



# Innovative Work and Citizenship Behaviors from Information Technology Professionals: Effects of Their Psychological Contract

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## ABSTRACT

*Little is known about the effects of the level of fulfillment of the IT professional's psychological contract on their innovative work and organizational citizenship behaviors. Using psychological contract and social information processing theories, this article proposes to answer the research question: How does the level of fulfillment of the IT professionals' psychological contract affect their organizational citizenship and innovative work behaviors? Survey data were collected from 209 IT professionals using group-administered paper and online surveys. Results show positive relationships with the level of fulfillment of the IT professional's psychological contract and their innovative work behavior, as well as four of their organizational citizenship behaviors, specifically loyalty, advocacy participation, obedience, and functional participation. Extending the body of knowledge, the dimensional approach of the psychological contract was used resulting in the scope, focus, and tangibility dimensions being the most significant predictors of the organizational behaviors.*

*Keywords:* human capital; IS personnel; IT management; IT professional; organizational effectiveness; organizational innovation

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## INTRODUCTION

Management continues to view information technology (IT) professionals as human capital, a resource used to maximize organizational effectiveness, which might include looking for

ways to cut IT costs, enhancing performance, and/or maximizing organizational goals (Josefek & Kauffman, 2003). In coordination with these goals, IT departments today are expected to be leaner, yet multi-talented and innovative

(Koch, 2006). Pring (2003) emphasizes that organizations still need innovation and value delivered from their IT professionals, even when organizations focus on cost management with respect to IT service providers. And while organizational effectiveness is affected by the productivity and performance of employees, there are other work behaviors beyond the dependable role performance that are also sought after by management. Two such extra-role behaviors are innovative work and organizational citizenship.

Research and practitioner literature stresses the importance of innovation and organizational citizenship in IT professionals. While an IT professional's job may have an implicit degree of creative and innovative requirements to it, organizations may have difficulty objectively monitoring creativity and innovation. Koch (2006) states that IT departments continue to need IT professionals who have in-depth technology knowledge and who can also create new products and capabilities. Innovative work may also be an accepted element to the job, as evidenced by one IT professional who was quoted saying, "...it's all about solving problems of the business...and there's always something new to learn" (Murphy, 2005). According to *CIO Magazine*, even when organizations are faced with mandates to cut costs while creating competitive advantage, chief information officers (CIO) are also charged with emphasizing innovation (Varon, 2005). In fact, 65% of the CIOs surveyed believe that "bringing ideas for IT-enabled business innovation to the table is a significant or dominant aspect of their roles" (Varon, 2005).

Organizational citizenship is also a vital component to organizational effectiveness, as well as a vital component of the IT professionals' performance as evidenced by continued research investigating predictors of the behavior (Ang & Slaughter, 2001; Moore & Love, 2005). Ang and Slaughter's investigation finds contract workers exhibit lower extra-role (citizenship) behaviors than permanent systems developers, and they also find that the supervisors rate contract workers lower than permanent

systems developers with respect to their loyalty and obedience. Finding differences by job category, Moore and Love find that levels of organizational citizenship behaviors are lower in the IT employees than the employees from work areas other than IT.

The current IT job market complicates this situation, in that organizations must also consider management strategies to keep their IT professionals engaged, productive, appreciated, and on the job, or lose them to another company (McGee, 2005; Motti, 2006). The psychological contract, the employee-employer relationship with respect to obligations to each, has been theorized to unite the employee with their organization and regulate their behaviors (Robinson, Kraatz, & Rousseau, 1994). An online poll indicated that 69% of the IT professionals surveyed were looking for a new employment position, and their number one reason was that they did not like the current employers' management or culture (McGee, 2005). Research shows that when the psychological contract is breached or violated, results can be lower job satisfaction (Robinson & Rousseau, 1994), organizational commitment (Coyle-Shapiro & Kessler, 2002; Suazo, Turnley, & Mai-Dalton, 2005), and organizational citizenship behaviors (Coyle-Shapiro, 2002; Robinson, 1996; Robinson & Morrison, 1995).

Psychological contract research has been conducted with professions from a wide variety of industries, for example, government employees (Coyle-Shapiro, 2002), professional workers from the banking and hospital industries (Van Dyne & Ang, 1998), and professional employees from aerospace, electronics, and accounting firms (Porter, Pearce, Tripoli, & Lewis, 1998), improving the generalizability of the research. Yet, there has been little empirical research sampling IT professionals, and until recently no direct research of their psychological contract (Martinez, 2004). And while some IT research supports differences between IT and non-IT professionals' attitudes and behaviors (Cougar, Zawacki, & Oppermann, 1979; Moore & Love, 2005), justifying a study of IT professionals, there is also research questioning

those differences (Wynekoop & Walz, 1998). Current research offers no distinctions for the IT profession, and with the present volatility of the IT job market and high expectations of innovation and performance by management, this study proposes to shed some light into the relationship between the perceptions of the IT professionals' level of fulfillment of their psychological contract and their innovative work behavior and organizational citizenship behaviors.

This article presents an empirical study that examines the relationship between the perceptions of the IT professionals' level of fulfillment of their psychological contract and their innovative work behavior and organizational citizenship behaviors. This article is organized as follows. First, the theoretical framework and relevant literature is presented followed by a discussion of the research model, and hypotheses. Then, the methodology is discussed, followed by the results of the data analysis. The article closes with discussion of the implications for practice and research.

## LITERATURE REVIEW

The study offers two complementary theoretical perspectives together in examining the IT professional's perceptions of the employer-employee relationship and resulting organizational behaviors. Researchers have drawn on Rousseau's (1989) psychological contract theory to help explain differences in employee attitudes and behaviors in the work place (Coyle-Shapiro, 2002; Janssen, 2000; Sels, Janssens, & Van Den Brande, 2004). The psychological contract perspective has also been applied to identify perceptions of IT outsourcing success (Koh, Ang, & Straub, 2004).

Salancik and Pfeffer's (1978) social information processing theory explains that employees receive social cues from not only their own behaviors, but also their employer's behaviors. These social cues can modify their beliefs of perceived obligations owed to and from their employers. Herriot and Pemberton (1997) parallels this view by proposing that development of the psychological contract is

a social process, because beliefs of the contract originate from each party through direct or indirect communication.

