

INFORMATION TECHNOLOGY PROFESSIONALS AS CITIZENS:  
AN EXPECTANCY THEORY PERSPECTIVE

by

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A Dissertation Submitted in Partial Fulfillment of the Requirements for the  
Doctor of Philosophy Degree

Department of Management  
in the Graduate School  
Southern Illinois University Carbondale  
May 14, 2010

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DISSERTATION APPROVAL

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By

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A Dissertation Submitted in Partial

Fulfillment of the Requirements

for the Degree of

Doctor of Philosophy

in the field of Business Administration

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## AN ABSTRACT OF THE DISSERTATION OF

SHIH YUNG CHOU, for the Doctor of Philosophy degree in Business Administration, presented on November 2, 2009, at Southern Illinois University Carbondale.

TITLE: INFORMATION TECHNOLOGY PROFESSIONALS AS CITIZENS: AN EXPECTANCY THEORY PERSPECTIVE

MAJOR PROFESSOR: Dr. John M. Pearson

Organizational citizenship behavior (OCB) has been suggested to facilitate organizational functioning. However, how OCB is motivated and the extent to which OCB is exhibited by highly skilled professionals remains uncertain. Very little theoretical and empirical research has focused on motivational factors that elicit the exhibition of OCB. In addition, previous research has found that information technology (IT) professionals exhibit significantly lower OCB than non-IT professionals. This particular discrepancy suggests that there is a need to study OCB exhibited by IT professionals from a motivational aspect.

In order to provide a theory-based model that explains OCB, this research utilized expectancy theory to examine how an IT professional's cognitive forces affect the valence of a job outcome and how the valence of the job outcome influences his or her OCB. The hypotheses were tested using partial least squares and multiple regression techniques with a sample size of 85 IT professionals.

Using IT professionals as the unit of analysis, the results indicated that the research model explained 36 percent of the variability of OCB exhibited by an IT professional. The results also confirmed the significant relationship between valence of job satisfaction and OCB and the significant relationship between OCB and actual job

satisfaction. Among the five cognitive forces tested, commitment to organization and commitment to profession contributed significantly to valence of job satisfaction. Furthermore, this research found some significant relationships among trust in supervisors, trust in coworkers, job stress, commitment to organization, and commitment to profession. Finally, conclusions, limitations, and suggestions for future research directions were discussed based on the findings.

## DEDICATION

I would like to dedicate this dissertation to my dad who taught me the importance to education and encouraged me to be hard working, persistent, and successful. I want to also dedicate this dissertation to my mom for teaching me how to become a good person and for praying for me every day.

## ACKNOWLEDGMENTS

I would like to express my appreciation to my dissertation chair, Dr. John Pearson, for his support and guidance. His knowledge, integrity, patience, thoughtfulness, and courtesy have influenced greatly on my academic and professional development.

I would also like to thank Dr. Arlyn Melcher, Dr. Peter Mykytyn, Dr. Marcus Odom, and Dr. Scott McClurg for devoting their time and serving on my dissertation committee. Their constructive comments have enhanced this research. A special thank need to be given to Dr. Melcher for his valuable feedback on methodological issues, which helped me strengthen this research.

This dissertation could not be completed without the support of my parents. Thank you for your continuous support throughout the years in the doctoral program. Thanks for listening to my complaints and providing me wise advice. I love you.

Lastly, I would like to thank my fiancée, Suree Lertpittayapoom, for inspiring me to do my best. Without your emotional support, I would not be able to finish this dissertation. Thank you.

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## CHAPTER 1

### INTRODUCTION

#### 1.1 Introduction

Because of increasing competition, many organizations have recognized the effect of employee behaviors on organizational functioning (Sparrowe et al., 2001). Among the various employee behaviors, work behavior is often used to predict individual, group, and organizational performance (Bateman & Organ, 1983; Organ, 1988). Organ (1988) has suggested that organizational functioning is facilitated when employees go beyond formal role requirements that are not explicitly required by job descriptions and formal reward systems. This particular type of employee behavior has been named by Bateman and Organ (1983) and Smith, Organ, and Near (1983) as “organizational citizenship behavior” (OCB). Using Organ’s (1988) examples, a teacher who covers a class for a sick colleague, a salesperson who struggles through a blinding blizzard in order to get to the job, or a retail clerk who first checks with shipping and delivery people before making a non-routine commitment to a customer exhibits OCB.

OCB is important because organizations typically are unable to anticipate the range of behaviors needed for the achievement of organizational goals through formal job descriptions (Vanyperen, Van Den Berg, & Willering, 1999). Moreover, OCB provides organizations with additional resources and eliminates the need for formal mechanisms that are crucial to successful organizational functioning (Bogler & Somech, 2004). Given the perceived importance of OCB, the number of studies related to OCB has increased dramatically. A review of OCB literature conducted by Podsakoff, Mackenzie, Paine, and Bachrach (2000) reported that there were more than 122 published papers on OCB and

related constructs during the six-year period from 1993 to 1998 while only 13 papers were published from 1983 to 1988. Additionally, an EBSCO search on the number of published OCB-related articles revealed that almost 800 articles were published from 1999 to 2008. Despite the amount of OCB research has increased, two important areas still need to be addressed.

First, there is a need to explain OCB from a motivational perspective. Prior OCB studies have typically drawn upon social exchange theory (e.g., Lavelle, Rupp, & Brockner, 2007; Wong, Wong, Ngo, & Lui, 2005), equity theory (e.g., Niehoff & Moorman, 1993; Spitzmuller, Glenn, Barr, Rogelberg, & Daniel, 2006; Williams, Pitre, & Zainuba, 2002), leader-member exchange theory (e.g., Deluga, 1994; Wang, Law, Hackett, Wang, & Chen, 2005), social network theory (e.g., Bowler & Brass, 2006; Venkataramani & Dalal, 2007), social learning theory (e.g., Bommer, Miles, & Grover, 2003; Zagenczyk, Gibney, Murrell, & Boss, 2008), social information processing theory (e.g., Bommer et al., 2003; Newton, Blanton, & Will, 2008), transformational leadership theory (e.g., Felfe & Schyns, 2004; Podsakoff, MacKenzie, & Bommer, 1996), and transactional leadership theory (e.g., Boerner, Eisenbeiss, & Griesser, 2007; Walumbwa, Wu, & Orwa, 2008). However, very little theoretical and empirical research has focused on motivational factors that elicit the exhibition of OCB. Understanding this particular aspect would be helpful for managers in their efforts to increase an employee's willingness to exhibit OCB.

Second, when comparing OCB exhibited by IT professionals and non-IT professionals, Moore and Love (2005) discovered a discouraging result. Specifically, they found that IT professionals tended to demonstrate significantly lower OCB than

professionals in non-IT areas. Although Moore and Love did not provide much explanation of these results, this discrepancy might be caused by the IT work environment. Moore and Love's study, therefore, suggests an opportunity to utilize motivation theory to explain factors that influence an IT professional's OCB.

To fulfill the research gaps mentioned above, the major objective of this research is to apply expectancy theory (Vroom, 1964) as the theoretical base in examining how cognitive forces influence an IT professional's OCB. To accomplish this, it is necessary to assess the IT work environment. Specifically, because IT professionals often work in high pressure and deadline-driven environments (Moore, 2000; Moore & Love, 2005; Tsai, Compeau, & Haggerty, 2007; Raghavan, Sakaguchi, & Mahaney, 2008), cognitive forces such as trust, commitment, and job stress could have an important impact on an IT professional's OCB (Moore & Love, 2005). Therefore, the above mentioned cognitive forces are examined by this research as the factors that influence the valence of performing OCB.

## **1.2 Organizational Citizenship Behavior**

Research in OCB has been predominately focused on antecedents of OCBs. For example, Deluga (1995) examined and found that supervisor trust-building behavior predicted a subordinate's OCB in a military setting. Lambert (2000) examined OCB in a manufacturing setting and found that perceived organizational support significantly predicted OCB. Lapierre and Hackett's (2007) meta-analytic study found strong evidence that employees who were more conscientious displayed higher levels of OCB, and employees with higher levels of job satisfaction demonstrated more OCB. Chiaburu and Lim (2008) tested whether manager trustworthiness and interactional justice predict OCB

after controlling for trust and system-based fairness and found that perceived interactional justice and manager trustworthiness were antecedents of OCB.

In addition to the antecedents of OCBs, OCB researchers have examined the consequences of OCB extensively. For instance, Bateman and Organ (1983) and Organ (1988) suggested that OCB is an important factor that leads to organizational effectiveness. Podsakoff, Ahearne, and MacKenzie (1997) suggested that OCB helps coordinate activities among team members and across groups. A longitudinal study conducted by Koys (2001) found that OCB had a significant impact on profitability. Ehrhart, Bliese, and Thomas (2006) found that unit-level OCB was related to unit effectiveness. Whiting, Podsakoff, and Pierce (2008) reported that OCB had a significant effect on performance evaluation decisions.

Given the importance of OCB on organizational functioning, OCB-related constructs have been developed in different conceptual ways. Although most OCB research has followed the definition provided by Organ (1988), three OCB-related constructs have received considerable attention. First, the contextual performance (e.g., Borman & Motowidlo, 1993; Campbell, 1994; Pulakos, Borman, & Hough, 1988) is defined as the contributions that create and sustain the cooperation and interpersonal supportiveness of the group, which in turn enhances group performance. Unlike task performance that can be predicted by knowledge, skills, or abilities, Organ, Podsakoff, and MacKenzie (2006) suggested that contextual performance captures interpersonal facilitation and job dedication.

Second, prosocial organizational behavior describes an individual's behavior in an organization that is aimed at improving the welfare of someone to whom the behavior is

directed (Brief & Motowidlo, 1986). However, because of its broad definition, prosocial organizational behavior does not constrain the behavior that has specific or direct organizational relevance (Organ et al., 2006).

Finally, Van Dyne, Cummings, and McLean-Parks (1995) proposed another OCB-related construct: extra-role behavior. According to its definition, extra-role behavior is the behavior that attempts to bring benefits to the organization. Thus, extra-role behavior is recognized as the behavior that goes beyond existing behavioral expectations.

In summary, previous research has defined OCB in various ways including in-role job performance behavior, organizationally functional extra-role behavior, organizational loyalty, self-development, individual initiatives, political behavior such as full and responsible organizational participation, and so on (Borman and Motowidlo, 1993; Graham, 1991; O'Reilly & Chatman, 1986; Van Dyne, Graham, & Dienesch, 1994). However, OCB and its related constructs (i.e., extra-role behavior, prosocial behavior, and contextual performance) are conceptually and operationally different (Organ et al., 2006). Thus, they should not be used interchangeably. Since extra-role behavior, prosocial organizational behavior, contextual performance, and organizational spontaneity have been argued to have broad definitions (e.g., Organ et al., 2006), this research proposes that OCB should be utilized in examining employee's positive work behavior that is not described in role descriptions as it is defined more strictly and consists of five distinct dimensions including altruism, courtesy, sportsmanship, conscientiousness, and civic virtue (Organ, 1988; Organ et al., 2006).



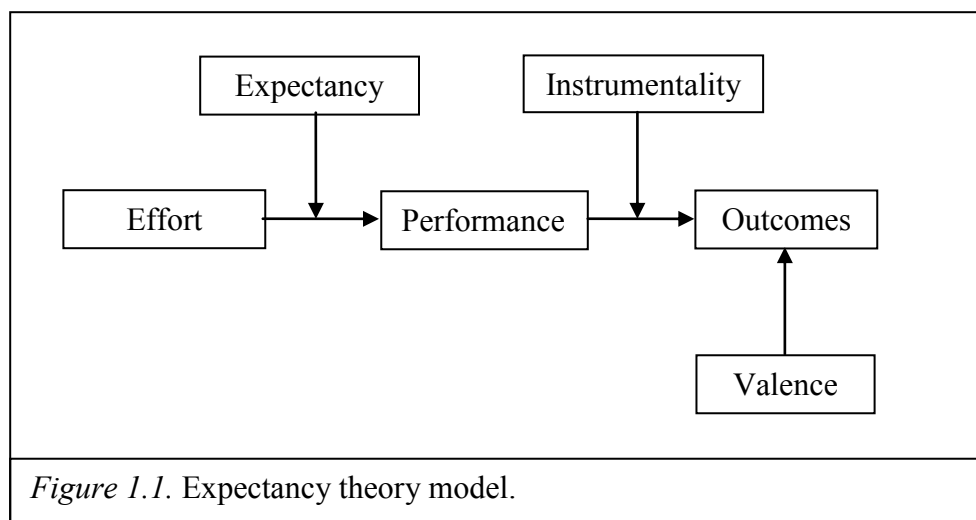
Although OCB studies have been conducted in different contexts, most existing OCB research only provides factors (e.g., personality, task characteristics, organizational characteristics, leadership behaviors, etc.) that facilitate or impede an individual's OCB rather than explaining the process that motivates OCB. This particular gap provides an opportunity for this research to apply expectancy theory to better understand what and how OCB is motivated.

### **1.3 Expectancy Theory**

Expectancy theory (Vroom, 1964) suggests that individuals make decisions about their behavior in the workplace. More specifically, expectancy theory suggests that individuals are purposeful and goal-oriented (Evans, Margheim, & Schlacter, 1982). Because expectancy theory was first designed to explain work behavior and motivation in the work environment (LaFleur, Arnold, & Price, 1991), it has been utilized in several research fields such as retailing (e.g., LaFleur et al., 1991), selling (e.g., Gray & Wert-Gray, 1999), education (e.g., Campbell, Baronina, & Reider, 2003), psychology (e.g., Unger, Evans, Rourke, & Levis, 2003), organizational behavior (e.g., Fudge & Schlacter, 1999), health management (e.g., Jones, Corbin, & Fromme, 2001), and so on.

Since expectancy theory posits that an individual's behavior is influenced by the situation he or she faces and the needs he or she desires, four assumptions about the cause of an individual's behavior in an organization provide the basis for studies that utilize expectancy theory (Hellriegel, Slocum, & Woodman, 1983). First, an individual behavior is determined by a combination of cognitive and environmental forces. Second, an individual makes his or her own decisions about his or her behaviors based on organizational constraints in the workplace. Third, individuals have different desires and

goals in terms of their work outcomes. Finally, decisions that an individual makes among various alternatives are based on his or her perceptions of which behavior will lead to desirable and undesirable outcomes. Figure 1.1 shows the schematic of expectancy theory.



*Source.* Adapted from Lawler, E. E. (1973). *Motivation in Work Organizations*.

Expectancy theory hypothesizes that an individual's motivation to work at a certain level is influenced by the desirability of the outcomes and the subjective probability that his or her efforts would lead to the attainment of personal goals (Evans et al., 1982). In the application of expectancy theory, an IT professional's motivation ( $M$ ) to perform a certain level of OCB can be explained by expectancy ( $E$ ), instrumentality ( $I$ ), and valence of outcome ( $V$ ). Expectancy is an IT professional's perception that a high level of OCB will lead to high task performance. Instrumentality is an IT professional's perception that high task performance will lead to job satisfaction. Valence of outcome is an IT professional's perception of the attractiveness of attaining job satisfaction because of high task performance. Thus, an IT professional's motivation to engage in some level of OCB can be expressed in the following equation:

$$M = \sum E [\sum I * V]$$

In summary, expectancy theory has been suggested as a promising conceptualization of individual motivation (Ferris, 1977). Because of its capability to capture the relationship between individual motivation and behavior, expectancy theory was adapted as the theoretical base by several studies (e.g., Campbell et al., 2003; Geiger & Cooper, 1996; Isaac, Zerbe, & Pitt, 2001). To date, only Kemery, Bedeian, and Zacur's (1996) study has utilized the concepts from expectancy theory to examine the importance of expectancy-based cognitions and job affect on an individual's helping behavior. However, how specific cognitive forces influence an individual's perceived valence of desired work outcomes was neglected in their study. Additionally, instead of examining OCB from the five different dimensions proposed by Organ (1988), Kemery et al. only used altruistic behavior as the representation of OCB. The application of expectancy theory that focuses on how cognitive forces affect an individual's perceived valence of work outcomes, therefore, provides for us potential insights into how OCB is influenced by the individual's interaction with the environment.

#### **1.4 Information Technology Professionals**

To survive in today's competitive environment, organizations have increasingly relied on information technology (IT) professionals to design and execute IT-enabled business processes (Mithas & Krishnan, 2008). In addition, IT has emerged as one of the most crucial sectors of the global economy (Maudgalya, Wallace, Daraiseh, & Salem, 2006). Thus, the role of IT professionals has become much more crucial. Because of their impact on organizations' success, IT professionals have been facing increased workloads and job demands (Hoffman, 2003; Joseph, Ng, Koh, & Ang, 2007). Specifically, IT professionals are expected to possess not only technical skills but also other

organizational skills such as problem-solving and customer service skills (Pawlowski & Robey, 2004; Thibodeau, 2004). Additionally, organizations expect IT professionals to expend more interpersonal effort at work so that they can understand the business processes and communicate effectively with organizational counterparts (Rutner, Hardgrave, & McKnight, 2008). The increasing job demands, therefore, may lead to some negative work outcomes such as low job satisfaction (Burke & Greenglass, 1995), high exhaustion and burnout (Moore, 2000), increased turnover (Moore, 2000), and withdrawal (Deery, Iverson, & Walsh, 2002). In addition, previous studies have found that IT professionals experience role conflict, role ambiguity, emotional dissonance, and other negative work outcomes (Joseph, et al., 2007; Maudgalya, et al., 2006; Moore, 2000; Rutner et al., 2008).

While most previous studies that used IT professionals as the unit of analysis have focused on the IT working environment and its impact on IT professionals' work outcomes, how the IT working environment affects an IT professional's motivation to exhibit positive work behaviors that are not described in their job descriptions (i.e., OCB) has not yet been studied. This gap, therefore, provides an opportunity for this research to use the IT work environment to identify specific cognitive forces (i.e., job stress, trust, and commitment) and their impact on an IT professional's OCB.

### **1.5 Research Model**

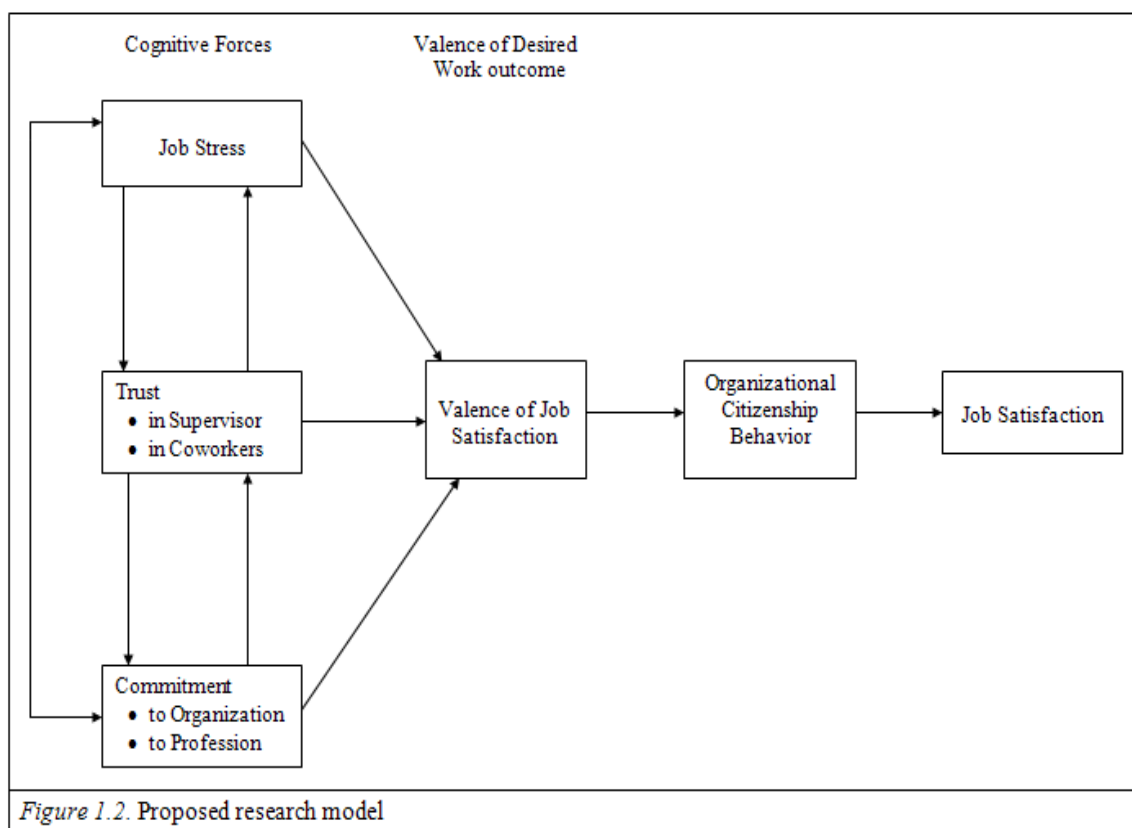
The research model proposed by this research is presented in Figure 1.2. By adopting expectancy theory as the theoretical base, the proposed model investigates the impact of cognitive forces on the valence of intrinsic reward, the impact of valence intrinsic reward on effort, and the impact of effort on intrinsic reward. Cognitive forces

identified in this research are an IT professional's job stress, trust in supervisors and coworkers, and commitment to the profession and the organization. Effort is the degree of OCB that an IT professional exhibits. This research utilizes an aggregate measure of OCB based upon Organ's (1988) study. When discussing valence, Vroom emphasizes that the outcomes associated with working at a particular effort are not the major concern but the individual's perception of satisfaction to be derived from working at a particular effort. Thus, an IT professional's job satisfaction is used as the outcome construct when examining valence of intrinsic reward.

