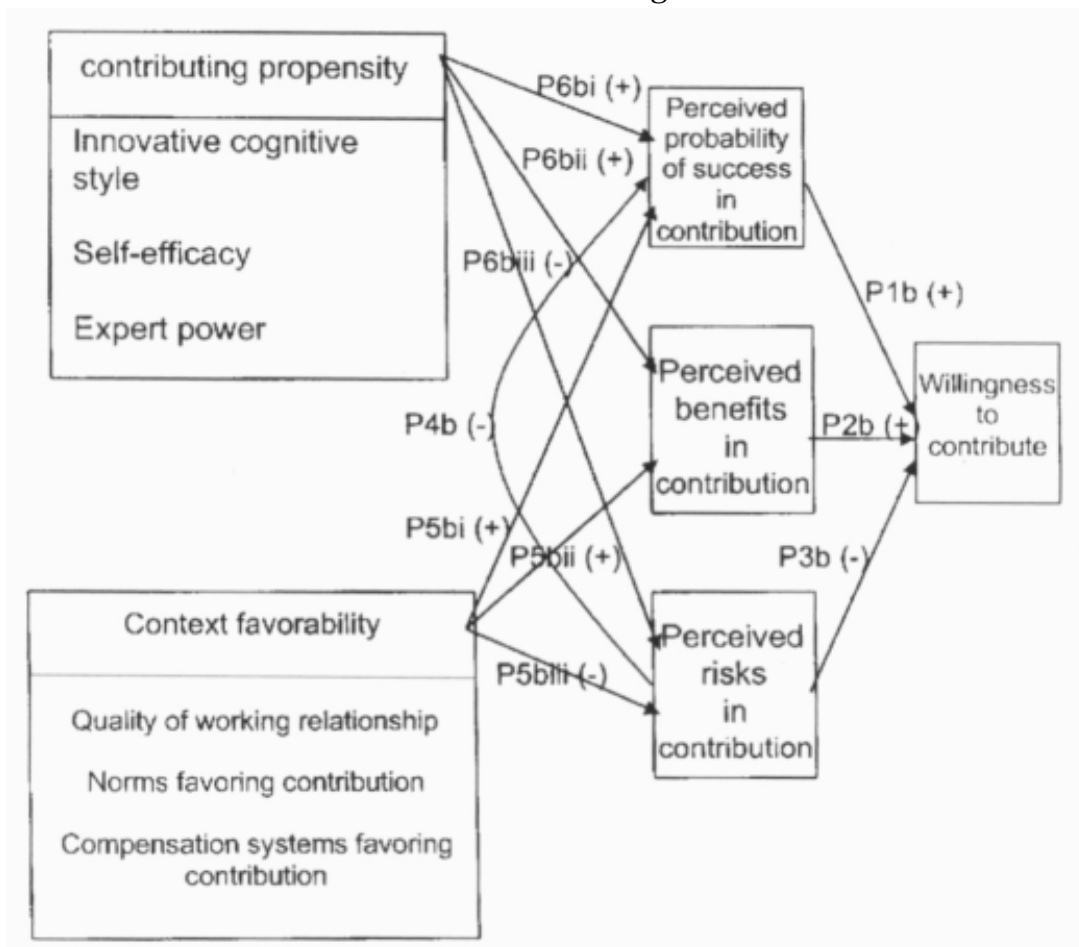


Figure 2
Model of Individual Knowledge Contribution



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