This study uses both theories to examine the IT professionals' perceptions regarding their employers' fulfillment of those obligations within the realm of the psychological contract and subsequent effects to their organizational behaviors—organizational citizenship and innovative work. Specifically, this study proposes to answer the question: How does the level of fulfillment of the IT professionals' psychological contract affect their organizational citizenship and innovative work behaviors?

## Fulfillment of Psychological Contract

Rousseau (1989) defines the psychological contract as "an employee's beliefs regarding the terms and conditions of a reciprocal exchange agreement between that focal person and another party" (p. 123). While the psychological contract is normally perceived as unwritten, it has "the power of self-fulfilling prophecies: they can create the future" (Rousseau, 1995, p. 9). The employee's perceptions form the psychological contract, which in turn becomes a reciprocal obligation. Hence, the employee believes certain obligations are owed to the employer, for example, loyalty or hard work, and in turn, the employee will receive certain inducements from the employer, such as job security and good pay (Rousseau, 1990). Consequently, the employee's psychological contract is the essence of the perceived relationship formed between the employee and employer, yet because the terms are subjective, parties to this relationship may not necessarily agree to its terms (Rousseau, 1989).

The degree of fulfillment, change, breach, or violation perceived within the context of the psychological contract refers to the instance where the employer may fail to live up to some aspect of their obligations, and the employee, in turn, believes less is owed to their employer (Robinson & Morrison, 1995; Robinson & Rousseau, 1994; Rousseau & Tijoriwala, 1998). Most research empirically measures

the psychological contract or the fulfillment of the psychological contract using the evaluation or content approach, which examines the specific aspects or tangible terms of the perceived employer-employee relationship, for example, employer's obligations of high pay and career development (Robinson, 1996; Rousseau, 1990; Van Dyne & Ang, 1998).

The study reported in this article uses the dimensional approach, which characterizes more distinctive properties of the employee's psychological contract, offers a more extensive understanding of the psychological contract, offers an improved assessment of understanding the employee-employer relationship in today's dynamic employment environment, and improves generalizability across populations. The diversity of employment arrangements within the IT industry warrants a more complete understanding of today's IT professionals' employment situation (Agarwal, De, & Ferratt, 2001; Ang & Slaughter, 2001; Ferratt, Enns, & Prasad, 2001). Investigating the dimensions of the employment relationship might better fit the organizational and employment context of IT professionals (McLean Parks, Kidder, & Gallagher, 1998). The six dimensions of the psychological contract used in this study are: stability, scope, tangibility, time frame, focus, and volition.

The stability dimension of the psychological contract refers to the extent the contract is constant or static opposed to dynamic and evolving as perceptions of obligations and entitlements framed within the psychological contract evolve in response to changing needs (McLean Parks et al., 1998). An IT professional whose organizational tenure is short term may have difficulty establishing trusting relationships, which enables a more flexible and malleable psychological contract, which is more common when job length is long term.

Scope refers to the extent of the boundary between an IT professional's employment relationship and other portions of one's life, for example, the amount an individual's work responsibilities spill over into their personal life (McLean Parks et al., 1998). The scope of

the psychological contract can vary from very narrow to very broad.

Tangibility refers to the explicitness of the psychological contract with respect to the employee's degree of understanding to the defining boundaries, terms, and expectations of the relationship, most important being that the specific terms of the contract are visible and are not ambiguous to third parties (McLean Parks et al., 1998). McLean Parks et al. (1998) details that the more specific and observable the terms of the employment contract and job description, the less likely the employee will go beyond the minimum requirements of the job.

Time frame dimension of the psychological contract has end points representing a close-ended, specific contract at one end and an open-ended, indefinite contract at the other end (Rousseau & Wade-Benzoni, 1994). McLean Parks et al. (1998) contend that an open-ended contract may be viewed as a long-term employment relationship; whereas, a close-ended contract may be characteristic of a short-term employment relationship. IT professional's time frame dimension may be affected if working in an organization with high turnover or contending with outsourcing issues, versus if working in an organization with minimal turnover, as evidenced in *EE Times* (2005).

Focus of the psychological contract refers to the relative emphasis on economic versus socio-emotional concerns on one continuum with extreme end points. Thus, a psychological contract, geared toward truthfulness, sharing, respect, development opportunities, and so forth is typical of socio-emotional concern. Whereas, focus geared toward material and monetary rewards is typical of an economic concern (McLean Parks et al., 1998). Rousseau (1989) states that the longer employment relationships continue, there will be recurring exchanges of contributions, which in turn will strengthen the employee's perceptions of the relationship.

Volition of the psychological contract is "the degree to which employees believe they had a choice in the selection of the nature of the employment relationship..." (McLean Parks et

al., 1998, p. 720). Volition also refers to alternatives one may or may not have with respect to jobs, that is, level of expertise, or specialized talents or skills (McLean Parks et al., 1998). Therefore, IT professionals may believe they have a higher level of volition when their skill set is unique or in demand. Following McLean Parks et al.'s (1998) conceptualization of volition, volition is also hypothesized to be a control variable in the research model.

When the organization fails to respond accordingly to their obligations as perceived by the employee, employees may construe the contradiction as some extent of non-fulfillment of their psychological contract. Even though this incongruence in a psychological contract is a subjective experience, with any perceived non-fulfillment, employees may change their beliefs about what they subsequently owe their employer (Robinson et al., 1994; Rousseau, 1989). The effects of the non-fulfillment of the IT professional's psychological contract using the dimensional approach on their organizational citizenship behaviors and innovative work behavior has not been assessed in this context. Organizational citizenship and innovative work behaviors are described next.

### **Organizational Citizenship Behaviors**

Smith, Organ, and Near (1983) define organizational citizenship behavior (OCB) as the extra-role, discretionary actions that help others in the organization perform their jobs or show support for and conscientiousness toward the organization. Organ (1988) identifies five OCB dimensions: altruism, conscientiousness, civic virtue, courtesy, and sportsmanship, which have been used to investigate the relationship with trust and satisfaction (Rioux & Penner, 2001) and to identify an employee's motives toward OCB (Brief & Motowidlo, 1986). Extending research in this area, many researchers have offered other perspectives to OCB (e.g., Borman, Penner, Allen, & Motowidlo, 2001; Brief & Motowidlo, 1986; Van Dyne & LePine, 1998).