### **1.5.1 Purpose and Scope**

The four major purposes of this research are first to identify the impact of cognitive forces (job stress, commitment to the organization, commitment to the profession, trust in supervisor, and trust in coworker) on the valence of outcome (job satisfaction). Second, by applying expectancy theory, this research investigates the impact of valence of outcome on OCB. Third, this research examines the relationship between OCB and job satisfaction. Finally, this research analyzes the relationships among five cognitive forces.

In this research, OCB is defined as "individual behavior that is discretionary, not directly or explicitly recognized by the formal reward system, and in the aggregate promotes the efficient and effective functioning of the organization" (Organ et al., 2006, p. 3). Although OCB literature has suggested several sub-properties that define OCB such as cheerleading and peacekeeping behavior, this research adopts Organ's (1988) five OCB sub-constructs including altruism, courtesy, sportsmanship, conscientiousness, and civic virtue.



It is important to note that this research intends to investigate the overall OCB exhibited by an individual rather than each sub-construct of OCB exhibited by an individual. Thus, this research will use an aggregated OCB based upon the five OCB sub-constructs (i.e., altruism, courtesy, sportsmanship, conscientiousness, and civic virtue). This approach has been commonly used by previous research (e.g., Blakely, Srivastava, & Moorman, 2005; Koys, 2001; Podsakoff, & MacKenzie, 1994). In addition, previous OCB studies have demonstrated the impact of organizational demographic variables such as age, gender, and tenure on OCB (e.g., Allen, 2006; Ehigie & Otukoya, 2005; Wagner & Rush, 2000). Thus, this research will control for the effects of these demographic variables.

### 1.6 Research Questions

This research attempts to investigate the following research questions:

1. How do job stress, commitment, and trust influence the valence of job satisfaction?
2. How does the valence of job satisfaction influence OCB?
3. How does OCB influence job satisfaction?

In addition to the research questions identified above, this research examines the relationships among cognitive forces. The research question related to the relationships among cognitive forces is:

4. What are the relationships among job stress, commitment, and trust?

### **1.7 Contributions and Importance of the Research**

To survive in the competitive environment, organizations must identify goals, seek individuals who have relevant and adequate knowledge, skills, and abilities to achieve those goals. However, most organizations have recognized that in addition to identifying individuals with adequate knowledge, skills, and abilities for effective task performance, they need to identify those who will “go above and beyond the call of duty” (Neuman & Kickul, 1998). While most existing OCB studies have focused on identifying antecedents and consequences of OCB, only the study conducted by Kemery et al. (1996) to our knowledge has examined OCB through the expectancy theory lens. Since expectancy theory is one of the dominant ways to think about the process of work motivation (Behling & Starke, 1973), the application of expectancy theory on OCB research would provide a better understanding of what and how OCB is motivated. In addition, the results of this research can be used by organizations and managers to establish a work environment where employees’ OCB is encouraged.

## **1.8 Research Approach**

One of the objectives of this research is to examine OCB of highly skilled employees. Thus, the unit of analysis of this research was IT professionals. This research employed a cross-sectional survey research approach to test the proposed research model empirically. Participants were provided an online self-reported questionnaire. The measures used in this research were adopted from existing measures to improve validity and reliability. Modifications of the existing measures were conducted to eliminate irrelevant items or add additional items.

## **1.9 The Organization of the Research**

The remainder of the research is organized into four additional chapters. Chapter 2 investigates previous research in the area of OCB. As job stress, commitment to the profession and organization, and trust in supervisors and coworkers are included as cognitive forces when examining valence of job satisfaction, reviews on those variables will be conducted. Chapter 2 also develops the theoretical framework and the hypotheses being tested. Chapter 3 provides the research methodology with emphasis on survey research design and data collection procedures. Chapter 4 summarizes the statistical analyses and results. Finally, chapter 5 offers the discussions, conclusions, implication limitations, and future research directions.



## CHAPTER 2

### LITERATURE REVIEW

#### **2.1 Introduction**

As the number of published OCB articles have increased dramatically in the past few decades (Podsakoff et al., 2000), the impact of OCB on individual and organizational outcomes has been identified. However, very little emphasis has been placed on utilizing motivational theories to explain why OCB occurs. The major purpose of this research is to utilize expectancy theory to explain how cognitive forces affect OCB exhibited by an IT professional. Therefore, in this chapter, an overview of OCB, the sub-constructs of OCB used in this research, an overview of motivational theory with the emphasis on expectancy theory, and the research model and hypotheses are provided.

#### **2.2 Organizational Citizenship Behavior (OCB)**

##### **2.2.1 Overview of OCB**

In the following sections, the development and the sub-constructs of OCB are discussed. We first discuss the bases of OCB including the conceptual works from Barnard (1938), Roethlisberger and Dickson (1939), Katz and Kahn (1966, 1978), and Blau (1946). We then discuss the sub-constructs of OCB used in this research.

##### **2.2.1.1 Barnard (1938): Cooperative System**

The concept of OCB was built upon Barnard's (1938) concept of willingness to cooperate and contribute. Barnard argued that an individual's willingness to cooperate and contribute is indispensable to the organization. He further stressed that the concept of willing to cooperation and contribute does not refer to an individual's willingness to enter an organization because of a contractual sense but a sense of purpose and satisfaction.

Another important concept in Barnard's work is "spontaneous organization" (Barnard, 1938, p.102), which is not the same as a formal organization. He believed that a formal organization is constituted by several small spontaneous organizations and these organizations legitimate and stabilize formal organizational systems. In other words, formal authority is less strained if necessary contributions are secured spontaneously from an individual's willingness to contribute. The concept of spontaneous organization in Barnard's work was further used in Roethlisberger and Dickson' (1939) concept of informal organization.

### **2.2.1.2 Roethlisberger and Dickson (1939): Informal Organization**

Borrowing from Barnard's concept, Roethlisberger and Dickson's (1939) concept of informal organization is one of the bases of OCB. Roethlisberger and Dickson argued that formal organizations utilize systems, policies, rules, and regulations to define members' tasks and roles in order to achieve effectiveness. Thus, formal organizations include all explicit control systems introduced by an organization. However, Roethlisberger and Dickson found that there is something more than formal organizations, which they termed informal organizations. They further claimed that informal organizations contain the sentiments and values by which individuals or groups of individuals are informally differentiated and integrated.

According to Roethlisberger and Dickson, informal organizations exist in every organization and sometimes are considered a means of satisfying social needs that are ignored by formal organizations. Moreover, they suggested that informal organizations are prerequisites for effective collaboration and they facilitate the functioning of formal

organizations. Roethlisberger and Dickson's concept of collaboration and informal, therefore, contain the essence of what OCB is (Organ, 1988).

### **2.2.1.3 Katz and Kahn (1966, 1978): A Sense of Citizenship**

In Katz and Kahn's (1966) analysis of an organization, it is suggested that to be effective, organizations must attract and hold individuals in the organizational system, ensure individuals perform their tasks stated in the role descriptions at a minimum level, and motivate performance that goes beyond role requirements such as innovative and spontaneous behavior. In addition, Katz and Kahn suggested that system rewards offer incentives for achieving in-role performance at a minimum level but fail to motivate incremental improvement within the system. Because of this particular discrepancy, Katz and Kahn acknowledged that "a sense of citizenship" might increase an individual's work outcome above minimally acceptable levels. In later work, Katz and Kahn (1978) translated the concept of a sense of citizenship into a readiness to contribute beyond contractual expectations and emphasized that one's feeling of being treated with respect determines one's sense of citizenship.

### **2.2.1.4 Blau (1946): Social Exchange Theory**

Social exchange theory (SET) posits that individuals are self-interested and their actions are motivated by the returns they receive from others. Other important concepts discussed in SET are first, individual behavior is a series of exchanges. Second, individuals try to maximize their rewards and to minimize costs. Finally, norms of reciprocity reinforce an individual's behavior (LaGipa, 1977; Nye, 1979). Since SET focuses on interpersonal transactions (Huston & Burgess, 1979), it has been applied to specific types of interpersonal transactions such as OCB. Because of this potential

relationship, Organ (1988) has provided an interpretation of OCB from the social exchange perspective. Specifically, Organ proposed that employees exhibit OCB to reciprocate for the fair treatment offered by their organizations. This relationship between fairness and OCB has been empirically tested by later studies extensively (e.g., Fassina, Jones, & Uggerslev, 2008; Kamdar, McAllister, & Turban, 2006; Konovsky & Pugh, 1994; Lambert, 2000; Lavelle et al., 2009; Messer & White, 2006; Moorman, Blakely, & Niehoff, 1998; Stamper & Van Dyne, 2001).

The above review provides us an understanding of the concept of OCB. However, to answer the proposed research questions, we must know what OCB consists of.

### **2.2.2 Sub-Constructs of OCB**

OCB represents individual behavior that is discretionary, not directly or explicitly recognized by formal reward, and that in the aggregate promotes organizational effectiveness (Organ, 1988; Organ et al., 2006). Derived from previous OCB research (e.g., Bateman & Organ, 1983, Graham, 1986; Podsakoff & Williams, 1986; Smith et al., 1983), Organ's (1988) taxonomy consists of five sub-constructs including altruism, courtesy, sportsmanship, conscientiousness, and civic virtue. According to Moorman (1993), the definitions of the five OCB sub-constructs are as follows.

Altruism is the behavior of helping a specific person with an organizationally relevant task or problem. An example of altruistic behavior is that a computer engineer spends time to show colleagues how to operate newly developed software. It is important to note that altruistic behavior can be directed toward coworkers, supervisors, customers, suppliers, etc. as long as the transaction has organizational relevance (Organ, 1988).

Courtesy occurs when an individual engages in preventing a work-related problem from occurring. Courtesy involves actions that are touching base with those parties whose work would be affected by one's decisions (Organ et al., 2006). For example, people in the gym who wipe the benches after a workout are exhibiting courteous behavior. As Organ (1988) pointed out, it is sometimes difficult to distinguish courtesy from altruism. However, he suggested that the distinction between altruism and courtesy is that altruism is to help someone who already has a work-related problem whereas courtesy is an effort to prevent a work-related problem from occurring or to take actions in advance to mitigate the problem.

Sportsmanship is the behavior that entails avoiding excessive complaining or railing against mostly imaged slights. An example would be an employee who does not complain about the new work routines that resulted from the organization's new quality improvement policy. Sportsmanship is important for organizational effectiveness in that it maximizes the total amount of energy that can be devoted to constructive purposes (Organ, 1988).

Conscientiousness is the behavior that allows one to carry out his or her specific role requirement to levels well beyond those normally expected. For example, an employee attends a meeting even under difficult weather conditions. It is important to note that conscientiousness is to go beyond the minimum role requirements such as regular attendance. Conscientiousness contributes to organizational effectiveness as it makes for a more efficient use of existing resources and provides a larger pool of resources to the organization (Organ, 1988). Using the attendance example, one can see

that conscientious attendance reduces the cost and time spent on rearranging the schedules of other employees.

Civic virtue is the behavior that evolves around responsible participation in the political life of the organization. Graham (1986) suggested that a good organizational citizen contributes to corporate governance not only by keeping abreast of the issues of the day but also by expressing sentiments about those issues. Thus, civic virtue implies an individual's sense of involvement in organizational policies, issues, or decisions. Civic virtue contributes to an organization in that it improves efficiency and increases knowledge that results from meetings, discussions, or constructive debates (Organ, 1988). Table 2.1 summarizes the constructs of OCB used in this research.

Table 2.1

*Definition and Example of OCB Sub-Constructs*

Construct	Definition	Example
Altruism	The behavior of helping a specific person with an organizationally relevant task or problem	A teacher covers a class for a sick colleague
Courtesy	The behavior that prevents a work-related problem from occurring	A retail clerk first checks with shipping and delivery department before making a non-routine commitment to a customer
Sportsmanship	The behavior that entails avoiding excessive complaining or railing against mostly imaged slights	An employee does not complain about a new production method that forces him or her to be rearranged
Conscientiousness	The behavior that allows one to carry out his or her specific role requirement to levels well beyond those normally expected	An employee attends the meeting under extreme weather conditions
Civic virtue	The behavior that evolves around the responsible participation in the political life of the organization	An employee attends meeting, reads the intramural mail, discusses issues on personal time, votes, and speaks up

*Source.* Adapted from Organ et al. (2006). Organizational Citizenship Behavior: Its Nature, Antecedents, and Consequences.

### 2.2.3 Gender and OCB

OCB researchers have paid attention to the how gender influences OCB. The argument that gender could make a difference on OCB can be found in Heilman and Chen's (2005) and Farrell and Finkelstein's (2007) studies. Specifically, Heilman and Chen claimed that one of the female gender stereotypes is being helpful which is captured by the altruism sub-construct of OCB. Meanwhile, Farrell and Finkelstein suggested that

civic virtue can be considered assertive and that independent behavior is more frequently associated with the male gender stereotype.

Visualizing the potential impact of gender differences on OCB, researchers have used gender as an independent variable or a moderator to examine its impact. For instance, Farh, Earley, and Lin (1997) examined the relationship between OCB and organizational justice in a Chinese context and found the relationship to be stronger for men than for women. In the experimental research conducted by Heilman and Chen (2005), it was hypothesized and found that the performance of altruistic citizenship behavior in a work setting would enhance the favorability of male employees' evaluations and recommendations but would diminish the favorability of female employees' evaluations and recommendations. Allen (2006) investigated the relationship between OCB to the organization and salary and promotion by using gender as a moderator. The results indicated that gender moderated the relationship between OCB to the organization and promotion and the relationship was stronger for males than for females.

Farrell and Finkelstein (2007) conducted three laboratory studies to examine how gender influences participants' OCB. Specifically, they argued that participants are more likely to attribute gender-incongruent OCB than gender-congruent OCB to their impression of management motives. The results demonstrated that OCB in general was expected more of women than of men. The results also indicated that civic virtue behaviors were exhibited more by men than by women.

In a study that examined the relationships between OCB and knowledge sharing, Lin (2008) proposed that gender has a moderating effect on the relationship between each



of the five sub-constructs of OCB (altruism, courtesy, conscientiousness, sportsmanship, and civic virtue) and knowledge sharing. The results indicated the impact of altruism on knowledge sharing was stronger for women than for men whereas the impacts of courtesy and sportsmanship on knowledge sharing were stronger for men than for women. However, gender had no significant effect on the impacts of conscientiousness and civic virtue on knowledge sharing. Table 2.2 summaries the studies that examined gender effect on OCB.

#### **2.2.4 Age and OCB**

Caspi and Bem (1990) pointed out that age has a significant impact on intelligence and cognitive development of an individual. From this standpoint, Wagner and Rush (2000) suggested that age might lead to important changes in the motivational bases or antecedents associated with OCB. Thus, one could logically argue that there is a linkage between an individual's age and OCB.

Several empirical studies have investigated the age-OCB relationship. For example, Chattopadhyay (1999) examined how employees' attraction to and trust in their peers, and their organization-based self-esteem mediate the effect of demographic dissimilarity on OCB. The results of Chattopadhyay's study demonstrated that younger employees were more likely to perform higher levels of altruistic behavior when there was greater age dissimilarity to peers. On the other hand, older employees reported lower levels of altruistic behavior when they perceived greater age dissimilarity to peers.

In Perry, Kulik, and Zhou's (1999) study, age differences between subordinates and supervisors were examined. In this study, it was found that subordinates who were older than their supervisors would engage in less OCB than subordinates who

Table 2.2

*Studies Examined Gender Effect on OCB*

Study	Sample	Model	Results
Farh et al. (1997)	227 Chinese supervisors and subordinates	Tested the relationship between organizational justice and an aggregated OCB by controlling gender effect	1. The relationship between justice and OCB to be stronger for men than for women
Heilman & Chen (2005)	135 undergraduate students	Tested the impact of gender on the relationship between altruistic citizenship behavior and performance evaluations and recommendations	1. The performance of altruistic citizenship behavior enhanced the favorability of men's evaluations and recommendations but would diminish the favorability of women's evaluations and recommendations
Allen (2006)	440 individuals employed in multiple settings	Tested the moderating effect of gender on the relationship between OCB to organization and organizational rewards	1. Gender was a moderator and the relationship between OCB to organization and promotion was stronger for males than for females
Farrell & Finkelstein (2007)	79 undergraduate students	Tested the relationship between gender and OCB sub-constructs	1. The aggregated OCB in general was expected more of women than of men 2. Civic virtue behaviors were exhibited more by men than by women
Lin (2008)	314 part-time college students	Tested the moderating effect of gender on relationship between OCB sub-constructs and knowledge sharing	1. The impact of altruism on knowledge sharing was stronger for women than for men 2. The impacts of courtesy and sportsmanship on knowledge sharing were stronger for men than for women 3. Gender had no significant effect on the impacts of conscientiousness and civic virtue on knowledge sharing

were younger than their supervisors. However, the absolute size of the age difference between subordinates and their supervisors was not found to have an impact on subordinates' OCB.

Wagner and Rush (2000) proposed age as a moderator of the relationship between altruistic behavior and contextual variables (i.e. job satisfaction, organizational commitment, and trust). The results indicated that the relationship was stronger for the younger individuals. The study also found that moral judgment was a unique predictor of altruistic behavior among older individuals.

Li and Wan (2007) investigated how age influences an individual's perception of OCB as in-role behavior or as extra-role behavior in a Chinese context. These researchers hypothesized that the older the employees are, the more likely they are to perceive OCB as in-role behavior. The results revealed that OCB was associated with age and the older employees are, the more they perceive OCB as in-role behavior.

Ng and Feldman (2008) conducted a meta-analysis on the relationship between age and the dimensions of job performance. Specifically, ten dimensions of job performance including core task performance, creativity, performance in training programs, OCB, safety performance, general counterproductive work behaviors, workplace aggression, on-the-job substance use, tardiness, and absenteeism were examined in relationship with age. The results indicated that OCB was significantly and positively related to age. Table 2.3 summarizes the studies that examined the age effect on OCB.

Table 2.3

*Studies Examined Age Effect on OCB*

Study	Sample	Model	Results
Chattopadhyay (1999)	401 manufacturing employees	Tested the relationship age dissimilarity and OCB sub-constructs	<ol style="list-style-type: none"> <li>1. Younger employees were more likely to perform higher levels of altruism behavior when there was greater age dissimilarity to peers</li> <li>2. Older employees reported lower levels of altruism behavior when they perceived greater age dissimilarity to peers</li> </ol>
Perry et al. (1999)	35 university employees	Tested the relationship between age difference and an aggregated OCB	<ol style="list-style-type: none"> <li>1. Subordinates who are older than their supervisors would engage in less OCB than subordinates who are younger than their supervisors</li> <li>2. The absolute size of the age difference between subordinates and their supervisors increases, subordinates would engage in less OCB was not supported</li> </ol>
Wagner & Rush (2000)	96 nursing staffs	Tested the moderating effect of age on the relationship between altruistic behavior and contextual variables	<ol style="list-style-type: none"> <li>1. The relationship between altruistic behavior and contextual variables was stronger for the younger individuals.</li> </ol>
Li & Wan (2007)	349 employees and general managers	Tested the impact of age on the perception of an aggregated OCB as in-role behavior	<ol style="list-style-type: none"> <li>1. An aggregated OCB was associated with age. The older employees are, the more they perceive OCB as in-role behavior</li> </ol>
Ng & Feldman (2008)	Meta-analytic study	Tested the relationship between age and job performance that includes an aggregated OCB	<ol style="list-style-type: none"> <li>1. An aggregated OCB were significantly and positively related to age</li> </ol>

### 2.2.5 Tenure and OCB

Since OCB is exhibited when an employee orients newcomers or helps others (i.e., altruistic or courtesy behavior) (Lepine & Van Dyne, 2001), one can argue that an individual with more job experience would be able to assist newcomers or others with less experience. However, unlike other organizational demographic variables such as gender and age, tenure has not been assessed in its impact on OCB independently but has been included as a control variable in a limited number of OCB studies.