Van Dyne and Ang (1998) propose that organizational citizenship can be regarded as a behavioral gauge of the employee's perceptions and subsequent responses to their relationship with their employer. The relevancy of these perceptions is important when IT professionals are placed in a work environment where the performance of their job is partially judged by the amount of OCB performed. And as evidenced in Moore and Love (2005), citizenship behaviors continue to remain a vital component of the IT professional's performance and are essential for proper organizational practices.

This study examines a set of organizational citizenship behaviors that have been used in prior research: helping, loyalty, advocacy participation, functional participation, and obedience (Ang & Slaughter, 2001; Coyle-Shapiro, 2002; Van Dyne & Ang, 1998), but not all within the context of IT professionals. These behaviors are chosen as they fit within the conceptual realm of those citizenship behaviors that might be expected of IT professionals, and to extend research of these behaviors into the IT profession, which has not been studied.

Helping refers to discretionary actions that have some assisting effect and are directed at a specific individual or group and the task performed has some organizational relevance (Coyle-Shapiro, 2002; Smith et al., 1983; Van Dyne & Ang, 1998).

Graham (1991, p. 255) and Van Dyne, Graham, and Dienesch (1994, p. 767) define loyalty and obedience as follows. Loyalty refers to identifying with the organization and having allegiance to the organization, going beyond the "parochial interests of individuals, work groups, and departments." Typical behaviors include "defending the organization against threats, contributing to its good reputation, and cooperating with others to serve the interests of the whole." Obedience refers to accepting the "rules and regulations governing organization structure, job descriptions, and personnel policies." This would include such actions as having "respect for rules and instructions, punctuality in attendance and task completion, and stewardship of organizational resources."

Advocacy participation refers to “behaviors that are targeted at other members of the organization and reflect a willingness to be controversial” and “maintaining high standards, challenging others, and making suggestions for change” (Van Dyne et al., 1994, p. 780).

Functional participation refers to behaviors that have a personal focus, yet still contribute to organizational effectiveness, such as “performing additional work activities, self-development and volunteering for special assignments” (Van Dyne et al., 1994, p. 780).

### **Innovative Work Behaviors**

The concept of innovation is defined a multitude of ways (Kanter, 1983; West & Farr, 1990b; Zaltman, Duncan, & Holbek, 1973). Using West and Farr’s (2000) definition, Janssen (2000) finds the level to which workers respond innovatively to their job is determined by their perceptions of fairness on the job. In a different study, the employee’s perceived obligation to innovate, job autonomy, and pay has a direct effect on their innovative work behavior (Ramamoorthy, Flood, Slattery, & Sardesai, 2005). In the same realm as innovative work, empirical evidence indicates that perceptions of an employee’s work environment and creativity climate directly affects the creativity of projects (Amabile, Conti, Coon, Lazenby, & Herron, 1996). Clinton, Hardgrave, and Armstrong (2005) find the interaction of IT professionals and their environment most important when examining the person-job cognitive style fit on innovative performance. Supporting anecdotal evidence found in the popular press (Koch, 2006; Murphy, 2005), this study examines innovative work behavior—planned actions that hope to accomplish some beneficial result—as defined by Janssen (2000).

### **Research Model and Hypotheses**

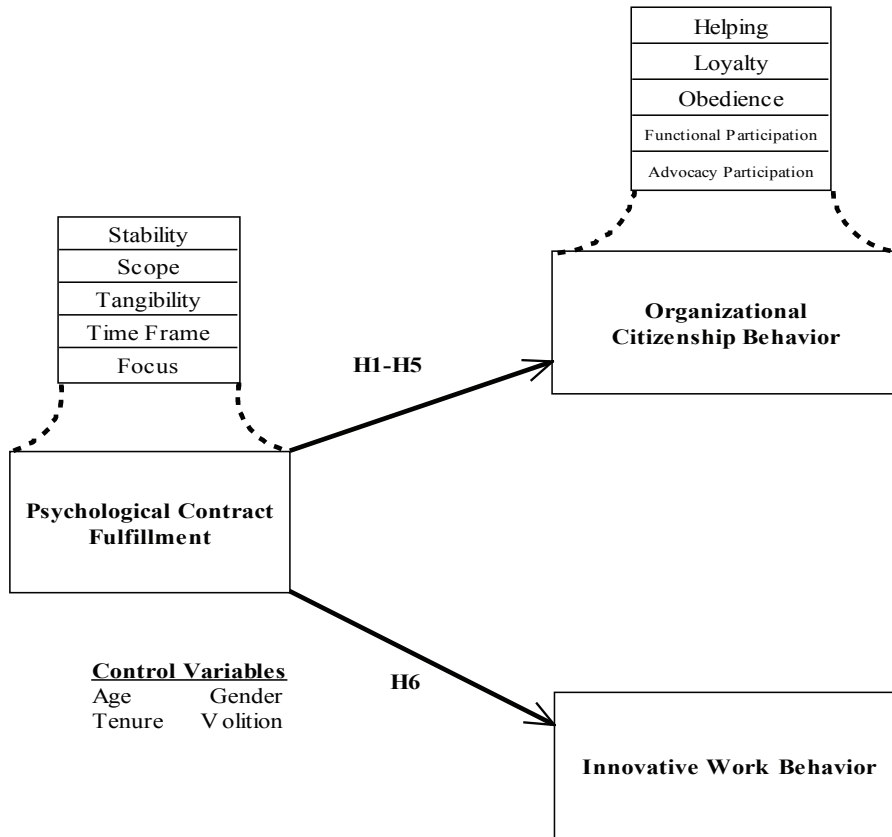
The psychological contract and social information processing theories are adapted to predict two organizational behaviors of IT professionals, organizational citizenship and innovative work. Using the dimensional approach to the psychological contract, the IT professional’s

perceptions of their employer’s fulfillment of their obligations are investigated as predictors of their organizational behaviors. The research model for this study is shown in Figure 1. From left to right, the level of fulfillment of the psychological contract using five dimensions (stability, scope, tangibility, time frame, and focus) are proposed to affect each of the IT professional’s five organizational citizenship behaviors (helping, loyalty, obedience, functional participation, and advocacy participation) and innovative work behavior. The model depicts four control variables: volition (a dimension of the psychological contract), age, gender, and tenure, which are discussed later in the article.

The key assertion in the study is that higher levels of fulfillment of the IT professional’s psychological contract will positively affect their organizational citizenship behaviors and innovative work behavior. Studies using the content or evaluative approach have found psychological contract violations related to lower extra-role behaviors (Robinson & Morrison, 1995), lower performance and civic virtue behavior (Robinson, 1996), lower OCB (Coyle-Shapiro, 2002), as well as lower trust and job satisfaction. Robinson and Morrison (1995) found employees less likely to perform civic-minded behaviors when they felt their employer had not fulfilled their obligations to the perceived contract.

Even though citizenship behaviors are viewed as a collective act by Organ (1988), researchers often consider OCB as a multi-dimensional construct and look at the significance of each dimension under study (Coyle-Shapiro, 2002), or investigate selective dimensions of OCB (Ang & Slaughter, 2001; Robinson & Morrison, 1995; Van Dyne & Ang, 1998). As such, it is proposed that higher perceptions of their employer’s fulfillment of their obligations (within the IT professional’s psychological contract) will be positively related to higher levels of each of the dimensions of OCB under study: helping, loyalty, obedience, functional participation, and advocacy participation. The five hypotheses below reflect this distinction:

Figure 1. Research model with hypotheses



**Hypothesis 1:** Higher perceptions of fulfillment of their employers' obligations of the psychological contract will be positively related to higher levels of the IT professionals' organizational citizenship behavior dimension—helping.

**Hypothesis 2:** Higher perceptions of fulfillment of their employers' obligations of the psychological contract will be positively related to higher levels of the IT professionals' organizational citizenship behavior dimension—loyalty.

**Hypothesis 3:** Higher perceptions of fulfillment of their employers' obligations of the psychological contract will be positively related to higher levels of the IT professionals' organizational citizenship behavior dimension—obedience.

**Hypothesis 4:** Higher perceptions of fulfillment of their employers' obligations of the psychological contract will be positively related to higher levels of the IT professionals' organizational citizenship behavior dimension—functional participation.

**Hypothesis 5:** Higher perceptions of fulfillment of their employers' obligations of the psychological contract will be positively related to higher levels of the IT professionals' organizational citizenship behavior dimension—advocacy participation.

Innovative work behaviors, as well as citizenship behaviors, have been thought of as extra-role behaviors that are not obligatory, are outside the normal job description require-

ments and are not clearly distinguished within the formal reward system (Katz & Kahn, 1978; Organ, 1988). In Janssen's (2004) investigation of fairness perceptions in non-management employees' relationship between job demands and innovative work behavior, he finds the level to which the employees respond innovatively to their job is determined by their perceptions of fairness on the job. Thus, it is proposed that one's perceptions of the level of fulfillment of their employer's obligations will be positively related to one's innovative work behavior. Accordingly, the following research hypothesis is proposed:

**Hypothesis 6:** *Higher perceptions of fulfillment of their employers' obligations of the psychological contract will be positively related to higher levels of the IT professionals' innovative work behavior.*

## METHODOLOGY

### Procedure and Sample

Data were collected from a convenience sample of working IT professionals located throughout the United States. The questionnaire was administered through two means: an online survey and a group-administered paper survey. Participation was strictly voluntary. The respondents were obtained from two sources: alumni from the management information systems program and graduate students in management information systems program evening classes of a major southeastern university.

For the online survey, a letter of invitation to participate was mailed to the intended respondents. A postcard was mailed about three weeks after the first mailing as a follow-up reminder to those who had not yet responded.

Three hundred twenty-four responded to the survey. Of that number, 251 completed the online survey, 36 completed the group administered survey, and 37 responded to the online survey, but did not complete the questionnaire. The overall response rate was 9.7% with 287 responding out of 2,950 potential respondents. Possible factors influencing the response rate

was the length of the questionnaire and the controls established within the online survey, in that those responding to the online survey had to answer a minimum number of questions to successfully submit the questionnaire. Basic demographic information was asked for in the event the respondent could not or chose not to complete the survey. This enabled verification that those who did not participate were not different from those who chose to participate. T-tests conducted found no significant differences between those who responded to the survey and those who chose not to respond; therefore, potential non-response bias was negligible.

Only those respondents who were permanent employed IT professionals were used in this study, providing 209 usable questionnaires. With two sources of data, group administered ( $n = 18$ ) and online survey ( $n = 191$ ), and the initial and second mailings inviting those to participate in the online survey, method bias was also assessed. Again, t-tests were conducted, and no significant differences in any of the demographics collected at  $\alpha = .01$ .

### Measures

To stay consistent with prior research, all scales in the measurement instrument, except focus and volition, were adopted from existing instruments with proven reliabilities. In an effort to have consistent end choice points throughout the measurement instrument, any scales not having choice end points of 1-6 were changed to choice end points of 1-6, which forces a non-neutral choice on behalf of the respondents (Spector, 1992).

### Psychological Contract Fulfillment

Psychological contract fulfillment refers to the IT professional's perceptions as to the level that their employer had fulfilled those obligations to them. The measurement items for four dimensions: stability, scope, tangibility, and time frame, were adapted from Sels and his colleagues (2004). Sels et al.'s five-point scale with response choices of 1 (entirely disagree) to 5 (entirely agree) was changed to a six-point



scale with response choices of 1 (entirely disagree) to 6 (entirely agree).

The statement asking the respondents to indicate “the extent to which you believe the organization has fulfilled this obligation to...” prefaced the measurement items. Stability of the psychological contract was measured by two items, for example: “Stick to agreements despite changing circumstances” ( $\alpha = .80$ ). Scope of the psychological contract was measured by four items, for example: “Appreciate me for what I do and who I am” ( $\alpha = .88$ ). Tangibility was measured by three items, for example: “Unambiguously describe my obligations within this firm” ( $\alpha = .86$ ). Time frame was measured by five items, for example: “Make a commitment to me for a long time” ( $\alpha = .89$ ).

Measurement items for the focus and volition dimension were developed for this study. Using the domain definition from McLean Parks et al. (1998), five items were developed to measure and operationalize the focus dimension as it relates to the fulfillment of the psychological contract. “Provide any and all materials necessary to do the job” is an example of one of the measurement items ( $\alpha = .88$ ). Volition was measured as a single item. Respondents were asked, “Which employment arrangement would you prefer to work?” This response was compared to their current employment arrangement, which they provided, and this provided an indication as to whether their current arrangement was voluntary (Morrow, McElroy, & Elliott, 1994; Stamper & Van Dyne, 2001).