For instance, Ryan (2001) controlled age, gender, tenure, and social desirability when examining the association between an employee's level of moral reasoning and OCB. Despite finding a positive and significant relationship between moral reasoning and two dimensions of OCB (i.e. helping behaviors and sportsmanship behaviors), Ryan did not find a significant effect between tenure and OCB.

Ehigie and Otukoya (2005) examined how perceived organizational support and perceived fair interpersonal treatment relates to OCB in Nigeria. In their study, Ehigie and Otukoya controlled the effects of gender, age, and tenure on the relationship between their independent variables and OCB. In terms of the control variables, these researchers found that both age and tenure contributed significantly to the variance in OCB. Table 2.4 summarizes the studies that examined tenure effect on OCB.

In summary, previous OCB studies have demonstrated the impact of organizational demographic variables such as age, gender, and tenure on an aggregated OCB or individual OCB sub-constructs. Although the purpose of this research is not to assess the relationship among demographic variables and an aggregated OCB, this research controls for the effects of age, gender, and tenure on OCB.

Table 2.4

*Studies Examined Tenure Effect on OCB*

Study	Sample	Model	Results
Ryan (2001)	116 public accountants	Tested the impact of moral reasoning on an aggregated OCB by controlling tenure	1. Tenure did not significantly affect the relationship between moral reasoning and OCB
Ehigie & Otukoya (2005)	207 Nigerian government employees	Tested the relationship between perceived organizational support and perceived fair interpersonal treatment and an aggregated OCB by controlling tenure	1. Tenure contributed significantly to the variance in OCB

**2.3 Motivation Theory**

Motivation is an important concept for management and organizations in that improved performance resulting from motivation is free and explains why some individuals and organizations are more productive than others (Tosi, Mero, & Rizzo, 2000). In the following sections, an overview of motivation theory with the emphasis on expectancy theory is provided.

**2.3.1 Overview of Motivation Theory**

Motivation theories can be categorized into two categories: content theories and process theories. The content theories focus on investigating factors that motivate a specific behavior. For example, Maslow's (1943) need theory suggests that an individual's behavior is motivated by his or her needs including physiological (i.e., food), safety (i.e., stable environment), belonging (i.e., affection), esteem (i.e., respect by others), and self-actualization (i.e., desire to do what he or she has potential of doing). Maslow's theory also suggests that individuals arrange needs in a hierarchy from lower

order (physiological needs and safety needs) to higher order (belonging needs, esteem needs, and self-actualization needs) and are motivated to satisfy lower level needs before satisfying higher level needs. Other prominent content theories include Herzberg, Mausner, and Snyderman's (1959) two-factor theory, McClelland's (1965) achievement-power theory, and Hackman and Lawler's (1971) job characteristics approach.

The process theories focus on how a specific behavior occurs. For instance, goal-setting theory (Locke, 1968) suggests that an individual's performance is influenced by his or her intention to perform, and an individual will try to achieve the goals he or she sets. From this perspective, an individual with higher goals will do better than someone with lower goals, and if an individual knows precisely what he or she wants to do, he or she will do better than someone whose goals are vague (Tosi et al., 2000). Some prominent process theories include expectancy theory (Vroom, 1964), reinforcement theories (e.g., Locke, Shaw, Saari, & Latham, 1981; Reitz, 1981), organizational justice theories (e.g., Adams, 1963, 1965; Baron, 1983). Table 2.5 summarizes the overview of motivation theory. Since expectancy theory is utilized as the theoretical base by this research, the following section provides a review of expectancy theory.

### **2.3.2 Expectancy Theory**

Expectancy theory (Vroom, 1964) has been used to explain organizational phenomena including occupational preference, job satisfaction, work motivation, and work behavior (Mitchell, 1982). Expectancy theory was formulated based upon two important concepts: expectancy and valence. According to the theory, an individual's decision to perform a specific behavior is based upon his or her analysis of (1) the valence (overall attractiveness) he or she perceives to be associated with the outcomes of

the behavior and (2) the expectancy (subjective estimation of the probability) that his or her behavior will lead to the desired outcomes.

Table 2.5

*Motivation Theory*

Theory	Basic Premises	Category
Maslow's (1943) need theory	<ol style="list-style-type: none"> <li>1. Human needs are arranged in a hierarchical form</li> <li>2. An Individual is not motivated by a need that is satisfied but by a need that is at the next level of the need hierarchy</li> </ol>	Content theory
Herzberg et al.'s (1959) two-factor theory	<ol style="list-style-type: none"> <li>1. Hygiene factors create dissatisfaction if they are not presented</li> <li>2. Motivators lead to high satisfaction and willingness to work harder</li> </ol>	Content theory
McClelland's (1965) achievement-power theory	<ol style="list-style-type: none"> <li>1. There are three motives including the need for achievement, the need for power, and the need for affiliation that will have strongest effect on an individual's behavior</li> </ol>	Content theory
Hackman & Lawler's (1971) job characteristics approach	<ol style="list-style-type: none"> <li>1. If specific job characteristics are presented, individuals will experience a positive and self-generated response when they perform well, which in turn creates continued effort toward good performance</li> </ol>	Content theory
Vroom's (1964) expectancy theory	<ol style="list-style-type: none"> <li>1. An individual will put effort on doing things that will lead to the results that he or she desires</li> </ol>	Process theory
Locke's (1968) goal-setting theory	<ol style="list-style-type: none"> <li>1. Performance is caused by an individual's intention to perform</li> <li>2. An individual will try to accomplish the goals he or she sets</li> </ol>	Process theory
Reinforcement theories (e.g., Locke et al., 1981; Reitz, 1981),	<ol style="list-style-type: none"> <li>1. Performance will increase if the consequences of high performance is a positive reinforce</li> <li>2. The reinforcement of the high performance behavior with desired consequences of high performance is the process by which performance improves</li> </ol>	Process theory
Organizational justice theories (e.g., Adams, 1963, 1965; Baron, 1983)	<ol style="list-style-type: none"> <li>1. An individual's motivation to work is based on his or her perceptions of how just or fair he or she is treated at work</li> </ol>	Process theory



Vroom (1964) defined expectancy as a belief about the likelihood that a desired outcome will be fulfilled by a particular act. Valence is defined as an affective orientation toward a particular outcome. Utilizing the concept of instrumentality, Vroom proposed that first level outcomes (i.e., performance) become instrumental to the attainment or avoidance of second level outcomes (i.e., job satisfaction or dissatisfaction). It is important to note that the concepts of expectancy and instrumentality are distinctive in that expectancy is a subjective probability of the action-outcome (i.e., effort-performance) association ranging from 0 to 1 whereas instrumentality is an outcome-outcome (i.e., performance-job satisfaction) association ranging from -1 to +1.

Building upon the concepts of expectancy, instrumentality, and valence, Vroom (1964) proposed that expectancy theory is comprised of two models: the valence model and the force model. The valence ( $V_j$ ) model explains the overall attractiveness of the second level outcome where valence is a product of the valence of the second level outcome associated with the first level outcome ( $V_k$ ) and the expectancy that first level outcome will be followed by second level outcome ( $I_{jk}$ ). The equation of the valence model is as the follow:

$$V_j = \sum (V_k I_{jk})$$

The force ( $F_i$ ) model explains an individual's motivation to maximize his or her effort to the attainment of the first level outcome. The force model is a product of the valence of the first level outcome ( $V_j$ ) and the expectancy that a certain level of effort will lead to the attainment of first level outcome ( $E_{ij}$ ). The equation of force model is as the follow:

$$F_i = \sum (E_{ij} V_j)$$

Since expectancy theory has been proposed to predict job effort (Galbraith & Cummings, 1967; Hackman & Porter, 1968; Lawler & Porter, 1967; Vroom, 1964), job satisfaction (Graen, 1969; Lawler, 1970; Porter & Lawler, 1968; Vroom, 1964), and work motivation (Campbell, Dunnette, Lawler, & Weick, 1970), this research will utilize it to explain an individual's OCB. In the application of expectancy theory, the first level outcome and second level outcome are task performance and job satisfaction, respectively. Valence is the overall attractiveness of job satisfaction. Effort is OCB exhibited by an individual. However, because of the objectives of this research, this research did not investigate the concepts of expectancy, instrumentality, and first level outcome. In other words, this research explored how cognitive forces (i.e., job stress, commitment, and trust) influence an individual's perceived valence of a second level outcome (job satisfaction), how the valence of job satisfaction influences OCB (effort), and how OCB affects job satisfaction.

### **2.3.3 Expectancy Theory and OCB**

The application of expectancy theory on OCB has been limited. An EBSCO search on the topic shows that only the study conducted by Kemery et al. (1996) has applied the concepts from expectancy theory. In their study, the researchers investigated the impact of expectancy-based cognitions including expectancies, instrumentalities, and valences and job affect (i.e., job satisfaction) on the altruism sub-construct of OCB. The results indicated that after controlling for negative and positive affectivity, generalized instrumentality beliefs were found to affect altruism directly. In addition, expectancies significantly mediated the impact of generalized instrumentality beliefs on affect-based job satisfaction. However, this study did not discuss how cognitive forces affect an

individual's perception of the valence of work outcome, which is one of the important concepts in Vroom's expectancy theory. This research gap, therefore, provides an opportunity to utilize expectancy theory to explain the impact of cognitive forces on an individual's perceived valence of work outcome, which in turn influences his or her OCB.

#### **2.4 Information Technology Professionals**

There is a popular image of IT professionals as the "technology geeks" (Moore & Love, 2004). However, organizations have increasingly relied on IT professionals to design and execute IT-enabled business processes and thus they have become a strategic resource for organizations to survive in today's competitive marketplace (Mithas & Krishnan, 2008).

Although the role of IT professionals is crucial on an organization's success, their functions in the organization could be different. According to Denning (2001), IT professionals can be categorized into three professional groups. The first group of IT professionals possesses IT-specific disciplines. They consist of professionals who deal with the major technical IT areas and the intellectual cores such as software architects and system security professionals. The second group of IT professionals is called IT-intensive disciplines professionals. They comprise professionals who are intensive users of IT and can make novel IT contributions such as knowledge engineers and multimedia designers. The third group of IT professionals, IT-supportive occupations professionals, covers those who have skills and knowledge to support the IT infrastructures that others use such as network technicians and database administrators. Table 2.6 summarizes the three IT professional groups.

Table 2.6

*Categories of Information Technology Profession*

IT Profession		
IT-Specific Disciplines Professionals	IT-Intensive Disciplines Professionals	IT-Supportive Occupations Professionals
Artificial intelligence	Aerospace engineering	Computer technician
Computer science	Bioinformatics	Help desk technician
Computer engineering	Cognitive science	Network technician
Computational science	Digital library science	Professional IT trainer
Database engineering	E-commerce	Security specialist
Computer graphics	Financial services	System administrator
Human-computer interaction	Genetic engineering	Web services designer
Network engineering	Information science	Web identity designer
Operating systems	Information systems	Database administrator
Performance engineering	Public policy and privacy	
Robotics	Instructional design	
Scientific computing	Knowledge engineering	
Software architecture	Management information systems	
Software engineering	Multimedia design	
System security	Telecommunications	
	Transportation	

*Source.* Adapted from Denning, P. J. (2001). *Who Are We?*

As IT has emerged as one of the most crucial sectors of the global economy (Maudgalya et al., 2006), IT professionals have been facing increased workloads and job demands (Hoffman, 2003; Joseph et al., 2007). The modern organization demands IT professionals to have not only technical skills but also other skills such as problem solving and customer service skills (Pawlowski & Robey, 2004; Thibodeau, 2004). Additionally, IT professionals are expected to expend more interpersonal effort at work in order to understand the business processes and to communicate effectively with organizational counterparts (Rutner et al., 2008). The increasing job demands, therefore, may lead to some negative work outcomes such as low job satisfaction (Burke &

Greenglass, 1995), high exhaustion and burnout (Moore, 2000), increased turnover (Moore, 2000), and withdrawal (Deery et al., 2002).

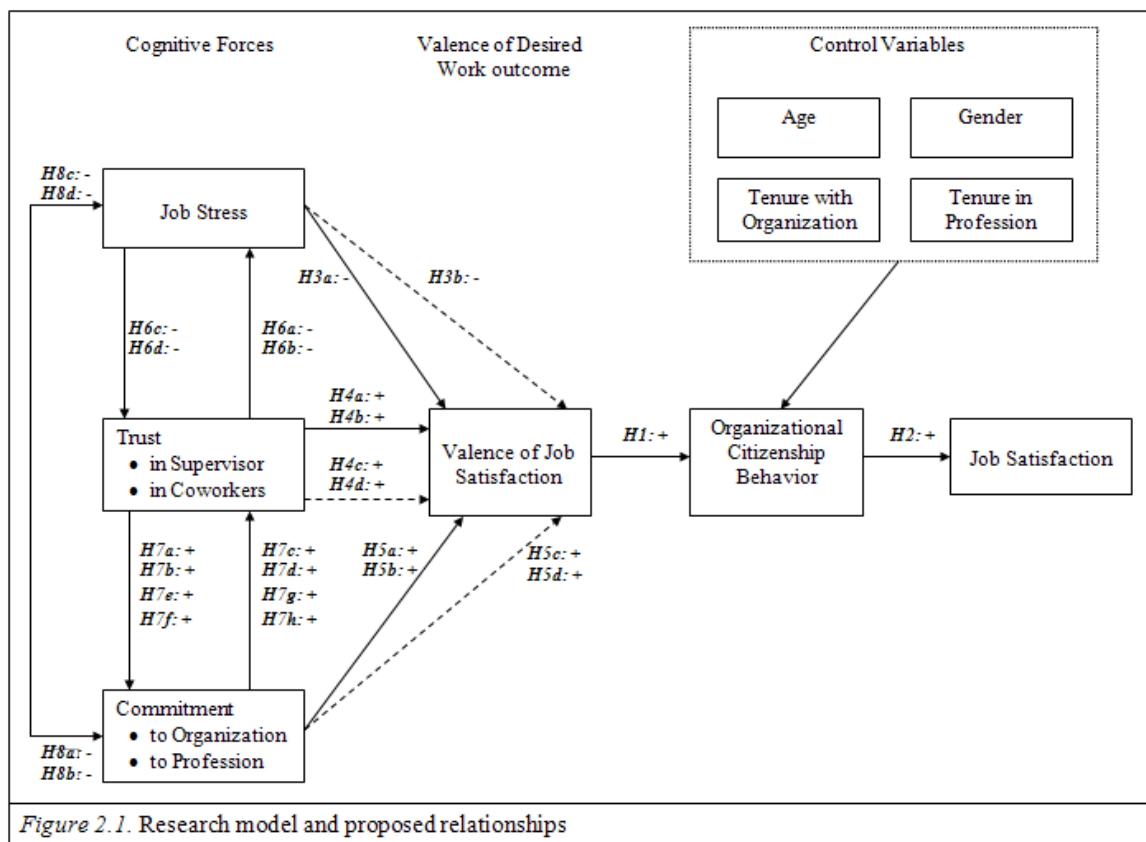
Unlike other professions, IT is a non-human service occupation (Maudgalya et al., 2006) that may not necessarily require emotional involvement with people (Golembiewski & Munzerider, 1988). Recognizing this particular characteristic, a study conducted by Evans and Fischer (1993) compared the work condition among human service and non-human service populations and found that non-human service workers experienced higher degrees of emotional exhaustion, de-personalization, and a lack of sense of personal accomplishment. Other studies such as Moore (2000), Maudgalya et al. (2006), Joseph et al. (2007), Rutner et al. (2008) demonstrated that IT professionals experienced work exhaustion, low job satisfaction, high turnover intention, role conflict, role ambiguity, emotional dissonance, and other negative work outcomes.

Although the IT work environment and its impact on IT professionals' work outcomes have been well-documented, how IT work environment affects an IT professional's motivation to exhibit positive work behaviors that are not described in job descriptions (i.e., OCB) has not yet been studied. This research, therefore, uses the IT work environment to identify specific cognitive forces (i.e., job stress, trust, and commitment) and their impact on an IT professional's OCB.

## **2.5 Research Model and Hypotheses**

This research addresses the effects of cognitive forces (i.e., job stress, trust in supervisors and coworkers, and commitment to the profession and organization) on the valence of an IT professional's intrinsic reward (i.e., job satisfaction). Additionally, this research investigates how an IT professional's OCB affects his or her actual job

satisfaction. The application of expectancy theory to explain OCB will provide better understanding of what and how OCB is motivated. Figure 2.1 shows the research model of this research and the expected relationships among constructs.



*Note:* Solid lines indicate direct effects and dotted lines indicate mediating effects

## 2.5.1 Valence of Job Satisfaction and OCB

Organizational behavior researchers have proposed that job satisfaction can have a significant impact on individual job performance. For instance, Ryan, Schmit, and Johnson (1996) suggested that if employees in a unit share positive attitudes, they should have norms in terms of cooperation and collaboration, which in turn improves the unit's productivity. In a recent meta-analysis, Ricketta (2008) found the job attitudes and performance relationship to be significant. Among numerous job attitudinal concepts, job satisfaction has received considerable attention in the OCB literature as it is believed to

be able to explain how hard people work, how much people achieve, how frequently people miss work, whether people look for another job, and so on (Organ et al., 2006).

Because of the implications of job satisfaction on people's work behavior, researchers have paid attention to the impact of job satisfaction on OCB. For instance, Bateman and Organ (1983) surveyed employees at a university and found a significant relationship between general measures of job satisfaction and OCB. The study conducted by Organ and Konovsky (1989) identified satisfaction with pay to be a significant predictor of the altruism and conscientiousness sub-constructs of OCB. In Moorman's (1993) study, he proposed that the relationship between job satisfaction and OCB depends on the nature of job satisfaction and cognitive job satisfaction such as work conditions, and opportunities were better than affective job satisfaction in predicting OCB. Konovsky and Organ (1996) surveyed hospital employees and found that satisfaction was significantly related to all five sub-constructs of OCB. Lowery, Beadles, and Krilowicz (2002) investigated blue collar workers' OCB and job satisfaction and found that the OCB of blue collar workers were related to satisfaction with coworkers, supervision, and pay. In a meta-analytic study, Lapierre and Hackett (2007) found strong evidence that more conscientious employees display more OCB, which leads to greater job satisfaction. They also found that employees reciprocate their higher job satisfaction by demonstrating more OCB. Foote and Tang (2008) proposed that team commitment in self-directed teams moderates the relationship between job satisfaction and OCB and found the relationship between job satisfaction and OCB to be significant.

Despite some inconsistent findings between job satisfaction and OCB (e.g., Schappe, 1998), it is believed that there is a reciprocal relationship between job

satisfaction and OCB. While most studies have emphasized the impact of job satisfaction on OCB, little attention has been paid to how OCB promotes job satisfaction. Since Lapierre and Hackett (2007) suggested that employees reciprocate their higher job satisfaction by demonstrating more OCB, this research will explore whether or not job satisfaction could lead to more OCB as well as whether engaging in more OCB could lead to higher job satisfaction.

Moore and Love (2005) claimed that as IT jobs becomes more dynamic, OCB becomes crucial to successful organizational operation. In other words, an organization will be more efficient and effective if IT professionals voluntarily take actions that help prevent problems. Since it has been suggested that job satisfaction enhances an individual's willingness to help the organization, it can be assumed that an IT professional's job satisfaction will enhance his or her willingness to help the organization, which may lead to the exhibition of OCB. Thus, it is expected that the valence of job satisfaction will have a positive impact on an IT professional's OCB.