### Organizational Citizenship Behavior

The dimensions helping, loyalty, advocacy participation, functional participation, and obedience were measured using items adapted from Coyle-Shapiro (2002). The five-point Likert scale, which measures the extent to which the specific behaviors were typical of their behaviors at work, was changed to a six-point scale with end choice points ranging from 1 (not at all) to 6 (very large extent). Helping of OCB was measured by three items, for example: “I help others who have been absent”

( $\alpha = .83$ ). Loyalty of OCB was measured by three items, for example: “I tell outsiders that the organization is a good place to work” ( $\alpha = .87$ ). Advocacy participation of OCB was measured by four items, for example: “I share ideas for new projects or improvements widely” ( $\alpha = .84$ ). Functional participation of OCB was measured by three items, for example: “I exceed formal requirements of the job” ( $\alpha = .84$ ). Obedience of OCB was measured by three items, for example: “I follow work rules and instructions with extreme care” ( $\alpha = .61$ ).

### Innovative Work Behavior

The eight-item innovative work behavior scale used in this study was developed by Janssen (2000), and assesses Kanter’s (1994) three stages to innovation: idea generation, idea promotion, and idea realization. Janssen’s (2002) seven-point scale ranging from 1 (never) to 7 (always) was changed to a six-point scale with end choice points of 1 (never) to 6 (always). “I create new ideas for difficult issues” is an example of a measurement item. Its demonstrated reliability was  $\alpha = 0.92$ .

### Control Variables

The IT professional’s age, gender, tenure in the employment arrangement, and volition were entered as control variables in this study, as researchers find that certain demographic characteristics have been linked to outcome behaviors. Forms of OCB may be a function of tenure and thus, tenure may be a moderator between antecedents and OCB (Organ & Ryan, 1995). Organ and Ryan also argue that gender might be a predictor of OCB, considering the beliefs that females may perform more aspects of OCB, for example, altruism and courtesy factors. In their study investigating OCB in restaurant employees, Stamper and Van Dyne (2001) find age, gender, and organizational tenure related to their work status.

### Data Analysis

All data analysis was accomplished using SPSS. Pearson correlations were used in the analysis of the correlations between the con-

structs. Analyses of the factor structures were examined using informal confirmatory factor analysis with Promax rotation and extracting the number of factor theorized in the literature. Promax rotation method was used due to moderate correlations among the factor items.

## Sample

The IT professionals responding to this study reflect a representative sampling comparable to the IT workforce as described by the Information Technology Association of America (ITAA, 2005). The respondents held a wide variety of IT job titles and were in all of the ITAA's career field clusters except one (technical writing). The study sample was well educated with 85% having at minimum a bachelor's degree. Approximately 45% had attended formal education within the past five years. The demographic data supports ITAA's 2005 report that "The IT labor force is a highly skilled, highly educated population" (p. 6). The study sample and ITAA IT workforce were also comparable in median age, percentage over 45 years of age, and gender. Median age for the sample was 37 years, 25% were over 45 years of age, and 35% were female. Eighty-eight percent of the IT professionals were in their preferred employment arrangement, while 10.2% preferred another arrangement. Median tenure in their employment arrangement was five years.

## Reliability and Validity of Constructs

Content validity of the measurement instrument was established mainly through the adoption of existing instruments and use of recommended concepts found in the literature. With the development of new measurement items for the focus dimension of the psychological contract, particular attention was taken during pre-testing with domain experts and pilot testing of the instrument. All reliabilities were above Nunnally and Bernstein's (1994) recommended acceptable level of at least .70 with one exception. The reliability for OCB obedience was  $\alpha = .61$ , which follows the reliability in Coyle-Shapiro's (2002) study of  $\alpha = .63$ . Means and

standard deviations for the study variables are shown in the Appendix. The internal reliabilities (Cronbach's alpha) for the study variables are repeated in the Appendix at the diagonal.

Construct and discriminant validity were assessed through informal confirmatory factor analysis and found to be satisfactory. Five factors extracted for fulfillment of the psychological contract explained 75.5% of the variance; five factors extracted for OCB explained 72.9% of the variance; and the one factor for IWB explained 62% of the variance. An evaluation of convergent validity was possible for two study variables, OCB advocacy participation and innovative work behavior. The measurement items in each variable relate to sharing ideas, making improvements, suggestions, and so forth, and the two study variables were found to be correlated at  $\alpha = .703$ . Tables 1, 2, and 3 present the measurement items used in the questionnaire for each factor and the factor loadings from the pattern matrix for fulfillment of the psychological contract, OCB and IWB, respectively.

## Results

The items retained for each construct were summed and averaged creating the variables used in the analysis. The inter-correlations of the study variables are also shown in the Appendix.

Separate regression analyses were performed with each of the organizational citizenship and innovative work behaviors as the dependent variables and the five dimensions of fulfillment of the psychological contract, as the independent variables. To control for other factors potentially confounding the relationship between the level of fulfillment of the psychological contract and the organizational behaviors, the IT professionals' age, gender, tenure in the employment arrangement, and volition were included in the regression equations. All variables were entered into the regression simultaneously.

As Table 4 shows, perceived higher levels of fulfillment of the psychological contract dimensions were positively related to four

Table 1. Measurement items with factor loadings for fulfillment of the psychological contract

Measurement Items	Factor				
	1	2	3	4	5
Time Frame					
Provide me with job security	<b>.876</b>	.023	.068	-.091	-.052
Make a commitment to me for a long time	<b>.906</b>	.144	-.048	-.147	-.038
Won't immediately release me if things are going badly	<b>.834</b>	-.061	.038	.071	-.018
Offer me another job if my current job would disappear	<b>.770</b>	-.103	-.203	.268	.074
Do everything in their power to keep me on the job	<b>.713</b>	.095	.097	.031	-.025
Scope					
Appreciate me for what I do and who I am	-.059	<b>.882</b>	.039	.206	-.139
Consider not only the end result, but also my personal effort	.060	<b>.855</b>	-.045	.038	.037
Treat me as a person, not as a number	.058	<b>.824</b>	.103	-.125	.058
Allow me to be myself within this firm	.017	<b>.865</b>	-.112	.025	.088
Focus					
Notify me of any available financial rewards	.101	-.241	<b>.680</b>	.115	.135
Establish a respectful and trusting relationship	.102	.183	<b>.664</b>	-.057	.033
Provide development opportunities	-.068	.115	<b>.839</b>	.077	-.107
Provide any and all materials necessary to do the job	-.097	-.014	<b>.970</b>	.009	-.101
Be truthful even when it may harm the relationship	.082	.167	<b>.487</b>	-.111	.321
Tangibility					
Specifically describe the performance appraisal criteria used in this firm	-.043	.123	.104	<b>.770</b>	-.031
Unambiguously describe my obligations within this firm	-.004	.071	-.093	<b>.925</b>	.010
Unambiguously describe my rights within this firm	.117	-.101	.251	<b>.674</b>	.032
Stability					
Stick to agreements despite changing circumstances	-.073	.113	.015	.134	<b>.783</b>
Consider written or oral agreements as permanently valid	-.005	-.009	-.064	-.056	<b>.996</b>

Table 2. Measurement items with factor loadings for organizational citizenship behavior

Measurement Items	Factor				
	1	2	3	4	5
Advocacy Participation					
I make creative work-related suggestions to co-workers	<b>.872</b>	.001	-.030	-.065	.051
I make innovative suggestions to improve the functioning of the department	<b>.844</b>	-.011	-.001	.036	-.003
I share ideas for new projects or improvements widely	<b>.776</b>	.065	.057	.101	.033
I encourage others to speak up at organizational meetings	<b>.843</b>	-.026	-.056	-.037	-.116

continued on following page

Table 2. *continued*

Loyalty					
I tell outsiders that this organization is a good place to work.	.011	<b>.942</b>	-.090	-.041	.076
I defend the organization when other employees criticize it	.080	<b>.822</b>	.049	.048	-.083
I represent the organization favorably to outsiders	-.069	<b>.899</b>	.043	-.039	.041
Functional Participation					
I work beyond what is expected	-.011	-.034	<b>.852</b>	.111	-.060
I exceed formal requirements of the job	-.011	-.085	<b>.914</b>	-.059	-.028
I go the "extra mile" for the organization	-.048	.192	<b>.837</b>	.021	-.022
Helping					
I help others who have heavy workloads	-.004	-.028	-.085	<b>.905</b>	.089
I help others who have been absent	.026	-.059	-.020	<b>.918</b>	.006
I go out of my way to help colleagues with job-related problems	-.030	.060	.192	<b>.707</b>	-.052
Obedience					
I neglect aspects of job responsibilities	-.112	-.002	-.157	.066	<b>.846</b>
Regardless of circumstance, I produce the highest quality of work	.113	-.141	.435	-.128	<b>.535</b>
I follow work rules and instructions with extreme care	.036	.110	.009	.035	<b>.742</b>

Table 3. *Measurement items with factor loadings for innovative work behavior*

Measurement Items—Innovative Work Behavior	Factor
	1
I create new ideas for difficult issues	<b>.767</b>
I search out new technologies, processes, working methods, techniques, and/or product ideas	<b>.703</b>
I generate original solutions for problems	<b>.734</b>
I mobilize support for innovative ideas	<b>.801</b>
I make organizational members enthusiastic for innovative ideas	<b>.759</b>
I transform innovative ideas into useful applications	<b>.771</b>
I introduce ideas into the work environment in a systematic way	<b>.698</b>

dimensions of citizenship behavior—loyalty and advocacy participation ( $p < .001$ ), obedience ( $p < .01$ ), and functional participation ( $p < .05$ ), providing support for Hypotheses 2-5. Hypothesis 1 was not supported by the data; no relationship was found between perceived levels of fulfillment of the psychological contract dimensions and OCB helping. Perceived

higher levels of fulfillment of the psychological contract dimensions were also positively related to innovative work behavior at  $p < .001$ , providing support for Hypothesis 6.

Table 5 highlights significant predictor variable regression coefficients of all regression equations, except for OCB helping, which was not significant.

Table 4. Regression analysis results explaining variance in organizational behaviors

<i>Dependent Variable</i>	<i>R</i>	<i>R</i> <sup>2</sup>	<i>R</i> <sup>2</sup> <sub>Adj</sub>	<i>F</i>
OCB loyalty	.76	.57	.55	28.01***
OCB advocacy participation	.44	.19	.16	5.09***
Innovative work behavior	.43	.18	.15	4.74***
OCB obedience	.34	.12	.07	2.73**
OCB functional participation	.30	.09	.05	2.12*

\*p &lt; .05, \*\*p &lt; .01, \*\*\*p &lt; .001

Table 5. Regression equation using significant predictor variables to explain variance in scores for organizational behaviors

<i>Predictor Variable<sup>a</sup></i>	<b>Loy- alty</b>	<b>Advo- cacy Part.</b>	<b>Innovative Work Behavior</b>	<b>Obedi- ence</b>	<b>Functional Part.</b>
	<i>B</i>	$\beta$	$\beta$	$\beta$	$\beta$
PC scope	.49***	.22*	.23*		
PC focus	.31***				
Age	.13*				
PC tangibility		.35***	.25*	.22*	
PC volition			.17*		
Gender				-.28***	-.15*

\*p < .05, \*\*p < .01, \*\*\*p < .001. <sup>a</sup>Predictor variables – PC Stability, PC Time Frame and Tenure were not significant in any regression equation, hence omitted from table list.

## DISCUSSION

Innovative work and citizenship are two qualities deemed vital in an IT professional's conduct. In today's world, businesses are constantly changing to adapt to competitive pressures, and they depend on their IT talent to help facilitate that process through their innovation. Whether the job is to beat the competition or just keep up, innovation remains the goal (Kanter, 2006; Varon, 2005). Citizenship behaviors, such as loyalty, advocacy participation, obedience, functional participation, and innovative work behavior on the part of IT professionals are still important to overall organizational success, even when the job is less clear (Moore & Love, 2005). The individuals' organizational citizenship behaviors can be a gauge of their responses

to their relationship with their employer (Van Dyne & Ang, 1998). IT professionals, who perceive the relationship with their employer is not what it should be, may retreat from their level of involvement within the job or project or withdraw from active participation, or even start to become complacent in their work. Applying psychological contract and social information processing theories, the results of this study provide empirical evidence to indicate that increased levels of fulfillment of the IT professionals' psychological contract are positively related to the IT professionals' increased performance of organizational behaviors. The findings of relationships with the organizational citizenship behaviors and innovative work behavior are discussed hereafter.