***H1: The valence of job satisfaction will have a positive impact on an IT professional's OCB.***

### **2.5.2 OCB and Job Satisfaction**

Bolino, Turnley, and Niehoff (2004) suggested that OCB may not be only driven by a desire to help others or reciprocate favorable treatment, but also by self-serving motives such as the desire to obtain a more satisfying job experience. Similarly, Lapierre and Hackett (2007) proposed that individuals who exhibit OCB may consider engaging in OCB as a potential means to satisfy their personal need for work related achievement and success. Thus, one could argue that an employee may engage in OCB because it helps



him or her achieve personal or organizational success, which is an essence of job satisfaction.

It has been suggested that IT jobs often require IT professionals to utilize unique skills, competences, and knowledge to successfully complete their jobs. The empirical study conducted by Feather and Rauter (2004) found that there were significant positive correlations between OCB and opportunities for skill utilization. Further, they claimed that performing more OCB may be a way to express and fulfill work values that are important to the employee or to achieve other personal goals such as promotion. In other words, because IT professionals have specialized knowledge, skills, and abilities, they have more opportunities to help others in the organization achieve personal or organizational goals, which in turn could lead to higher levels of job satisfaction. Thus, it is expected that the more opportunities for an IT professional to utilize his or her skills, the more potential for him or her to exhibit OCB. From this standpoint, it is expected that OCB exhibited by an IT professional's will increase his or her job satisfaction.

***H2: An IT professional's OCB will have a positive impact on his or her job satisfaction.***

### **2.5.3 Job Stress, Valence of Job Satisfaction, and OCB**

Most OCB research has emphasized the positive side of OCB (Bolino & Turnley, 2005). For instance, research on OCB has consistently made the suggestion that employees who are satisfied with their jobs or committed to their organizations are more likely to engage in OCB (e.g., Organ & Ryan, 1995). Another example of a typical suggestion made by OCB research is that OCB leads to more effective organizational functioning because of increasing efficiency and productivity (e.g., Bolino, Turnley, & Bloodgood, 2002).

Although previous OCB research has predominately discussed the positive aspects of OCB, some OCB studies have raised the question of whether OCB could lead to negative consequences (e.g., Van Emmerik, Jawahar, & Stone, 2005; Vigoda-Gadot, 2006). In particular, it has been suggested that employees who contribute to other employees and/or the organization by performing OCB might experience stress and overload (Organ & Ryan, 1995). Bolino and Turnley (2005) investigated the impact of a specific type of OCB, individual initiative, on job stress. The results indicated that higher levels of individual initiative are associated with higher levels of employee job stress. Chu, Lee, and Hsu (2006) examined the relationships among job stress, social support, and OCB of public health nurses in rural areas of Taiwan. The findings demonstrated that workload had a negative impact on nurses' OCB. Boerner, Dutschke, and Wied (2008) examined the impact of followers' stress on the association between charismatic leadership and followers' OCB in German hospitals. In that study, stressors were identified as the objective component of work-stress, and strain as the subjective component of work-stress. Although the results of Boerner et al.'s study did not find stressors as moderators of the relationship between charismatic leadership and followers' OCB, the study did demonstrate that followers' strain fully mediated the relationship between charismatic leadership and followers' OCB.

Although the reciprocal relationship between job stress and OCB can be seen cognitively and has been demonstrated empirically, Noblet, McWilliams, Teo, and Rodwell's (2006) study showed a different result. More specifically, Noblet et al. examined the relationship between extra-role performance measured by the altruism sub-construct of OCB and employee well-being measured by job satisfaction and

psychological health in a local government. However, Noblet et al. reported that job stress was not a significant predictor of OCB, which contradicts previous findings; this provides an opportunity to reexamine the relationship between job stress, job satisfaction, and OCB.

Previous research on IT job characteristics has suggested that IT jobs tend to be autonomous (e.g., Moore & Love, 2005). While IT has become an important factor of an organization's success, the IT professional's role has become much more crucial. Because of this important role, it is expected that IT professional's job stress would be rather high. Moore (2000) supports this view by claiming that IT professionals can feel overwhelmed by various demands since IT is so widespread and vitally important in the modern organization.

It is argued that higher levels of job stress leads to lower levels of job satisfaction (e.g., Bacharach, Bamberger, & Conley, 1991; Cullen, Silverstein, & Foley, 2008; Veloutsou & Panigyrakis, 2004). Thus, one can argue that when an individual perceives a high level of job stress, he or she would anticipate a high level of job dissatisfaction. Since expectancy theory suggests that the valence of an individual's anticipation of satisfaction or dissatisfaction can result from work-related cognitive forces (Behling & Starke, 1973), it is expected that an IT professional's job stress will negatively influence the valence of job satisfaction.

***H3a: Job stress will have a negative impact on the valence of job satisfaction of an IT professional.***

According to Caplan, Cobb, French, Van Harrison, and Pinneau (1975), an individual experiences job stress because of multiple job demands, difficulty of the job,

insufficient supplies or support. Thus, if an individual has a high level of job stress from in-role expectations, he or she may not have time or the energy to exhibit extra-role behaviors. In other words, job stress has a negative impact on OCB. Meanwhile, as mentioned earlier, individuals may perform OCB in order to experience job satisfaction (Bolino et al., 2004). Thus, because of the valence of job satisfaction, an individual may perform OCB even under high levels of job stress. Since it is suggested that IT professionals' working environment is stressful, it is expected that the valence of job satisfaction will mediate the negative relationship between IT professionals' job stress and OCB.

***H3b: The negative relationship between an IT professional's job stress and OCB will be positively mediated by the valence of job satisfaction.***

#### **2.5.4 Trust, Valence of Job Satisfaction, and OCB**

According to Rotter (1967), trust is an individual's expectancy that the word, promise, verbal or written statement of another individual can be relied on. Thus, it is suggested that trust can be a predictor of one's behavior (Gamson, 1968). Because of the potential connection between one's trust in others and one's behavior, researchers have investigated the impact of trust on OCB. For instance, Deluga (1994) applied social exchange theory and equity theory and examined the relationships among supervisor trust building, leader-member exchange quality, and a subordinate's OCB. Deluga found that perceived fairness was the most significant supervisor trust building behavior associated with a subordinate's OCB. Korsgaard, Brodt, and Whitener (2002) surveyed credit union employees and found that trustworthy behavior by managers was positively associated with trust in manager and OCB. Mayer and Gavin (2005) studied the relationship

between employees' in-role performance and OCB and their trust in plant managers and top management teams and found that both trust in managers and trust in top management teams were related to employees' OCB. Chiaburu and Lim (2008) used fairness heuristic theory to test how manager trustworthiness and interactional justice predict OCB. By controlling the effects of dispositional factors and procedural and distributive justice, these researchers found that manager trustworthiness explains variance in OCB over and above the variance accounted for by interactional fairness.

Previous studies have found that trust facilitates cooperative behavior and reduces conflict (e.g., Rousseau, Sitkin, Burt, & Camerer, 1998). Building upon this concept, researchers have demonstrated the impact of trust on OCB. Moreover, trust has been found to be a significant mediator between organizational variables (e.g., organizational justice, leadership style, or commitment) and OCB. While most studies have targeted non-highly skilled employees, there is a need to identify the impact of trust on OCB of highly skilled employees such as IT professionals (Pare & Tremblay, 2007).

It is suggested that supervisors are the formal links between the organization and subordinates because supervisors are directly responsible for communicating organizational policies and goals to subordinates (Srutton, Toma, & Pelton, 1993; Tan & Tan 2000). Moreover, it is suggested that trust improves interpersonal relationships and openness (Mishra & Morrissey, 1990) and improves an employee's evaluation of supervisors. Thus, if an employee trusts his or her supervisors, he or she will have a positive relationship with the supervisors as well as the organization. In addition, when an employee trusts supervisors, the supervisors may reciprocate by giving him or her greater freedom in decision making, which allows the employee to experiment with new

ways of doing his or her work and leading to possible innovative behaviors (Tan & Tan, 2000). Since trust in supervisors can enhance an employee's attitude and relationship to the supervisors, the organization, and the job itself, which are important determinants of job satisfaction, it is expected an IT professional's trust in supervisors will have a positive influence on the valence or attractiveness of job satisfaction.

***H4a: Trust in supervisors will have a positive impact on the valence of job satisfaction of an IT professional.***

Previous research has suggested that trust in coworkers facilitates cooperative behavior, reduces conflicts, and enhances group cohesion (e.g., Ladebo, 2006; Rousseau et al., 1998). It is also argued that trust in coworkers may result from the expectation of achieving organizational goals (Ladebo, 2006). While both in-role and extra-role behaviors have an impact on determining whether organizational goals can be achieved, it is expected that higher levels of trust in coworkers leads to higher levels of OCB exhibited by an individual for the purpose of achieving organizational goals.

Trust in coworkers has been suggested to have a positive impact on an employee's attitude toward workplace (e.g., Karl, Peluchette, Hall, & Harland, 2005). Specifically, when an employee perceives his or her coworkers as untrustworthy, he or she is likely to experience negative feelings such as hostility, scorn, or fear (Jones & George, 1998). Moreover, Dirk and Ferrin (2001) suggested that a high level of trust causes the trustor to hold positive attitudes such as higher job satisfaction or perceived good performance. Thus, it is expected that an IT professional's trust in coworkers will enhance the valence of job satisfaction.

***H4b: Trust in coworkers will have a positive impact on the valence of job satisfaction of an IT professional.***

Tan and Tan (2000) suggested that supervisors are directly responsible for articulating and communicating organizational and departmental goals to their subordinates. Thus, it is expected that organizational and department goals will be accepted and implemented by subordinates when their trust in supervisors is high. Bowler (2006) claimed that OCB promotes the goals of the organization as well as the goals of the individuals (i.e., supervisors and subordinates). While trust in supervisor leads to a subordinate's willingness to achieve organizational goals and OCB facilitates the organizational goals to be achieved, it is expected that trust in supervisors will have a positive impact on a subordinate's OCB. The study conducted by Coyle-Shapiro (2002) also provided evidence that employees who trust management are more likely to exhibit OCB.

Expectancy theory suggests that the valence is the desirability of work-related satisfaction or dissatisfaction to be derived from working at a particular level. Since previous studies have shown that OCB is a means to achieve job satisfaction (e.g., Deluga, 1998; Hofmann, Morgeson, & Gerras, 2003; Kraimer, Wayne, & Jaworski, 2001; Masterson, Lewis, Goldman, & Taylor, 2000; Organ & Ryan, 1995; Wang et al., 2005), it is expected that the valence of job satisfaction will mediate the positive relationship between IT professionals' trust in supervisors and OCB as well as the positive relationship between IT professionals' trust in coworkers and OCB.

***H4c: The positive relationship between an IT professional's trust in supervisors and OCB will be positively mediated by the valence of job satisfaction.***

***H4d: The positive relationship between an IT professional's trust in coworkers and OCB will be positively mediated by the valence of job satisfaction.***

### **2.5.5 Commitment, Valence of Job Satisfaction, and OCB**

Organizational commitment has been recognized and demonstrated as one of the important factors that influence organizational outcomes such as performance and employee work behavior (e.g., Lee & Mowday, 1987; Meyer, Paunonen, Gellatly, Goffin, & Jackson, 1989; Porter, Mowday, & Boulian, 1974; Wiener & Vardi, 1980). In addition, according to Meyer and Allen's (1991) model of organizational commitment, commitment to the organization has a positive impact on specific work outcomes such as reduced employee turnover, greater performance, and less absenteeism.

Because of the potential relationship between commitment to the organization and OCB, researchers have analyzed the relationship between the two constructs. For instance, the meta-analysis conducted by Organ and Ryan (1995) found that commitment to the organization was positively correlated with altruistic behavior and conscientious behavior. Feather and Rauter (2004) investigated and compared OCB of permanent employment and contract school teachers in Australia. They reported that the contract teachers perceived less job security but exhibited more OCB compared to the permanent teachers. In addition, they found that OCB was positively related to organizational commitment, organizational identification, and opportunities to satisfy variety and skill-utilization work values for the permanent teachers.

In their field study, Van Dyne and Pierce (2004) surveyed supervisory and non-supervisory employees from three different U.S. firms and examined the relationships among psychological ownership, work attitudes (i.e., organizational commitment, job



satisfaction, and organization-based self-esteem), and work behaviors (i.e., performance and OCB). By using data from both supervisor and peer observations, Van Dyne and Pierce found positive links among psychological ownership for the organization and employees attitudes. More importantly, Van Dyne and Pierce found that psychological ownership increased the explained variance of organization-based self-esteem and OCB compared to the impact of job satisfaction and organizational commitment on OCB.

In a study that examined the relationship between perceived external prestige (i.e. social and economic) and social workers' affective commitment to their organization in the Israeli health care system, Carmeli (2005) found that perceived external prestige increased social workers' affective commitment to their organization. More importantly, Carmeli found that social workers' affective commitment mediated the relationship between perceived external social prestige and OCB. Carmeli also reported that affective commitment tended to have different impact on the sub-constructs of OCB. Specifically, affective commitment influenced altruistic behavior more than did conscientious behavior.

The studies of the relationship between organizational commitment and OCB, however, have not yielded conclusive results. For instance, in a study that examined the relationship between individual values and organizational commitment, Cohen and Keren (2008) examined the joint effect of individual values and organizational commitment on Israeli teachers' OCB. The results indicated a weak relationship of organizational commitment and OCB and also raised some questions about the utility of organizational commitment in predicting OCB. Because of the inconsistent findings revealed by

previous studies on the commitment-OCB relationship, this research will investigate the relationship among commitment, job satisfaction, and OCB.

Mowday, Porter, and Steers (1982) categorized commitment into attitudinal and behavioral aspects and it has been one of the most widely used typologies in the literature (Oliver, 1990). The attitudinal approach suggests that commitment is determined by individual factors such as personal characteristics, work experience, and organizational factors such as structural characteristics (Steers, 1977). As previous studies have pointed out (e.g., Stevens, Beyer, & Trice, 1978), some role-related determinants such as work/role overload and experienced role conflict can have a negative impact on organizational commitment whereas feedback and task identity can have a positive influence on organizational commitment. Thus, one can argue that an uncommitted individual might perceive high levels of work overload and role conflict from a job, receive less feedback from supervisors, and perceive low levels of task identity that in turn could reduce the valence of job satisfaction to the individual. Meanwhile, Oliver (1990) suggested that an employee may offer commitment in return for the anticipated receipt of rewards from the organization. Thus, linking Oliver's argument to expectancy theory, it is expected that an IT professional may offer his or her commitment to the organization because of the anticipated receipt of job satisfaction from the organization.

***H5a: Commitment to the organization will have a positive impact on the valence of job satisfaction of an IT professional.***

It is argued that individuals with higher levels of commitment to the profession are more likely to be involved in activities within the profession and to keep up to date with professional developments (e.g., Larson, 1977; Meyer, Allen, & Smith, 1993). Aranya,

Pollack, and Amernic (1981) suggested that individuals who are committed to their professions have high levels of belief and acceptance to the goals and values of the profession, high levels of willingness to exert effort on behalf of the profession, and high levels of desire to maintain membership in the professions. Because of the strong desire to stay in the profession, an individual's anticipation of job satisfaction or dissatisfaction that resulted from the work-related outcomes would play an important role on determining his or her belief of profession's success or failure, which in turn is an indicator of his or her feeling of personal success or failure. In other words, it is expected that an IT professional's commitment to the profession will have a positive influence on the valence of job satisfaction.

***H5b: Commitment to the IT profession will have a positive impact on the valence of job satisfaction of an IT professional.***

To ensure personal employability, IT professionals have to maintain high levels of competence through rigorous and regular professional development (Schambach & Blanton, 2002). Schambach and Blanton also claimed that IT professional development is generally voluntary. Thus, IT professional's commitment to the profession is expected to have an impact on the degree of their professional development. Specifically, if an IT professional's commitment to the profession is high, he or she will be highly committed and motivated to develop skills and a higher level of competence. While it is argued that IT jobs are interdependent and boundary spanning (Moore & Love, 2005), one can argue that IT professionals with more skills and competence will exhibit more OCB in order to complete overall departmental or organizational tasks. In other words, it is expected that

there is a positive relationship between an IT professional's commitment to the profession and OCB.

Since both commitment to the organization and commitment to the profession have positive impacts on individual and organizational outcomes such as less turnover, greater performance, and higher motivation, the valence or attractiveness of job satisfaction becomes more important for those individuals who have higher levels of commitment to the organization and commitment to the profession. Thus, it is expected that the valence of job satisfaction will positively mediate the relationship between an IT professional's commitment to the organization and OCB and the relationship between an IT professional's commitment to the profession and OCB.

***H5c: The positive relationship between an IT professional's commitment to the organization and OCB will be positively mediated by the valence of job satisfaction.***

***H5d: The positive relationship between an IT professional's commitment to the profession and OCB will be positively mediated by the valence of job satisfaction.***

### **2.5.6 Job Stress, Commitment, and Trust**

Following the definition of trust provided by Mayer, Davis, and Schoorman (1995), Matzler and Renzl (2006) suggested that employees will feel safer and more positive about their supervisors and coworkers when they believe that supervisors and coworkers are trustworthy. Meanwhile, low trust is suggested to lead to psychologically distressing situations because supervisors or coworkers may have power over important aspects of an individual's job (Dirks & Ferrin, 2002). The study conducted by Timms, Graham, and Caltabiano (2006) found a similar result that there was a significant negative relationship

between trust and job stress. Based upon the findings of previous studies, it is expected that an IT professional's trust in supervisors and coworkers will have a negative impact on job stress. In other words, high levels of trust will lead to low levels of job stress and high levels of job stress will lead to low levels of trust.

***H6a: An IT professional's trust in supervisors will have a negative impact on job stress.***

***H6b: An IT professional's trust in coworkers will have a negative impact on job stress.***

***H6c: An IT professional's job stress will have a negative impact on trust in supervisors.***

***H6d: An IT professional's job stress will have a negative impact on trust in coworkers.***

The relationship between trust and commitment has been identified by previous studies extensively (e.g., Blau, 1964; Lawler & Yoon, 1993; Yamagishi & Yamagishi, 1994). It is argued that the greater the trust for others, the greater will be the commitment to those others (Burke & Stets, 1999). Previous research has also shown that trust in supervisors has a positive impact on employee job satisfaction (e.g., Driscoll, 1978; Lagace, 1991), which in turn has a positive impact on professional commitment (e.g., Billingsley & Cross, 1992). Thus, it is expected that an IT professional's trust in his or her supervisors affects his or her commitment to the profession. Moreover, Konovsky and Pugh (1994) and Tan and Tan (2000) claimed that an employee may see the supervisor as a representative of the organization and may extend his or her trust to the organization. Tan and Tan further suggested that trust in organization affects levels of organizational commitment. Therefore, it is expected that an IT professional's trust in supervisors will have a positive impact on commitment to the organization and commitment to the organization will have a positive impact on trust in supervisors.

***H7a: An IT professional's trust in supervisors will have a positive impact on commitment to the profession.***

***H7b: An IT professional's trust in supervisors will have a positive impact on commitment to the organization.***

***H7c: An IT professional's commitment to the profession will have a positive impact on trust in supervisors.***

***H7d: An IT professional's commitment to the organization will have a positive impact on trust in supervisors.***

In addition to trust in supervisors, trust in coworkers may be an important factor that influences individuals' commitment to stay in their profession. It is theorized that when the level of trust in coworkers is high, members support each other resulting in a strong cohesion between the members that in turn motivates an employee to stay in the current job position (Ladebo, 2006). Moreover, previous studies have suggested that trust in coworkers promotes job satisfaction because of more knowledge sharing, learning opportunities, and help giving (Abrams, Cross, Lesser, & Levin, 2003). Since job satisfaction is positively related to commitment to stay in the profession, it is expected that an IT professional's trust in coworkers will have a positive influence on commitment to the profession and commitment to the profession will have a positive impact on trust in coworkers.