## Organizational Citizenship Behaviors

This study has examined in greater depth than prior research the importance the IT professional's perception that the psychological contract between the employee and employer has been fulfilled and the potential impact this has on organizational citizenship behaviors. Even though these behaviors are subtly expected by supervisors, they fall outside the traditional productivity and task performance measures (Ang & Slaughter, 2001). Employees, if they perceive that promises have not been met, have the potential to *under perform* in areas that are not directly observable by the manager. The IT professionals' citizenship behavior, especially advocacy participation, is strongly affected by the scope and tangibility dimensions of the psychological contract.

Scope refers to the level that the employer typically fulfills their obligations, such as expressing appreciation of the IT professional's work, taking the IT professional's personal effort into consideration, and their treatment of them. Therefore, the IT professional might speak out more while making creative and innovative suggestions, share ideas, and encourage others to speak up, and thus supporting the organization overall, the more the IT professional felt their employer had fulfilled their obligations to express their appreciation to them. Or the direct opposite is true; the IT professional may fail to speak up, share ideas, or make innovative suggestions, if they feel that their employer has not fulfilled their obligations related to scope.

High levels of fulfillment of the tangibility dimension of the psychological contract, the explicitness to defining the boundaries, terms, and expectations of the employment relationship, was also positively related to high levels of advocacy participation. Acquisition for technology companies can be challenging for IT professionals, in that innovation and creativity are still expected, even during changes to the organizational structure (Christensen, 2006). Therefore, the clearer the terms of the employment contract and the employer respecting and upholding those terms, the more willing the IT

professional will be to make suggestions and share ideas.

High levels of fulfillment of the scope and focus dimensions of the IT professional's psychological contract were positively related to the IT professional's OCB dimension—loyalty. Therefore, the IT professional's level of loyalty to the organization, can be influenced by the amount the employer expresses appreciation of the IT professional's work, takes the IT professional's personal effort into consideration, and treats them with respect, which relate to the scope dimension. For this study, the IT professionals' focus represents a more socio-emotional concern in their psychological contract. Consequently, the more the IT professional feels that the employer has fulfilled their obligations to provide development opportunities, provide a trusting and respectful employment relationship, and be truthful, the more the IT professional is willing to be loyal and defend the organization. Age is also found to be a significant predictor of loyalty, in that older IT professionals indicate greater loyalty to the organization than younger IT professionals.

High levels of fulfillment of the tangibility dimension of the psychological contract were positively related to high levels of the OCB dimension—obedience. The tangibility dimension again refers to the explicitness to defining the boundaries, terms, and expectations of the employment relationship. Therefore, the clearer the terms of the employment contract and the more the employer respected and upheld those terms, the more inclined the IT professional was to produce quality work, follow rules and not neglect aspects of their job responsibilities.

The study corroborates prior research by Organ and Ryan (1995), in that females exhibited higher levels of organizational citizenship than males. Females indicated higher obedience than males. Gender was the sole significant variable in explaining the OCB dimension—functional participation, which relates to higher levels of working beyond expectations, or exceeding formal job requirements, and going the extra mile.

## Innovative Work Behavior

The relationship between employee and employer is tenuous in today's IT labor market. The scope and tangibility dimensions of the psychological contract had the most influential effects in the relationship. Managers making simple gestures, such as expressing appreciation to their IT professionals can improve a situation considerably (Motti, 2006). This study finds that if employers fulfilled their obligations to express appreciation of the IT professional's work, consider their personal effort in the performance of their jobs, improve their treatment of them, and stick to agreements, the IT professional was motivated to perform greater levels of innovative work behavior, such as create new ideas, search out new processes, transform innovative ideas into useful applications, and so forth. West and Farr (1990a) recognize innovative work behavior can be an intentional act, which can be withheld, as easily as it can be performed. The innovativeness and creativity of IT professionals remains a vital component to the organization, and the ability of the employer to improve perceptions of the employer-employee relationship is found to be a common denominator in the equation.

The IT professional's volition, which refers to whether they preferred their permanent employment arrangement, was also found to affect their innovative work behavior. However, it was the IT professional, who preferred an employment arrangement other than their permanent arrangement, who indicated higher levels of innovative work. This suggests that perhaps the IT professionals engage in innovative work as a means to facilitate some other objective.

## CONCLUSION

An important contribution of this study is its investigation into the innovative work behavior of IT professionals. While research continues to investigate the motives and cognitions around creative and innovative work behavior (Christensen, 2006; Janssen, 2000; Ramamoorthy et al., 2005), this study finds that some aspect of the IT professional's innovative work behavior may be determined by the level of fulfillment of

their psychological contract. Recognizing the importance of how IT professionals perceive their environment, these perceptions can affect their creativity, which is the seed of all innovation (Amabile et al., 1996).

Another important contribution of this study is in the use of the dimensional approach to the psychological contract. This more expressive view of the perceptual nature of the psychological contract explored the underlying dimensions of the psychological contract, while assessing the level of fulfillment. The dimensional approach enabled examination of the psychological contract and its affect on employee behavior by seeking to understand in greater depth, the motivations behind the IT professional. This is an improved illustration over the content approach of the psychological contract, especially with the increasingly complex employer-employee relationship of those in the IT industry.

A strength of this study is in the research methodology as it relates to the data collection and the sample. The administration of the questionnaire was through two means: an online survey and a group-administered paper survey, and the respondents were obtained from two sources: alumni from the management information systems program and graduate students in management information systems program evening classes of a major southeastern university.

This study used cross-sectional data and was strictly based on self-report data and did not look at IT employee evaluations by peers or supervisors. As in all research that involves self-report data, there is the potential for self-report bias (Organ & Ryan, 1995; Spenner, 1990). However, Spector (1987) contends that the typical criticism in using self-report measures involving attitude and perception measures may not be factual. Rioux and Penner (2001) obtained ratings from a number of different sources, for example, self, peers, and supervisors, in an effort to minimize mono-method bias and found self-ratings of OCB comparable to both peer and supervisor ratings.

The overall response rate was 9.7%, which is appropriate for a study of this nature. However, possible factors influencing the low response rate was the length of the questionnaire and the controls established within the online survey. Those responding to the online survey had to answer a minimum number of questions to successfully submit the questionnaire.

The psychological contract dimensions first empirically tested by Sels et al. (2004) and then analyzed in this research require additional studies to further validate and improve the scales, particularly stability. The focus scale, which was developed for this study, also requires further validation and improvement. The low adjusted  $R^2$  values of the regression models suggest that there are other factors, such as job demands, perceptions of fairness, or personality factors that may help to further explain the organizational behaviors of IT professionals (Organ & Ryan, 1995), and should be investigated.

For practitioners, the results indicate that the IT professional's perceptions are very relevant in the employee-employer relationship, as Weick (2001) so aptly stated, "believing is seeing" (p. 195). The strong relationship found between the OCB dimension—loyalty and the IT professional's level of fulfillment of their psychological contract sends an unmistakable message to management for the continued need for clear communication between employer and employee. Shore and Tetrick (1994) contends that if organizations do not understand the employee's psychological contract under which they are operating, some strategic business decisions for cost savings and improvements may result in violations to the employee's psychological contract. And as seen in this study, the IT professional's performance of organizational behaviors, specifically their citizenship behaviors—loyalty, obedience, advocacy participation and most importantly innovative work behavior—are affected by their perceptions of their employer's fulfillment of psychological contract obligations to them.

Management has the ability to improve the employer-employee relationship by focusing on and addressing specific issues found within

the dimensions relating to the IT professionals' psychological contract. Management could conceivably ask employees to anonymously rate the company's performance on the various psychological contract dimensions. Low scores may suggest that the employer look closely at its practices in certain key areas. Issues such as being clear about opportunities for advancement, improving trust within the organization, providing development opportunities, and finding ways to show appreciation for work performance can be easily achieved within any organization. IT professionals are busier than ever with the organizational and sourcing adjustments and change is unstoppable; but regardless, management or the CIO must remain sensitive to the needs of the IT professional (Cramm, 2006). Using the dimensions of the psychological contract offers tangible employment relationship topics for management to identify and improve upon; it might be something as simple as investing in training opportunities or showing appreciation for a job well done (Motti, 2006).

Future research should extend this study by including IT professionals in relevant employment arrangements other than permanent full-time. Sourcing IT jobs beyond the permanent full-time employee has most likely altered how many human resource and management issues are executed (Ang & Slaughter, 1995), and the variability of employment arrangements for IT professionals or their working conditions is not likely to stabilize with continued offshore outsourcing, downsizing, or healthcare cost shifting (Koprowski, 2005). The dimensional approach to the psychological contract tells a more comprehensive story of the IT professional's understanding of their employer's obligations to them and as to what influences their subsequent behaviors, both organizational citizenship and innovative work. This study demonstrates that this approach might also be appropriate when investigating IT professionals in varied employment arrangements. Saying this however, future research might address how important the psychological contract.



The construct, OCB, has received attention referring to the need of better identifying its dimensions (Van Dyne et al., 1994), because of the blurring of the separation between in-role performance and OCB. Most OCB studies have been subject to non-managerial or non-professional respondents. IT professionals do not likely fall into these categories, and hence with their job descriptions, in-role performance and OCB may be harder to distinguish. Organizational behaviors, OCB and IWB, were the focus in the study. Future research might consider investigating whether organizational behaviors within the OCB and IWB domain are considered in-role or extra-role behaviors by IT professionals. Other research might address what supports or leads to cultural or innovative behaviors within organizations.

With the ever-changing roles of the IT professional, management is challenged to understand how the employee perceives their role and the organization's role in achieving cutting-edge performance and creating competitive advantage in this global workforce. This study does not provide all the answers to understanding what affects their behaviors. However, we believe we have expanded our understanding of how IT professionals perceive their employment relationship and how the extent that the employer has fulfilled their obligations to the IT professional affects their subsequent innovative work and organizational citizenship behaviors.

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## APPENDIX. MEANS, STANDARD DEVIATIONS, CORRELATION, INTERNAL RELIABILITIES AMONG THE STUDY VARIABLES†

	Mean	SD	Age	Gender	Tenure	Volition	Time Frame	Tangibility	Scope	Stability	Focus	OCB Loyal	OCB Obed	OCB AP	OCB Help	OCB FP	IWB
Age	37.62	9.12															
Gender			-.065														
Tenure	5.51	4.28	.408**	-.094													
PC Volition			.014	-.010	-.159*												
PC Time Frame	4.15	1.24	-.212**	-.015	.048	-.169*	<b>.89</b>										
PC Tangibility	3.90	1.35	-.110	.068	.082	-.128	.589**	<b>.86</b>									
PC Scope	4.29	1.18	-.134	-.006	.058	-.126	.652**	.587**	<b>.92</b>								
PC Stability	3.84	1.26	-.230**	-.036	-.146*	-.121	.562**	.558**	.671**	<b>.80</b>							
PC Focus	4.08	1.15	-.192**	.065	.017	-.146*	.649**	.692**	.755**	.665**	<b>.88</b>						
OCB Loyal	4.39	1.27	-.014	.022	.090	-.137	.546**	.491**	.715**	.501**	.670**	<b>.87</b>					
OCB Obed	4.39	.96	-.053	-.242**	-.107	-.015	-.035	.105	.016	.080	.052	.029	<b>.61</b>				
OCB AP	4.39	.45	.043	.084	.089	.057	.167*	.344**	.283**	.238**	.223**	.252**	.219**	<b>.84</b>			
OCB Help	4.40	.22	-.071	-.108	.025	-.064	.029	.061	.076	.140*	.038	.064	.247**	.301**	<b>.83</b>		
OCB FP	4.94	.24	.019	-.126	.030	.043	.162*	.203**	.221**	.131	.202**	.328**	.385**	.488**	.355**	<b>.84</b>	
IWB	4.29	.35	-.083	.108	-.001	.113	.166*	.314**	.284**	.289**	.253**	.230**	.198**	.670**	.254**	.443**	<b>.92</b>

\*\*p<0.01 (2-tailed) \*p<0.05 (2 tailed) †Cronbach's Alpha for the corresponding variable is at the diagonal in bold.

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