Prior studies have suggested that trust in coworkers increases an employee's affective commitment (Ferres, Connell, & Travaglione, 2004) that is the extent an employee feels an emotional attachment to the organization. In addition, other studies have shown that members of a cohesive group exhibited greater commitment to the

organization (e.g., Vandenberghe, Bentein, & Stinglhamber, 2004; Yoon, Baker, & Ko, 1994). Furthermore, studies based on correlational data have supported the positive relationship between interpersonal trust and employee's commitment to the organization (e.g., Chrobot-Mason, 2003). From the perspective of an employee's quit intention, it is suggested that an employee is more likely to quit the organization when the level of trust in coworkers is low (Ferres et al., 2004). Thus, it is expected that an IT professional's trust in coworkers will have a positive influence on commitment to the organization and commitment to the organizational will have a positive influence on trust in coworkers.

***H7e: An IT professional's trust in coworkers will have a positive impact on commitment to the profession.***

***H7f: An IT professional's trust in coworkers will have a positive impact on commitment to the organization.***

***H7g: An IT professional's commitment to the profession will have a positive impact on trust in coworkers.***

***H7h: An IT professional's commitment to the organization will have a positive impact on trust in coworkers.***

Previous studies have demonstrated a negative relationship between job stress and organizational commitment (e.g., Jamal, 1990; Jackson, Turner, & Brief, 1987; Spector, Dwyer, & Jex, 1988). Thus, if an employee perceives the work environment as stressful, he or she may be unwilling to stay in the organization. Similarly, if an employee works in a stressful profession, he or she may not be willing to continue working in the profession. As was mentioned above, since the IT work environment can be relatively stressful, it is

expected that an IT professional's job stress will have a negative influence on both commitment to the organization and commitment to the profession.

***H8a: An IT professional's job stress will have a negative impact on commitment to the organization.***

***H8b: An IT professional's job stress will have a negative impact on commitment to the profession.***

Commitment is suggested to have positive effect on employee retention, performance, and absenteeism (e.g., Meyer & Allen, 1991). Thus, if an employee has a high level of commitment to the organization or profession, he or she will agree with and accept to organizational or professional goals, policies, and objectives even they are difficult to achieve. In other words, commitment to organization and commitment to the profession will reduce an employee's feeling of job stress. Thus, it is expected that an IT professional's commitment to the organization and commitment to the profession will have a negative impact on job stress.

***H8c: An IT professional's commitment to the organization will have a negative impact on job stress.***

***H8d: An IT professional's commitment to the profession will have a negative impact on job stress.***

## 2.6 Summary

In the previous sections, a review of the OCB literature related to this research indicated that there is an opportunity to utilize expectancy theory to explain an IT professional's OCB. Since IT professionals' OCB can be critical to an organization's success (Moore & Love, 2005), the results of this research will provide an additional



understanding of why and how an IT professional's OCB is motivated. In the next chapter, the research methodology, sampling frame, method of study, development of instrument, survey administration, and data analysis of this research are discussed.

## CHAPTER 3

### RESEARCH METHODOLOGY

#### 3.1 Introduction

In this chapter, a detailed discussion on the research methodology that was employed to test the research hypotheses is provided. In the first section of this chapter, an explanation of the targeted population and sample is discussed. The second section shows the processes in terms of instrument development as well as the procedures used to generate a reliable and valid survey instrument. In the final section, a discussion on the statistical techniques is given.

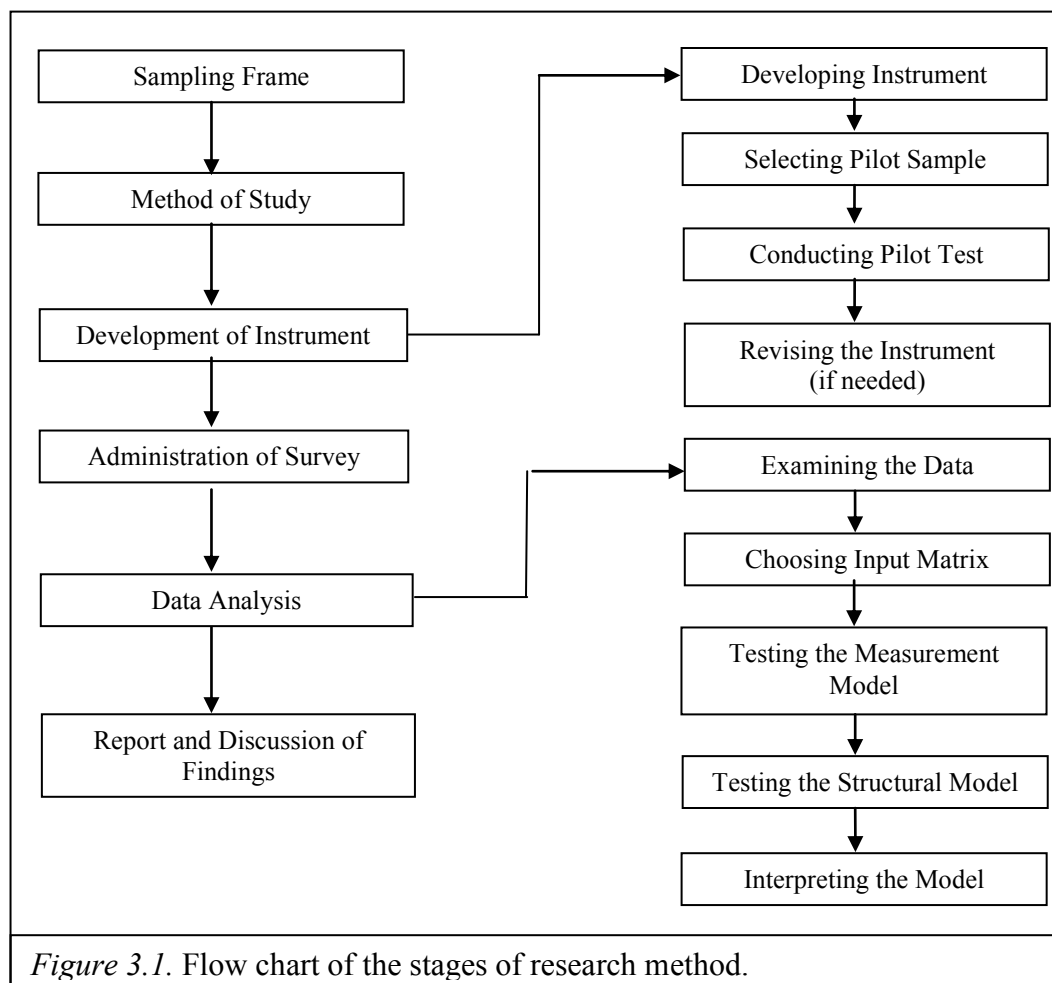
#### 3.2 Research Methodology

This research followed the stages as shown in Figure 3.1. The first stage was the establishment of the sampling frame. In this stage, targeted population, sample subjects, and sample size were determined. After establishing the sampling frame, the method of study was chosen in the second stage based upon the research objectives and the data sources. The third stage involved developing the instrument for the study. The processes of instrument development included selecting and modifying previously validated measures, selecting the pilot sample, and conducting the pilot study.

The fourth stage involved administering the survey. Specifically, a snowball sampling approach was used to reach the target population. Snowball sampling is considered usable when difficulties in gaining access to and recruiting target populations are experienced (Elan-Goossensen, Van De Goor, Vollemans, Hendriks, & Garretsen, 1997), which were the conditions experienced in this research. We first sent out email invitations requesting participation in this research to IT professionals at a large mid-

western university and used their referrals to locate other IT professionals. Personal referral has been used widely by previous research (e.g., Martin & Dean, 1990; Piron, 2006; Shtayermman, 2008; Watters & Biernacki, 1989).

After a 2-month period, a total of 165 surveys were viewed and 132 surveys were started, which resulted in a response rate of 80.00%. The research process then entered the fifth stage, data analysis, which involved examining the data including outliers, missing data, and normality, choosing the appropriate input matrix, evaluating estimates of the measurement and structural models, and interpreting the model. In the final stage, the results were reported. A detailed discussion on each of the above research processes is provided in the subsequent sections.



### 3.3 Sampling Frame

#### 3.3.1 Subjects

Using a snowball sampling approach, this research identified subjects to participate in this research. Specifically, subjects for this research were IT professionals located across 21 U.S. states and in different industries including banking, health care, education, financial, automotive, manufacturing, and retailing industry. Although there are limitations of using a snowball sampling approach, it is assumed that subjects are suitable in this research for two reasons. First, subjects were distributed across the states in the U.S. Second, as a snowball sampling approach could result in sampling bias (Zikmund, 2003), this research found that the variation in demographic backgrounds (i.e., age, gender, tenure, or job position) to be quite large. Thus, similarity in subject results from using a snowball sampling approach was not expected.

#### 3.3.2 Sample Size

To determine an adequate sample size, it is necessary to examine the impact of the statistical tool used in this research on sample size. Because this research utilized partial least squares (PLS) technique, the sample size is determined by ten times either (1) the block with the largest number of formative indicators or (2) the dependent latent variable with the largest number of independent latent variables influencing it, whichever is the greater (Chin & Newsted, 1999). Since this research involved a formative construct (OCB) with 5 formative indicators and a dependent latent construct (valence of job satisfaction) with 5 paths going to it, the minimum sample size is 50. As this research had a sample size of 132, which exceeds the minimum requirement, the statistical analyses could be performed. In addition, since it is suggested that a minimum sample size of 84 is

needed to obtain a power of .80 as defined by Cohen (1977) (Chin, Marcolin, & Newsted, 2003; Chin & Newsted, 1999), the sample size of this research was considered adequate.

### **3.4 Method of Study**

This research employed a cross-sectional survey approach as it provides quick, inexpensive, efficient, and accurate means of assessing information about the population (Zikmund, 2003). In addition, this research utilized an online survey and was considered appropriate since potential respondents were dispersed in terms of their geographical locations.

### **3.5 Development of Instrument**

#### **3.5.1 Developing the Instrument**

This research adopted previously validated measures to examine the constructs used in this study. The questionnaire consisted of two sections. In the first section, measurement items intended to measure job satisfaction, organizational citizenship behavior, valence of job satisfaction, job stress, commitment to organization, commitment to profession, trust in supervisors, and trust in coworkers. It is important to note that since one of the major objectives is to investigate an IT professional's OCB, OCB is examined by summing the values of the five sub-constructs of OCB identified by Organ (1988). A higher value represents a higher degree of OCB exhibited by an IT professional. The second part of the survey was designed to solicit respondents' demographic information including age, gender, tenure with organization, and tenure in profession. These variables were used as control variables in this research as previous OCB studies have demonstrated their impact on OCB (e.g., Allen, 2006; Ehigie & Otukoya, 2005; Wagner & Rush, 2000).

Items to measure job satisfaction were adopted from Lee, Holtom, McDaniel, and Hill (1999). Organizational citizenship behavior items were based upon the scales developed by Moorman (1993). Valence of job satisfaction items were created using the work of Teas (1981). Job stress items were generated based upon Schaufeli, Leiter, and Kalimo's (1995) scale. Items to measure commitment to organization and commitment to profession were adopted from Porter et al. (1974). Finally, items related to trust in supervisors and trust in coworkers were based upon the scales created by Cook and Wall (1980). Table 3.1 summarizes the definitions, scales, and internal reliabilities (measured by previous studies using Cronbach's alpha  $\alpha$ ) of the constructs involved in this research. The measures used in this research are all previously used, tested, and validated.

### **3.5.2 Pilot Sampling, Pilot Testing, and Instrument Revising**

A pilot test was conducted before the distribution of the survey. The purpose of the pilot test was to evaluate the clarity and appropriateness of the survey items. Twenty IT workers from a large university located in the mid-western United States were invited to participate in the pilot test. Participants were asked to evaluate the questionnaire and to provide comments on the clarity and appropriateness of questionnaire items. Most of the participants felt that the questionnaire items were understandable and clear except some items that had minor wording issues. Thus, the final questionnaire was created based upon the feedback from the pilot study.

Table 3.1

*Constructs, Definition, Scales, and Internal Reliability*

Construct	Definition	Scale	Reference	Internal Reliability
Organizational Citizenship Behavior (OCB)	“Individual behavior that is discretionary, not directly or explicitly recognized by the formal reward system, and in the aggregate promotes the efficient and effective functioning of the organization” (Organ et al., 2006, p. 3).	A 24-item questionnaire using a 7-point Likert scale with 1 representing strongly disagree and 7 representing strongly agree.	Moorman (1993)	0.81 altruism 0.87 courtesy 0.87sportsmanship 0.83 conscientiousness 0.77 civic virtue
Valence of Job Satisfaction (VJSAT)	An attitude that predisposes a worker to respond to job situations in a favorable or unfavorable way (Seashore & Taber, 1975).	A 13-item scale using a 7-point Likert scale with 1 representing strongly disagree and 7 representing strongly agree.	Teas (1981)	0.75
Job Satisfaction (JSAT)	Feelings or affective responses to facets of the work (Smith, Kendall, & Hulin, 1969).	A 13-item job satisfaction questionnaire using a 7-point Likert scale with 1 representing very dissatisfied and 7 representing very satisfied.	Lee et al. (1999)	0.76
Job Stress (JS)	A psychological syndrome of emotional exhaustion, depersonalization, and diminished personal accomplishment that can occur among individuals who work in human service (Maslach & Jackson, 1981, 1986).	A 5-item scale using a 7-point Likert scale with 1 representing strongly disagree and 7 representing strongly agree.	Schaufeli et al. (1995)	0.88

Table 3.1 (continued)

Construct	Definition	Scale	Reference	Internal Reliability
Commitment to Profession (CP)	The relative strength of an individual's identification with and involvement in a particular profession (Mowday et al., 1982).	A 15-item scale using a 7-point Likert scale with 1 representing strongly disagree and 7 representing strongly agree.	Porter et al. (1974)	0.88
Commitment to Organization (CO)	The relative strength of an individual's identification with and involvement in a particular organization (Mowday et al., 1982).	A 15-item scale using a 7-point Likert scale with 1 representing strongly disagree and 7 representing strongly agree.	Porter et al. (1974)	0.92
Trust in Supervisors (TS)	The willingness of an individual to be vulnerable to the actions of his or her supervisors whose behavior and actions he or she cannot control (Mayer et al., 1995).	A 6-item instrument using a 7-point Likert scale with 1 representing strongly disagree and 7 representing strongly agree.	Cook & Wall (1980)	0.74
Trust in Coworkers (TC)	The willingness of an individual to be vulnerable to the actions of other fellow workers whose behavior and actions he or she cannot control (Mayer et al., 1995).	A 6-item instrument using a 7-point Likert scale with 1 representing strongly disagree and 7 representing strongly agree.	Cook & Wall (1980)	0.77
Age (AGE)	An individual's time of life. Age is measured by years.	An open-ended scale	N/A	N/A
Gender (GE)	An individual's biological trait.	A categorical scale including male and female.	N/A	N/A



Table 3.1 (continued)

Construct	Definition	Scale	Reference	Internal Reliability
Tenure with Organization (TEN_ORG)	The period of time that an individual works for the current organization. Tenure with organization is measured by years.	An open-ended scale.	N/A	N/A
Tenure in Profession (TEN_PRO)	The period of time that an individual works in a given profession. Tenure with profession is measured by years.	An open-ended scale.	N/A	N/A

### **3.6 Administration of the Survey**

The survey was administered by the author and the advisor of this research. Before distributing the survey using a snowball sampling approach, the instrument was submitted for approval by the Southern Illinois University Carbondale (SIUC) Human Subjects Committee to ensure the federal regulations and university policies involving human subjects were followed. Before answering the survey items, participants were informed regarding to the research purposes, contact information of the researchers, and confidentiality. The 132 completed surveys were stored on an online survey website for further analysis.

### **3.7 Data Analysis**

#### **3.7.1 Examining the Data**

The data were examined before entering the analysis stage. Particular attention was given to the assessments of the following aspects: missing data or outliers, normal distribution of the data, and estimation technique. A detailed discussion on data examination is provided in chapter 4.

#### **3.7.2 Choosing Input Matrix**

SmartPLS 2.0 and multiple regression in SPSS 17 for Windows were used for statistical analyses. In addition, this research used raw score as the input data and covariance structure as the type of analysis, which is suitable when examining data with potential non-normal distribution (Bentler, 1990).

#### **3.7.3 Testing the Measurement Model**

To test the measurement model, this research examined construct validity (convergent and discriminant validity). Convergent validity assesses the degree to which

two or more measures of the same concept are correlated. Individual factor loadings were assessed to establish convergent validity. The factor loading and variance extracted should be at least 0.6 for reliability of a construct (Hair, Black, Babin, Anderson, & Tatham, 2006). Items that had no significant loadings, a low communality, or a cross-loading were eliminated and a new factor model was respecified.

Discriminant validity assesses the degree to which two conceptually similar concepts are distinct. Discriminant validity was assessed by examining the interconstruct covariance (Hair et al., 2006). Specifically, discriminant validity is obtained when each variance extracted estimate is greater than the corresponding squared correlation. A detailed discussion on testing the measurement model is presented in chapter 4.

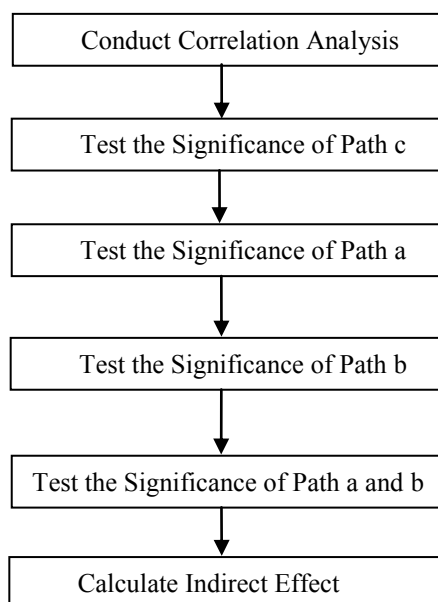
### **3.7.4 Testing the Structural Model**

#### **3.7.4.1 Examining Hypothesized Relationships**

The assessment of the structural model provides statistical confirmation of the proposed hypotheses. Specifically, the standardized path estimates (coefficients) included on the paths provide support for accepting or rejecting the hypothesized relationships in this research. Note that this research used a significance level of .05 to assess the statistical significance for the path estimates.

#### **3.7.4.2 Examining Mediating Effects**

The proposed mediating effects were tested through multiple regression by implementing the steps (see Figure 3.2) suggested by Baron and Kenny (1986) and Hair et al (2006). Five hypothesized mediating effects involved in this research. Figure 3.3 shows these five mediating effects.



*Figure 3.2.* Steps for testing proposed mediating effects

First, a correlation analysis (i.e., whether job stress is related to job satisfaction) was conducted to check the correlations among variables. If the variables were not correlated, the hypothesized mediating effects were not supported. Second, the significance of path c was tested (see Figure 3.3). If path c remained significant after the addition of job satisfaction (JSAT), the hypothesized mediating effects was not supported. The third and fourth step involved testing the significance of path a and path b, respectively. The fifth step was to test the significance of the impact of the predictor (i.e., job stress) and mediator (job satisfaction) on OCB. The final step was to calculate the indirect effect. Specifically, if path c was reduced but still statistically significant after the addition of the mediator, a partial mediation effect was supported. Or, if path c was not statistically significant after the addition of the mediator, then a full mediation effect was supported.

### 3.7.5 Interpreting the Model

In the measurement model, the concept of factor loading was applied to assess the support for the measurement items and constructs proposed in this research. A significant factor loading (i.e., greater than .60) indicates the reliability and internal consistency of the constructs (Hair et al., 2006). The assessment of direct and mediating effects provides the evidence of whether the structural model is valid. Specifically, path estimates provide the statistical support for accepting or rejecting the hypothesized relationships. Meanwhile, regression coefficients provide the support or non-support of whether the proposed mediating effects exist. Discussions on the results of measurement and structural models are presented in chapter 4 and 5.

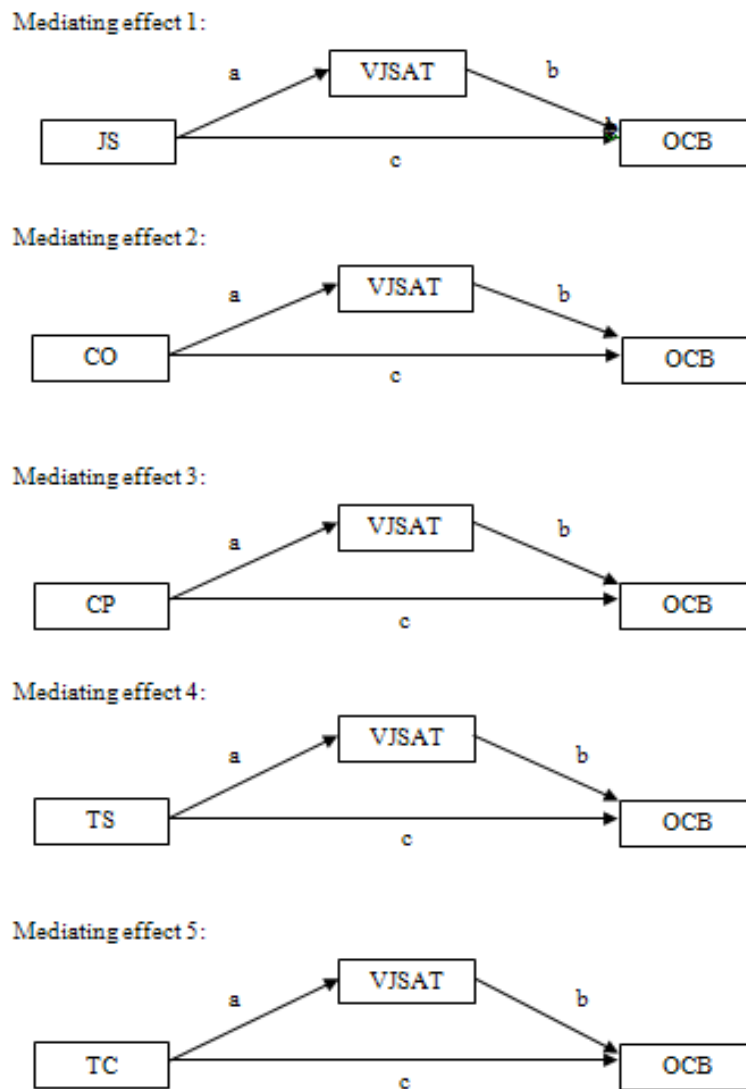


Figure 3.3. Proposed mediating effects

Note: JS = Job Stress, VJSAT = Valence of Job Satisfaction, OCB = Organizational Citizenship Behavior,  
 CO = Commitment to the Organization, CP = Commitment to the Profession,  
 TS = Trust in Supervisors, TC = Trust in Coworkers

## CHAPTER 4

### DATA ANALYSIS AND RESULTS

In the first part of this chapter, an explanation of the data collection process is given. Next, demographic information about the respondents is provided. This is followed by the results of preliminary data screening including missing data analysis, outlier analysis, and multivariate normality analysis. Next, descriptive analysis of measurement scales and analyses of reliability and validity of the measurement scales are presented. The results of hypothesis testing are summarized in the final section of this chapter.

#### **4.1 Data Collection Procedure and Preliminary Data Analysis**

After developing the initial questionnaire, a pilot test of the questionnaire was conducted. By asking 20 university IT professionals about the appropriateness of the questionnaire items, comments were obtained. Most agreed that the items were appropriate and understandable with some minor issues. Based on their feedback, the questionnaire was revised.

After pilot testing of the questionnaire, a snowball sampling approach was used as this research experienced difficulties in gaining access to and recruiting target populations. As mentioned in previous chapters, this research utilized an online survey. The online survey began with an introduction page, which included the purpose of the research, contact information of the researchers, and information about SIUC human subjects approval. In addition, prospective participants were informed that participation in the research was anonymous and voluntary. After a 2-month period, a total of 132 responses were obtained and were used for further analyses.

## 4.2 Preliminary Data Screening and Multivariate Normality Assumption

In this section, procedures employed for data screening and multivariate normality analysis are provided. Specifically, the following discussion focuses on missing data analysis, outlier analysis, and multivariate normality analysis.

### 4.2.1 Missing Data Analysis

To analyze missing data, a four-step process was employed (Hair et al., 2006). The first step was to determine whether missing data should be removed. As the data set contains missing data that can be identified due to failure to complete the entire questionnaire and omitting to answer certain items, the missing data were determined significant. The second step involved determining the extent of missing data. This was calculated by tabulating the percentage of missing data by variable and by case (observation). After the calculations using 132 cases (started surveys), total missing values were 2085, which accounted for 16.3 percent (i.e., 2085 missing values divided by  $132 \text{ cases} \times 97 \text{ questions}$ ) of overall data.

Following Hair et al.'s (2006) suggestion, an individual case/observation with 50 percent or more missing value and/or an individual case with missing values for the dependent variable were deleted. This step resulted in 46 cases being deleted from the data set because each had 50 percent or more missing data (i.e.,  $\geq 49$  unanswered questions of the 97 total questions asked). After deleting 46 cases, a new cross-tabulation table with 86 cases was constructed to calculate missing values by case and by variable. In the 86 cases, the total missing values were 27, which accounted for 0.324 percent of overall data (27 missing values divided by  $86 \text{ cases} \times 97 \text{ questions}$ ). Since the overall



decrease in missing data is large enough, the process of deleting the 46 cases was justified.

In the next step, attention was given to ascertaining the degree of randomness of the missing data present in the 86 cases. This step is important in that it helps a researcher determine the appropriate missing data remedies. Thus, the data set with 86 cases was entered into SPSS 17 to determine whether significant mean differences exist between cases with missing values and those with complete values. Because the analysis showed no significant difference exists, the cases with missing data were believed to be missing completely at random (MCAR), which means the cases with missing values are indistinguishable from the cases with complete values (Hair et al., 2006).

The final stage involved selecting the imputation method. This research utilized the maximum likelihood (ML) approach to cope with missing values in the 86 cases. The ML approach has been recommended as an appropriate missing data technique in the methodological literature (e.g., Allison, 2001). The ML approach is based on data that are normally distributed and parameter estimates are based on the available data. Based upon the estimated parameters, the missing values are estimated (Karanja, 2008). To calculate missing values, data were entered into SPSS 17 and were analyzed by using the Expectation-Maximization (EM) algorithm to obtain maximum likelihood estimators. The EM algorithm is an iterative two-stage method where the E stage calculates the best possible estimates of the missing values and the M stage estimates the parameters assuming the missing data are replaced (Hair et al., 2006). The E and M stages continue until the change in the estimated values is stabilized (Schafer, 1997). Although the EM

algorithm is quite complicated, it has been suggested as an effectively missing data remedy even under the instances of nonrandom missing data (e.g., Hair et al., 2006).

#### 4.2.2 Outliers Analysis

Outliers are defined as “observations with a combination of characteristics identifiable as distinctly different from the other observations” (Hair et al., 2006, p. 73). Because more than two variables were involved in this research, Mahalanobis  $D^2$  measure was used to detect potential outliers in the data set. Specifically, to assess outliers, the  $D^2$  measure obtained by regression analysis was divided by the number of variables involved ( $D^2/df$ ) in this research. Because the sample size was considered relatively small, cases with a value of  $D^2/df$  greater than 2.5 were designated as possible outliers. After performing outlier analysis, 4 observations were designated as possible outliers. These 4 potential outliers were further analyzed by visual examination. The examination suggested that these outliers all fall within the ordinary range of values without any particularly high or low values. Thus, these 4 outliers were considered valid cases and therefore were retained.

#### 4.2.3 Multivariate Normality Analysis

Because post hoc analysis will be inaccurate if the normality assumption is violated (Hayashi & Yuan, 2003), this research utilized both statistical tests and statistical plots to assess multivariate normality. First, skewness and kurtosis values were computed using SPSS 17.

According to Byrne (1998), skewness values ranging from 2 to 3 and kurtosis values ranging from 7 to 12 suggest that data are considered as moderately non-normal.

Meanwhile, data with skewness values greater than 3 and kurtosis values greater than 12

are considered as extreme non-normal. The results of initial skewness and kurtosis tests indicated that the data distributions of all constructs were normally distributed as the skewness values were all less than 2 and the kurtosis values were all less than 3.

In addition to skewness and kurtosis tests, Shapiro-Wilks test was performed to examine multivariate normality. Shapiro-Wilks test provides the significance values ( $p$ -value) of normality. Thus, if the  $p$ -value is not significant (i.e., greater than 0.05), the data can be assumed to be normally distributed. The results of Shapiro-Wilks test revealed that commitment to organization, commitment to profession, and trust in coworkers had a  $p$ -value less than 0.05 ( $p < 0.001$ ,  $p < 0.014$ , and  $p < 0.001$ , respectively) and could not assumed to be normally distributed. Because of the contradictory results between skewness and kurtosis tests and Shapiro-Wilks test, graphical methods were utilized. Specifically, this research examined frequency histograms and normal probability plots. The results demonstrated that the data of commitment to organization, commitment to profession, and trust in coworkers tended to be non-normally distributed. When examining these histograms and the normal probability plots, this research found that an outlier might be responsible for the non-normal distribution. Thus, this observation was deleted from the data set and skewness and kurtosis tests and Shapiro-Wilks test were recalculated. After excluding the outlier, skewness and kurtosis tests revealed that the data were all normally distributed. The Shapiro-Wilks test also showed significant improvements in meeting the multivariate normality assumption of all constructs. Specifically, only commitment to organization and commitment to profession had a  $p$ -value less than 0.05. The results of skewness test, kurtosis test, and Shapiro-Wilks test were reported in Table 4.1 and Table 4.2.

Table 4.1

*Skewness and Kurtosis Analysis (N = 85)*

Variable	Mean	St. Dev.	Min	Max	Skewness	Kurtosis
Job Stress	3.430	1.341	1.00	6.40	0.224	-0.709
Commitment to Organization	4.984	1.074	2.07	6.73	-0.631	-0.233
Commitment to Profession	5.257	.913	2.40	6.67	-0.742	0.554
Trust in Supervisors	4.862	1.616	1.00	7.00	-0.806	-0.313
Trust in Coworkers	5.508	1.201	1.83	7.00	-1.062	1.027
Valence of Job Satisfaction	5.213	0.979	1.92	7.00	-0.702	1.096
Organizational Citizenship Behavior	5.497	0.722	2.23	6.92	-1.025	2.901
Altruism	5.655	0.919	2.00	7.00	-0.746	1.803
Courtesy	5.879	0.750	2.60	7.00	-1.184	2.488
Sportsmanship	5.066	0.978	2.17	7.00	-0.428	0.357
Conscientiousness	5.434	1.179	2.20	7.00	-0.369	-0.714
Civic Virtue	5.452	1.086	2.00	7.00	-0.930	0.788
Job Satisfaction	5.037	0.964	1.69	6.92	-0.680	1.049

Table 4.2

*Results of Shapiro-Wilks Test (N = 85)*

Variable	Shapiro-Wilks Test		
	Statistic	df	Significance
Job Stress	0.977	85	0.071
Commitment to Organization	0.955	85	0.015
Commitment to Profession	0.959	85	0.025
Trust in Supervisors	0.914	85	0.251
Trust in Coworkers	0.898	85	0.069
Valence of Job Satisfaction	0.965	85	0.181
Organizational Citizenship Behavior	0.934	85	0.142
Altruism	0.937	85	0.057
Courtesy	0.919	85	0.112
Sportsmanship	0.977	85	0.126
Conscientiousness	0.944	85	0.079
Civic Virtue	0.936	85	0.091
Job Satisfaction	0.970	85	0.143

Although the data for two major constructs showed non-normal distribution, this research did not take remedies for the violation of multivariate normality. This is because this research utilized a partial least squares (PLS) approach and it has been suggested to be powerful even under the condition of non-normal data distribution (Chin et al., 2003; Chin & Newsted, 1999; Goodhue & Lewis, 2007; Wold, 1985). Thus, this research proceeded using 85 observations.

#### **4.3 Demographic of Respondents**

Demographic variables including age, gender, tenure with the organization, and tenure in the profession were collected during the data collection processes. Age, tenure with the organization, and tenure in the profession were assigned as open-ended ratio scales whereas gender as a nominal scale.

Majority of the respondents were male (76%) with ages ranging mostly between 26 and 35 (31%) and greater than or equal to 46 years (45%). Tenure with the organization showed that 44% of respondents had been with his or her organization less than or equal to 5 years, 33% of them between 5.1 and 15 years, 14% of them between 15.1 and 25 years, and 9% of them had been with his or her organization for more than 25 years. In terms of tenure in the IT profession, 13% of respondents had been in the profession for less than or equal to 5 years, 33% of them between 5.1 and 15 years, 34% of them between 15.1 and 25 years, and 20% of them had been in the profession for more than 25 years.

Demographic variables were included in the model as control variables. Table 4.3 summarizes this information about the respondents.

Table 4.3

*Demographics of Respondents*

Variable	Frequency (N = 85)	Valid Percent
Age (N = 85, SD = 10.947)		
≤ 25 years	2	2.353%
26 - 35 years	27	31.765%
36 - 45 years	17	20.000%
≥ 46 years	39	45.882%
Gender (N = 85 )		
Male	65	76.471%
Female	20	23.529%
Tenure with the organization (N = 85, SD = 9.788)		
≤ 5 years	37	43.529%
5.1 - 15 years	28	32.941%
15.1 - 25 years	12	14.118%
≥ 25.1 years	8	9.412%
Tenure in the profession (N = 85, SD = 10.469)		
≤ 5 years	11	12.941%
5.1 - 15 years	28	32.941%
15.1 - 25 years	29	34.118%
≥ 25.1 years	17	20.000%

**4.4 Reliability and Validity of Measurement Scales**

Because this research involved multiple constructs and used variates, measurement error could be a potential issue (Hair et al., 2006). To measure the degree of measurement error, this research focused on reliability and validity of the measures.

**4.4.1 Reliability of Measurement Scales**

Reliability refers to the degree to which measures are error free and yield consistent results (Peter, 1979). To assess reliability of measurement scales for the eight constructs, Cronbach's alpha was calculated using SPSS17. Table 4.4 summarizes the values of initial Cronbach's alpha (includes all indicators for a particular construct). A

Cronbach's alpha with a value of 0.70 or higher suggests good reliability and a value of between 0.60 and 0.70 is considered acceptable (Hair et al., 2006). As shown in Table 10, all scales had an acceptable Cronbach's alpha ( $> 0.60$ ). Specifically, four scales had an alpha above 0.90; five scales had an alpha above 0.80; two scales had an alpha above 0.70; and one scale had an alpha above 0.60. Thus, all measurement scales were considered reliable and appropriate for further analysis.

Table 4.4

*Summary of Cronbach's Alpha for Measurement Scales*

Measurement Scale	Items	Initial Alpha ( $\alpha$ )	
Job Satisfaction	JSAT1, JSAT2, JSAT3, JSAT4, JSAT5, JSAT6, JSAT7, JSAT8, JSAT9, JSAT10, JSAT11, JSAT12, JSAT13	0.881	
Organizational Citizenship Behavior	Altruism	OCBA1, OCBA2, OCBA3	0.815
	Courtesy	OCBCOU1, OCBCOU2, OCBCOU3, OCBCOU4, OCBCOU5	0.774
	Sportsmanship	OCBS1, OCBS2*, OCBS3, OCBS4, OCBS5, OCBS6*	0.656
	Conscientiousness	OCBCON1, OCBCON2, OCBCON3, OCBCON4, OCBCON5	0.792
	Civic Virtue	OCBCV1, OCBCV2, OCBCV3, OCBCV4, OCBCV5	0.891
Valence of Job Satisfaction	VJSAT1, VJSAT2, VJSAT3*, VJSAT4, VJSAT5*, VJSAT6, VJSAT7*, VJSAT8, VJSAT9*, VJSAT10, VJSAT11, VJSAT12, VJSAT13*	0.903	
Job Stress	JS1*, JS2, JS3, JS4*, JS5	0.840	
Commitment to Organization	CO1, CO2, CO3*, CO4, CO5, CO6, CO7*, CO8, CO9*, CO10, CO11*, CO12*, CO13, CO14, CO15*	0.915	
Commitment to Profession	CP1, CP2, CP3*, CP4, CP5, CP6, CP7*, CP8, CP9*, CP10, CP11*, CP12*, CP13, CP14, CP15*	0.896	
Trust in Supervisors	TS1, TS2*, TS3, TS4, TS5, TS6*	0.946	
Trust in Coworkers	TC1, TC2, TC3, TC4, TC5, TC6	0.907	

Note: \* = Reverse-coded items



#### 4.4.2 Validity of Measurement Scales

Validity refers to “the ability of a scale or measuring instrument to measure what it is intended to measure” (Zikmund, 2003, p. 302). Several types of validity can be used to assess the validity of measurement scales. First is face or content validity, which is an assessment of the correspondence of the indicators included in a summated scale and the conceptual definition (Hair, et al., 2006). This research assessed face validity by asking 5 university professors and 20 IT workers who were familiar with the concepts tested in this research. They reviewed the appropriateness of the items and provided feedback on face validity. Based on their suggestions, necessary changes were made and thus face validity was assumed.

The second type of validity is construct validity, which is defined as “the ability of a measure to confirm a network of related hypotheses generated from a theory based on the concepts” (Zikmund, 2003, p. 303). To assess construct validity, this research conducted two unique factor analyses via SmartPLS 2.0. The first factor analysis tested the validity of the proposed constructs included in the measurement model and the second factor analysis assessed the validity of the organizational citizenship behavior (OCB) scale. The reason that this research conducted two separate factor analyses is that OCB is a formative construct, which is a composite of five measures (i.e., altruism, courtesy, sportsmanship, conscientiousness, and civic virtue). Since changes in the formative measures cause changes in the underlying construct (Jarvis, MacKenzie, & Podsakoff, 2003) and one of the objectives of this research is to examine an aggregated OCB, an independent factor analysis of the OCB construct was performed.

#### 4.4.2.1 Construct Validity of the Proposed Measurement Model

Seven constructs (i.e., job stress, commitment to organization, commitment to profession, trust in supervisors, trust in coworkers, valence of job satisfaction, and job satisfaction) were assessed in terms of their construct validity. Specifically, this research first examined convergent validity. Convergent validity assesses the degree to which two measures of the same concept are correlated. Individual factor loadings were assessed to establish convergent validity using SmartPLS 2.0. It has been suggested that a factor loading score of 0.60 can be used in exploratory research (Hair, et al., 2006). The initial factor analysis showed that some indicators were cross-loaded on several factors with loading values less than 0.60. Thus, those indicators were eliminated and the remaining indicators were used to run further factor analyses. Table 4.5 lists the measurement items that were deleted.

Table 4.5

##### *Deleted Measurement Items*

CO	CP	JS	JSAT	TC	TS	VJSAT	OCB
co3*	cp4	No	jsat5	No	No	vjsat2	ocbcou4
co4	cp7*	Deletion	jsat6	Deletion	Deletion	vjsat3*	ocbs1
co7*	cp9*		jsat7			vjsat6	ocbs3
co9*			jsat8				ocbs4
co11*			jsat11				

*Note.* \* = Reverse coded item

After four iterations, a 7-factor measurement model emerged, where all indicators loaded as expected (greater than 0.60) on its corresponding construct as show in Table 4.6. For variance extracted, a value of 0.50 or above suggests adequate convergence (Fornell & Larcker, 1981). Table 4.7 shows that the variance extracted of measures were in the range from 0.540 to 0.793, which exceeded the recommended value.

Table 4.6

*Factor Loadings for Major Constructs*

	CO	CP	JS	JSAT	TC	TS	VJSAT
co1	<b>0.6673</b>	0.4497	-0.2341	0.3167	0.2080	0.2270	0.4444
co2	<b>0.8845</b>	0.4662	-0.5217	0.6257	0.3714	0.6399	0.5854
co5	<b>0.7975</b>	0.3743	-0.4853	0.6108	0.3423	0.6503	0.474
co6	<b>0.8254</b>	0.3316	-0.4535	0.5360	0.1691	0.5149	0.4779
co8	<b>0.8036</b>	0.4504	-0.3956	0.6381	0.2379	0.6354	0.5009
co10	<b>0.7925</b>	0.4450	-0.4215	0.5523	0.2152	0.4288	0.5432
co12*	<b>0.6627</b>	0.3719	-0.4902	0.5842	0.4407	0.6942	0.4566
co13	<b>0.7045</b>	0.6593	-0.3637	0.4986	0.3788	0.4854	0.5344
co14	<b>0.8183</b>	0.5392	-0.5506	0.6586	0.4298	0.6231	0.6106
co15*	<b>0.7323</b>	0.5583	-0.4989	0.5602	0.3477	0.4702	0.5562
cp1	0.5201	<b>0.7152</b>	-0.2222	0.4151	0.2626	0.3283	0.6198
cp2	0.3543	<b>0.7115</b>	-0.3178	0.4127	0.2906	0.1263	0.5251
cp3*	0.4468	<b>0.6912</b>	-0.1883	0.3166	0.1798	0.1356	0.5577
cp5	0.3821	<b>0.6817</b>	-0.3111	0.4544	0.4476	0.4549	0.4939
cp6	0.4306	<b>0.7646</b>	-0.4302	0.4892	0.2699	0.4144	0.5239
cp8	0.5076	<b>0.8104</b>	-0.4389	0.5624	0.2619	0.4962	0.5997
cp10	0.3823	<b>0.719</b>	-0.2873	0.4536	0.2520	0.2352	0.4711
cp11*	0.4319	<b>0.6883</b>	-0.3731	0.4209	0.2516	0.2373	0.5702
cp12*	0.3450	<b>0.6375</b>	-0.1972	0.3943	0.2469	0.3509	0.4745
cp13	0.5509	<b>0.8038</b>	-0.3415	0.4842	0.2896	0.4813	0.5233
cp14	0.4040	<b>0.7749</b>	-0.2653	0.4527	0.1988	0.2688	0.4813
cp15*	0.5515	<b>0.7944</b>	-0.4053	0.5271	0.3136	0.4048	0.5734
js1*	-0.4034	-0.3002	<b>0.7020</b>	-0.5266	-0.3422	-0.5493	-0.2497
js2	-0.4981	-0.3689	<b>0.8675</b>	-0.5565	-0.4401	-0.5446	-0.4099
js3	-0.4640	-0.3425	<b>0.8275</b>	-0.4870	-0.4070	-0.4553	-0.4441
js4*	-0.5497	-0.2295	<b>0.7858</b>	-0.4972	-0.3553	-0.5218	-0.2949
js5	-0.3466	-0.4281	<b>0.7026</b>	-0.4302	-0.3200	-0.1615	-0.3353
jsat1	0.5140	0.3880	-0.4479	<b>0.6841</b>	0.4983	0.7129	0.4984
jsat2	0.7014	0.5415	-0.4954	<b>0.7309</b>	0.1652	0.5845	0.5322
jsat3	0.6344	0.5829	-0.4694	<b>0.8405</b>	0.3098	0.6518	0.5776
jsat4	0.4365	0.3378	-0.3652	<b>0.7551</b>	0.1500	0.5042	0.4442
jsat9	0.5046	0.4271	-0.4493	<b>0.7083</b>	0.1532	0.4586	0.4491
jsat10	0.4944	0.4211	-0.5460	<b>0.7275</b>	0.3500	0.4167	0.4230
jsat12	0.4555	0.4615	-0.5349	<b>0.7310</b>	0.3922	0.5014	0.4253
tc1	0.2815	0.3267	-0.4178	0.2861	<b>0.8563</b>	0.3438	0.3546
tc2	0.3587	0.3624	-0.4450	0.3866	<b>0.9081</b>	0.4859	0.3984
tc3	0.3601	0.2469	-0.3991	0.3552	<b>0.8874</b>	0.4976	0.2900
tc4	0.4191	0.3891	-0.4028	0.3723	<b>0.8755</b>	0.4206	0.3734
tc5	0.2751	0.2994	-0.3782	0.2264	<b>0.7514</b>	0.2491	0.2426
tc6	0.3921	0.1654	-0.3847	0.3093	<b>0.7216</b>	0.4526	0.1978

Table 4.6 (continued)

	CO	CP	JS	JSAT	TC	TS	VJSAT
ts1	0.6493	0.4303	-0.5220	0.6898	0.5211	<b>0.9381</b>	0.4888
ts2*	0.5478	0.3048	-0.5019	0.6161	0.3817	<b>0.8052</b>	0.3625
ts3	0.6238	0.4744	-0.5350	0.7144	0.5391	<b>0.9378</b>	0.4941
ts4	0.6432	0.3229	-0.5436	0.6927	0.3813	<b>0.9122</b>	0.3853
ts5	0.6518	0.3818	-0.4659	0.6784	0.3684	<b>0.9131</b>	0.4043
ts6*	0.6206	0.4563	-0.4481	0.6002	0.3697	<b>0.8289</b>	0.3922
vjsat1	0.4554	0.5980	-0.3199	0.4716	0.3401	0.3794	<b>0.6727</b>
vjsat4	0.5476	0.5834	-0.3374	0.5288	0.3136	0.2657	<b>0.8217</b>
vjsat5*	0.6237	0.4967	-0.4872	0.6035	0.1841	0.4175	<b>0.8018</b>
vjsat7*	0.5225	0.5853	-0.2692	0.4699	0.1668	0.3096	<b>0.7829</b>
vjsat8	0.3440	0.6122	-0.2052	0.3772	0.3562	0.1776	<b>0.6922</b>
vjsat9*	0.5153	0.5470	-0.3731	0.4272	0.3372	0.3305	<b>0.8131</b>
vjsat10	0.3635	0.4018	-0.3571	0.4460	0.3448	0.4131	<b>0.6739</b>
vjsat11	0.5912	0.4393	-0.3790	0.5917	0.2861	0.5839	<b>0.7015</b>
vjsat12	0.5215	0.6337	-0.3928	0.5264	0.3065	0.3857	<b>0.8008</b>
vjsat13*	0.5634	0.5880	-0.3403	0.4650	0.3115	0.3767	<b>0.7522</b>

Note. \* = Reverse-coded items

Table 4.7

*Variance Extracted for Major Constructs*

Measure	Number of Indicators	Composite Reliability	Variance Extracted
Commitment to Organization	10	0.936	0.596
Commitment to Profession	12	0.933	0.540
Job Stress	5	0.885	0.601
Job Satisfaction	7	0.895	0.549
Trust in Supervisors	6	0.933	0.700
Trust in Coworkers	6	0.958	0.793
Valence of Job Satisfaction	10	0.929	0.568

**4.4.2.2 Construct Validity of OCB Construct**

A second factor analysis was conducted for OCB construct. As mentioned in the previous chapter, OCB consists of 5 sub-constructs including altruism, courtesy, sportsmanship, conscientiousness, and civic virtue. Thus, the purpose of factor analysis is

to examine whether indicators of each sub-construct loaded on the intended sub-construct. The results of the first factor analysis showed that 4 indicators cross-loaded across five sub-constructs with values less than 0.50. Thus, these 4 indicators were eliminated and a second factor analysis provided evidence that all indicators loaded on expected sub-constructs (see Table 4.8).

Based on the nature of OCB, it is considered as a formative construct. This means the 5 sub-constructs cause OCB. When evaluating convergence validity of OCB covariance-based estimates such as reliability and variance extracted are not applicable because formative indicators are not expected to move together and to show high covariance (Chin, 1998). Thus, the path coefficients and their associated t-statistic values were examined to check if they significantly contribute to the emergent construct as suggested by Liang, Saraf, Hu, and Xue (2007). The results of the analysis demonstrated that all five path weights were significant at the .01 level (see Table 4.9), indicating that the five sub-constructs form the construct of OCB from different significant paths.

Table 4.8

*Factor Loadings for Measures of Organizational Citizenship Behavior*

Measure	Indicator	Factor				
		1	2	3	4	5
Altruism	ocba1	<b>0.8793</b>	0.3578	0.4925	0.3494	0.2513
	ocba2	<b>0.8103</b>	0.2175	0.4229	0.3061	0.1308
	ocba3	<b>0.8772</b>	0.3330	0.4235	0.4681	0.2110
Courtesy	ocbcou1	0.5484	0.2734	<b>0.7584</b>	0.2601	0.3198
	ocbcou2	0.4857	0.2415	<b>0.8352</b>	0.4206	0.2450
	ocbcou3	0.4893	0.2757	<b>0.7922</b>	0.4056	0.3084
	ocbcou5	0.2457	0.2563	<b>0.7719</b>	0.3693	0.4520
Sportsmanship	ocbs2*	0.1102	0.2277	0.3061	0.2178	<b>0.7616</b>
	ocbs5	0.2030	0.2901	0.3305	0.3517	<b>0.8062</b>
	ocbs6*	0.2863	0.2728	0.4324	0.4530	<b>0.7767</b>
Conscientiousness	ocbcon1	0.1364	<b>0.6490</b>	0.0868	0.2761	0.0687
	ocbcon2	0.3169	<b>0.8146</b>	0.2806	0.4549	0.1655
	ocbcon3	0.1866	<b>0.7945</b>	0.1394	0.3708	0.2986
	ocbcon4	0.1372	<b>0.6692</b>	0.1048	0.2993	0.1072
	ocbcon5	0.4216	<b>0.7769</b>	0.4905	0.6172	0.3649
Civic Virtue	ocbcv1	0.3604	0.6048	0.3422	<b>0.7187</b>	0.5574
	ocbcv2	0.4318	0.3446	0.3909	<b>0.8095</b>	0.4418
	ocbcv3	0.4378	0.4801	0.5067	<b>0.9079</b>	0.3361
	ocbcv4	0.3023	0.5221	0.3770	<b>0.8881</b>	0.2176
	ocbcv5	0.3201	0.4923	0.3894	<b>0.8816</b>	0.2137

*Note.* \* = Reverse-coded items

Table 4.9

*Convergent Analysis of Path Coefficients and t-Statistic for OCB Sub-Constructs*

Construct	Indicator	Mean	Standard Deviation	t-value
Organizational Citizenship Behavior	Altruism	5.667	.845	9.395*
	Courtesy	5.887	.683	11.849*
	Sportsmanship	5.045	.915	8.712*
	Conscientiousness	5.424	1.097	27.707*
	Civic Virtue	5.365	1.026	6.925*

*Note.* \* = Significant at the .05 level

#### 4.4.2.3 Discriminant Validity Analysis

Discriminant validity assesses the degree to which two conceptually similar constructs are distinct (Hair et al., 2006). To examine discriminant validity, this research assessed interconstruct covariance. It is suggested that discriminant validity is obtained when each average variance extracted (AVE) estimate is greater than the corresponding squared correlation (Chin, 1998). In other words, discriminant validity is achieved if the square root of AVE is greater than all of the inter-construct correlations. The results of discriminant validity analysis revealed that all AVE values were greater than all of the inter-construct correlations (see Table 4.10) and therefore, discriminant validity of the measurement was obtained.

Table 4.10

#### *Correlations among Major Constructs*

	CO	CP	JS	JSAT	OCB	TC	TS	VJSAT
CO	<b>0.772</b>							
CP	0.608**	<b>0.735</b>						
JS	-0.577**	-0.431**	<b>0.780</b>					
JSAT	0.728**	0.612**	-0.634**	<b>0.741</b>				
OCB	0.576**	0.533**	-0.370**	0.505**	N/A			
TC	0.411**	0.369**	-0.482**	0.389**	0.319**	<b>0.836</b>		
TS	0.698**	0.448**	-0.564**	0.717**	0.482**	0.487**	<b>0.891</b>	
VJSAT	0.677**	0.731**	-0.459**	0.651**	0.537**	0.384**	0.477**	<b>0.754</b>

*Note.* \*\* = Correlation is significant at the 0.01 level. AVE values are in **Bold**.



#### 4.4.2.4 Summary

In the previous sections, approaches and processes to assess measurement validity were described. This research first assessed content validity followed by construct validity including convergent validity and discriminant validity. The analyses of measurement validity have revealed satisfactory results. Thus, this research proceeded to analyze the validity of structural model.

#### 4.5 Descriptive Statistics of Measurement Scales

The descriptive statistics including mean and standard deviation of the constructs included in the measurement and structural models were calculated after reliability and validity were obtained. Each construct was measured by its own indicators using a seven-point Likert scale ranging from 1 (strongly disagree or strongly dissatisfied) to 7 (strongly agree or strongly satisfied). The anchor of the scale, therefore, means that lower mean scores are considered a respondent's disagreement with the statements while higher mean scores are considered the respondent's agreement with the statements. The results of descriptive statistics of job satisfaction, organizational citizenship behavior, valence of job satisfaction, job stress, commitment to organization, commitment to profession, trust in supervisors, and trust in coworkers are summarized in Appendix B.

#### 4.6 Hypothesis Testing

Figure 4.1 shows the research model and summarizes the proposed relationships. To test the proposed hypotheses, this research utilized partial least squares (PLS) and multiple regression techniques. PLS was chosen because it employs a component-based approach for estimation (Lohmoller, 1989) and is capable of handling formative constructs (Chin et al., 2003). In addition, PLS does not require normal distribution for

variables (Moore & Chang, 2006) and can be used on a relatively smaller sample size for validating a model (Chin, 1998). Given the characteristics of this research, PLS was suitable.

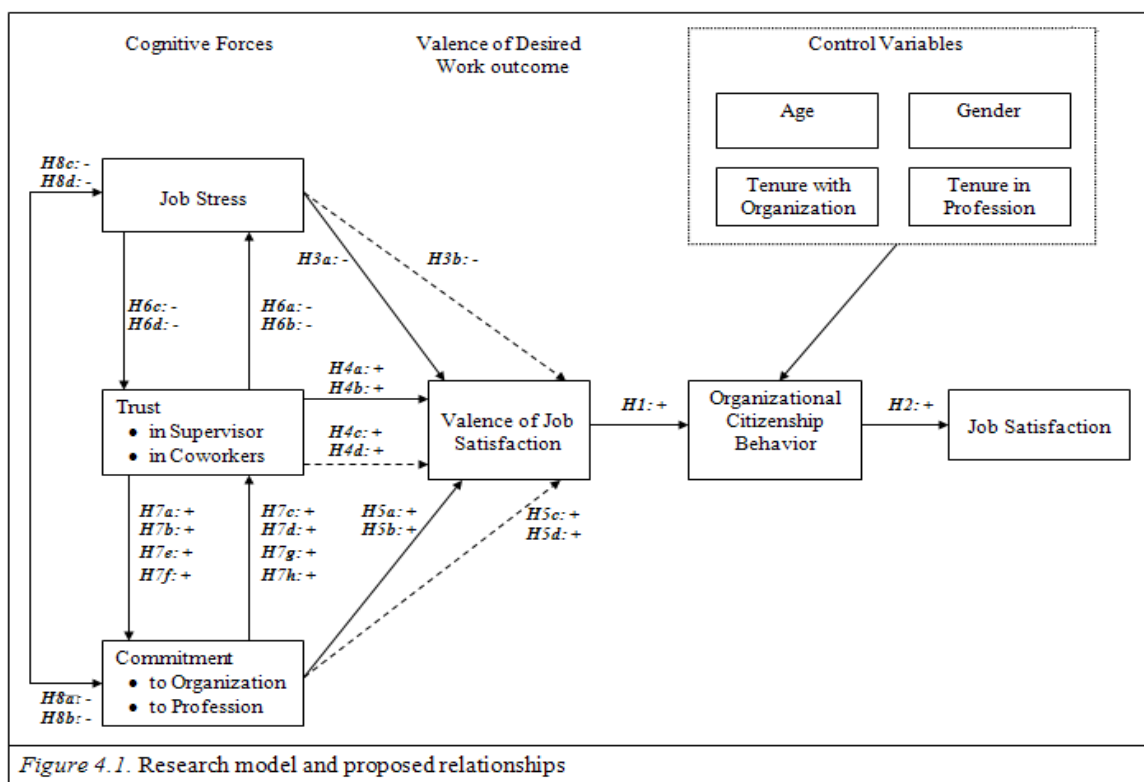
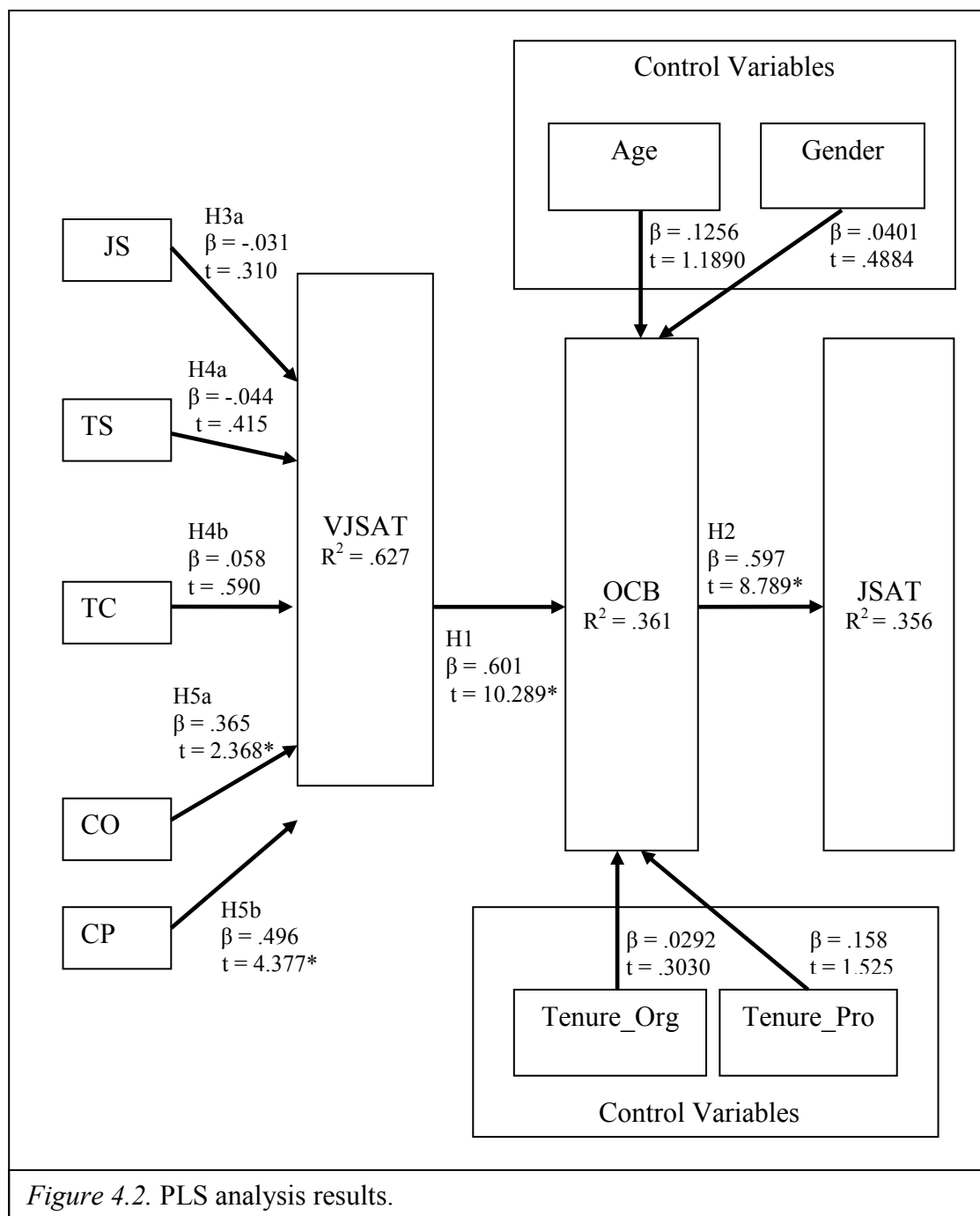


Figure 4.2 summarizes the standardized path coefficients ( $\beta$ ) and t-values obtained from the PLS analyses. The relationships between the constructs can be interpreted by using path coefficients. In other words, each proposed hypothesis can be tested by interpreting its respective path coefficient and significance. In this research, if an estimated t-value of exceeds the critical value of 1.96 (at 0.05 significance level), the associated null hypothesis is rejected and the hypothesized hypothesis is supported (Mueller, 1996). To test mediation effects, this research employed a set of regression analyses as suggested by Baron and Kenny (1986). In addition to regression analyses, this research performed an alternative PLS analysis where JS, CO, CP, TS, and TC directly

connected to OCB and VJSAT was removed from the model to further confirm mediating effects. In the following sections, a detailed explanation of the hypothesis testing procedures, follow-up analyses, and results are provided.



The results of mediating effects and relationships among cognitive forces are presented in the following sections

*Hypothesis 1: Valence of Job Satisfaction (VJSAT) – OCB*

Hypothesis H1 proposed that VJSAT will have a positive impact on OCB. As shown in Figure 4.2, the results provided evidence for supporting the H1 ( $\beta = 0.601$ ,  $t = 10.289$ ,  $p < 0.05$ ). This means that high levels of valence of job satisfaction lead to high levels of OCB exhibited by an IT professional. Thus, H1 was supported.

*Hypothesis 2: OCB – Job Satisfaction (JSAT)*

Hypothesis H2 proposed that OCB will have a positive impact on JSAT. As predicted, the results showed that the OCB – JSAT link was statistically significant ( $\beta = 0.597$ ,  $t = 8.789$ ,  $p < 0.05$ ) (see Figure 4.2). In other words, the more OCB an IT professional exhibits, the higher job satisfaction he or she experiences. Thus, H2 was supported.

*Hypothesis 3: Job Stress (JS), VJSAT, and OCB*

Hypothesis H3a proposed that JS will have a negative impact on VJSAT. Surprisingly, this relationship was not significant as indicated in Figure 4.2 ( $\beta = -0.031$ ,  $t = 0.310$ ,  $p > 0.05$ ). Thus, H3a was not supported. Although the relationship was not significant, the negative direction of the relationship was as predicted. Hypothesis H3b proposed that the negative relationship between JS and OCB will be positively mediated by VJSAT. To test this mediation effect, this research employed the approach suggested by Baron and Kenny (1986). First, a correlation analysis was conducted to check the correlation between JS and OCB. As indicated in Table 4.9, there was a significant negative correlation between JS and OCB. This step is needed because it confirms

whether there is a relationship to be mediated. Next is to show that the JS – OCB relationship may be mediated. To do so, JS was entered into a regression equation as a predictor and OCB as an outcome variable. The results indicated that JS was not a significant predictor of OCB ( $\beta = -0.198$ ,  $t = 1.467$ ,  $p > 0.05$ ) and therefore, the mediation effect was not supported (see Figure 4.3).

A follow-up test utilizing PLS was conducted to confirm the result. Specifically, JS – OCB link was added with VJSAT – OCB link was simultaneously included and found to be non-significant ( $\beta = 0.0381$ ,  $t = 0.3081$ ,  $p > 0.05$ ). This result suggested a potential mediating role of VJSAT. To test the mediating role of VJSAT, VJSAT was removed from the model and if JS – OCB link becomes significant, the mediation effect is supported. However, the results showed that JS – OCB link was not significant when VJSAT was absent ( $\beta = 0.033$ ,  $t = 0.278$ ). Thus, H3b was not supported.

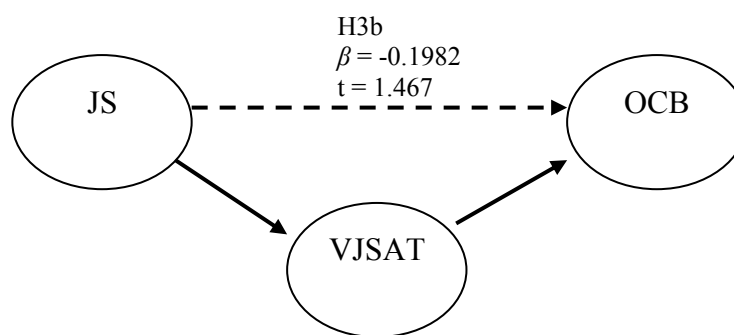


Figure 4.3. Regression analysis for Hypothesis 3b.

*Hypothesis 4: Trust in Supervisors (TS) and Coworkers (TC), VJSAT, and OCB*

*Trust in Supervisors (TS), VJSAT, and OCB*

Hypothesis H4a proposed that TS will have a positive impact on VJSAT. Surprisingly, the results of PLS analyses indicated that this relationship was not only non-significant but also in a negative direction as shown in Figure 4.2. Thus, H4a was not

supported. Hypothesis H4c proposed that VJSAT will positively mediate the positive relationship between TS and OCB. The correlation analysis showed that TS and OCB were significantly correlated. Thus, TS and OCB were entered into a regression analysis as independent variable and dependent variable, respectively. The regression analysis revealed that TS was a significant predictor of OCB ( $\beta = 0.303$ ,  $t = 2.489$ ,  $p < 0.05$ ) (see Figure 4.4). Another correlation analysis was conducted to check whether TS and VJSAT were significantly correlated and the result confirmed their significant correlation. Thus, TS and VJSAT were entered into a regression analysis as predictor and outcome variable, respectively. However, the result revealed that TS was not a significant predictor of VJSAT. Thus, the mediation effect was not supported.

An additional PLS test was conducted to confirm H4c using the procedures described above. Specifically, TS – OCB link was added with VJSAT – OCB link simultaneously included and found to be non-significant, suggesting a possible mediating role of VJSAT. To test the mediating role of VJSAT, VJSAT was removed from the model and if TS – OCB link becomes significant, the mediation effect is supported. However, the results showed that TS – OCB link was non-significant when VJSAT is absent ( $\beta = 0.205$ ,  $t = 1.492$ ,  $p > 0.05$ ). Thus, H4c was not supported.

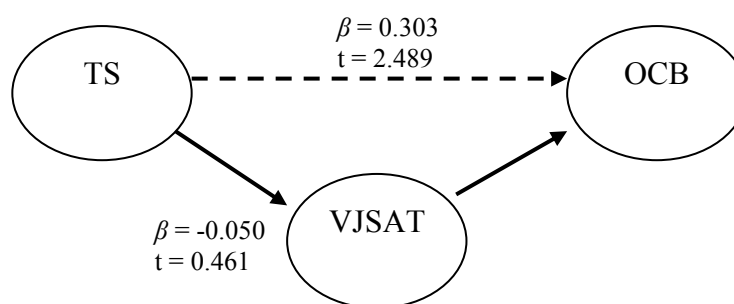
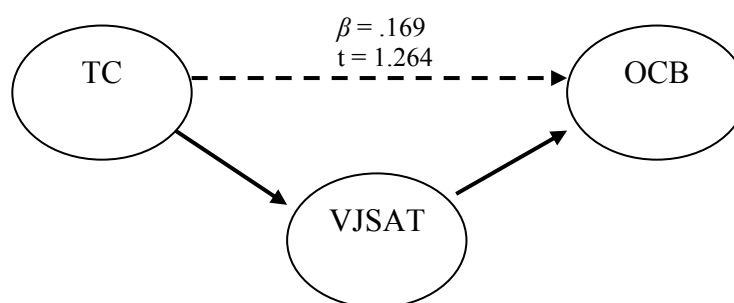


Figure 4.4. Regression analysis for Hypothesis 4c.

*Trust in Coworkers (TC), VJSAT, and OCB*

Hypothesis 4b proposed that an IT professional's TC will have a positive effect on VJSAT. As indicated in the PLS results (see Figure 4.2), H4b was not supported ( $\beta = 0.058$ ,  $t = 0.590$ ,  $p > 0.05$ ). In other words, an IT professional's TC was not related to VJSAT. Although the relationship was not significant, the direction of the relationship was as expected. Because the non-significant relationship between TC and VJSAT, this research concluded that H4 was not supported. However, to confirm this conclusion, correlation and regression analyses were again conducted and found that TC and OCB were significantly correlated at 0.05 level (see Table 4.10). However, the result of the regression analysis showed that TC was not a significant predictor of OCB ( $\beta = 0.169$ ,  $t = 1.264$ ) (see Figure 4.5). Thus, the proposed mediation effect, H4d, was not supported.



*Figure 4.5. Regression analysis for Hypothesis 4d.*

*Hypothesis 5: Commitment to Organization (CO) and Profession (CP), VJSAT, and OCB*  
*Commitment to Organization (CO), VJSAT, and OCB*

Hypothesis 5a proposed that an IT professional's CO will have a positive impact on VJSAT. The PLS results confirmed this proposed relationship ( $\beta = 0.363$ ,  $t = 2.368$ ,  $p < 0.05$ ) (see Figure 4.2). Thus, H5a was supported. Hypothesis 5c proposed that the relationship between an IT professional's CO and OCB will be mediated by VJSAT. To

test the mediation, a correlation analysis was conducted and found that CO and OCB were significantly correlated ( $r = 0.576, p < 0.05$ ). Thus, a follow-up regression analysis was performed to check the impact of CO on OCB. The results of the regression analysis revealed that CO was a significant predictor of OCB ( $\beta = 0.560, t = 5.738, p < 0.05$ ). Next, another regression analysis was conducted to using CO as the predictor and VJSAT as outcome variable and found that CO was a significant predictor of VJSAT ( $\beta = 0.686, t = 8.005, p < 0.05$ ). Because of the significant relationship between CO and VJSAT, VJSAT was entered into a regression analysis as the predictor and OCB as the outcome variable. The results showed that VJSAT was a significant predictor of OCB ( $\beta = 0.541, t = 5.456, p < 0.05$ ). Next, both CO and VJSAT were entered into a regression model to predict OCB and the results showed that CO ( $\beta = 0.357, t = 2.738, p < 0.05$ ) and VJSAT ( $\beta = 0.296, t = 2.265, p < 0.05$ ) were both significant predictors of OCB. The last stage of testing mediation effect is to calculate the indirect effect (the amount of mediation). Thus, the following equation was calculated:

$$(0.560) - (0.357) = 0.203 > 0$$

Based on the calculation, this research concluded that there was a partial mediation effect. In other words, VJSAT partially positively mediates the relationship between an IT profession's CO and OCB (see Figure 4.6). Thus, H5c was supported.



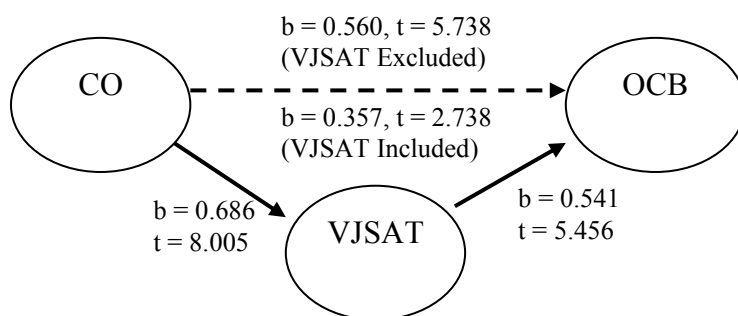


Figure 4.6. Regression analysis for Hypothesis 5c.

An additional PLS test was conducted to confirm H5c using the procedures described above. First, CO – OCB link was added with VJSAT – OCB link simultaneously included and found to be insignificant ( $\beta = 0.2739, t = 1.452, p > 0.05$ ), suggesting a possible mediating role of VJSAT. To test the mediating role of VJSAT, VJSAT was removed from the model and if CO – OCB link becomes significant, the mediation effect is supported. The results showed that TS – OCB link became significant when VJSAT is absent ( $b = 0.338, t = 1.98, p < 0.05$ ). Thus, H5c was supported.

#### *Commitment to Profession (CP), VJSAT, and OCB*

Hypothesis 5b proposed that an IT professional's CP will have a positive impact on VJSAT. The results of PLS analysis supported H5b ( $\beta = 0.496, t = 4.378, p < 0.05$ ), suggesting that there was a positive impact of CP on VJSAT (see Figure 4.2). Hypothesis 5d proposed that VJSAT will positively mediate the relationship between CP and OCB. The correlation analysis showed that CP and OCB were significantly correlated ( $r = 0.533, p < 0.05$ ). A regression analysis using CP as independent variable and OCB as dependent variable showed that CP was a significant predictor of OCB ( $\beta = 0.463, t = 4.430, p < 0.05$ ). Because CP was also a significant predictor of VJSAT ( $\beta = 0.717, t = 8.735, p < 0.05$ ), VJSAT was entered into a regression analysis as the predictor and OCB as the outcome variable. The result showed that VJSAT was a significant predictor of

OCB ( $\beta = 0.541, t = 5.456, p < 0.05$ ). Next, CP and VJSAT were both entered into a regression model to predict OCB and the results showed that the impact of CP ( $\beta = 0.154, t = 1.086$ ) became insignificant while VJSAT ( $\beta = 0.430, t = 3.027, p < 0.05$ ) was a significant predictor of OCB (see Figure 4.7). Next, the amount of mediation effect was calculated as the follow:

$$(0.463) - (0.154) = 0.309 > 0$$

Because the initial effect of CP on OCB was significant and after the addition of VJSAT this effect reduces to a point where it is not significant after the addition of VJSAT, this research concluded that there was a full mediation effect existed between CP and OCB. In other words, VJSAT fully positively mediated the relationship between an IT profession's CP and OCB.

Again, an additional PLS test was conducted to confirm H5d. First, CP – OCB link was added with VJSAT – OCB link simultaneously included and found to be non-significant ( $\beta = 0.1958, t = 1.380, p > 0.05$ ), suggesting a possible mediating role of VJSAT. To test the mediating role of VJSAT, VJSAT was removed from the model and if CP – OCB link becomes significant, the mediation effect is supported. The results show that CP – OCB link becomes significant when VJSAT is absent ( $\beta = 0.3844, t = 2.623, p < 0.05$ ). Thus, H5d was supported.

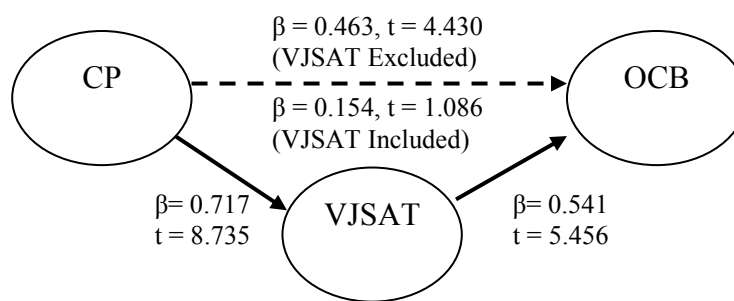
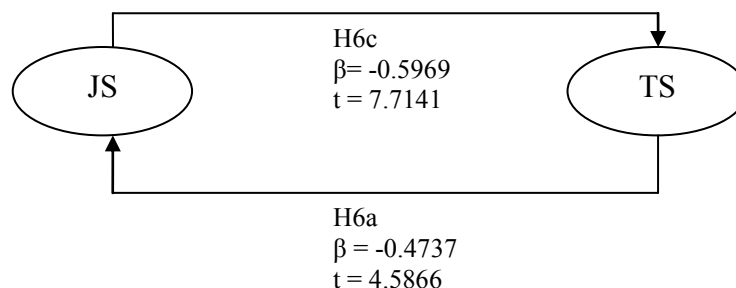


Figure 4.7. Regression analysis for Hypothesis 5d.

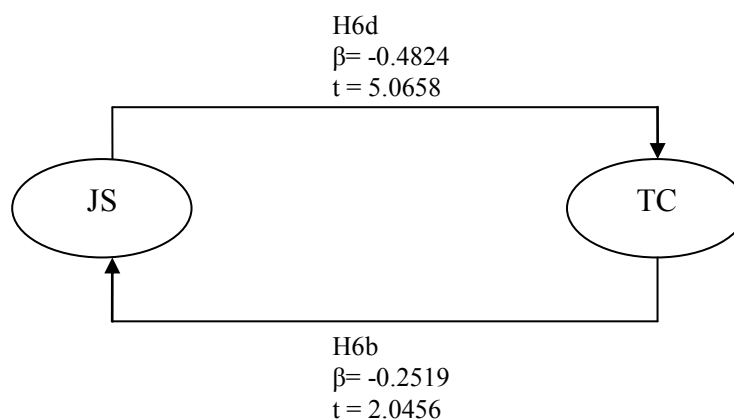
*Hypothesis 6: Job Stress (JS), Trust in Supervisors (TS), and Trust in Coworkers (TC)*

Hypothesis 6a proposed that an IT professional's TS will have a negative impact on JS. Hypothesis 6c proposed that an IT professional's JS will have a negative impact on TS. The results of PLS analysis as indicated in Figure 4.8 showed that both H6a ( $\beta = -0.4737$ ,  $t = 4.5866$ ,  $p < 0.05$ ) and H6c ( $\beta = -0.5969$ ,  $t = 7.7141$ ,  $p < 0.05$ ) were supported.



*Figure 4.8. Simplified PLS results (JS - TS Link).*

Hypothesis 6b proposed that an IT professional's TC will have a negative impact on JS. Hypothesis 6d proposed that an IT professional's JS will have a negative impact on TC. The results of PLS analysis (see Figure 4.9) showed that both H6b ( $\beta = -0.2519$ ,  $t = 2.0456$ ,  $p < 0.05$ ) and H6d ( $\beta = -0.4824$ ,  $t = 5.0658$ ,  $p < 0.05$ ) were supported.



*Figure 4.9. Simplified PLS results (JS -TC Link).*

*Hypothesis 7: Commitment to Organization (CO) and Profession (CP) and Trust in Supervisors (TS) and Trust in Coworkers (TC)*

Hypothesis 7b proposed that an IT professional's TS will have a positive impact on CO. Hypothesis H7d proposed that an IT professional's CO will have a positive impact on TS. As indicated in Figure 4.10, the results of PLS analysis showed that both H7b ( $\beta = 0.6708$ ,  $t = 8.5967$ ,  $p < .05$ ) and H7d ( $\beta = 0.6934$ ,  $t = 7.372$ ,  $p < 0.05$ ) were supported.

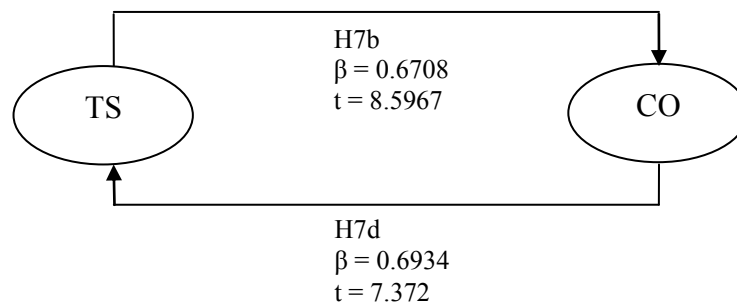


Figure 4.10. Simplified PLS results (TS –CO Link).

Hypothesis 7a proposed that an IT professional's TS will have a positive impact on CP. Hypothesis H7c proposed that an IT professional's CP will have a positive impact on TS. The results of PLS analysis (see Figure 4.11) showed that H7a ( $\beta = 0.3683$ ,  $t = 3.3217$ ,  $p < 0.05$ ) was supported but H7c ( $\beta = 0.0441$ ,  $t = 0.3735$ ,  $p > 0.05$ ) was not supported.



Figure 4.11. Simplified PLS results (TS –CP Link).

Hypothesis 7f proposed that an IT professional's TC will have a positive impact on CO. Hypothesis H7h proposed that an IT professional's CO will have a positive impact on TC. Unexpectedly, the results of PLS analysis (see Figure 4.12) showed that both H7f ( $\beta = 0.0972$ ,  $t = 0.8329$ ,  $p > 0.05$ ) and H7h ( $\beta = 0.3183$ ,  $t = 1.8624$ ,  $p > 0.05$ ) were not supported.

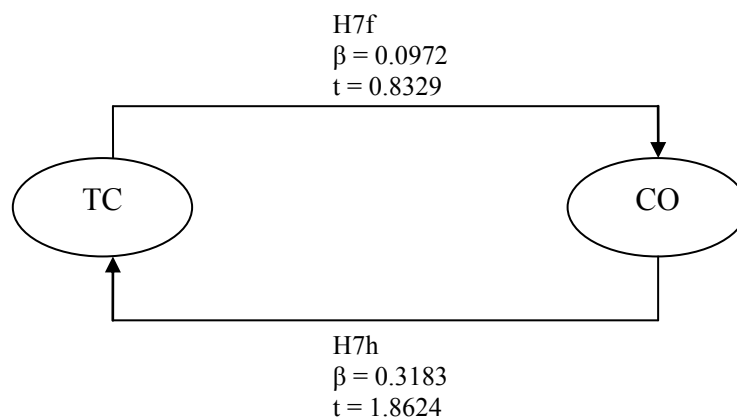


Figure 4.12. Simplified PLS results (TC –CO Link).

Hypothesis 7e proposed that an IT professional's TC will have a positive impact on CP. Hypothesis H7g proposed that an IT professional's CP will have a positive impact on TC. As indicated in Figure 4.13, the results of PLS analysis showed that both H7e ( $\beta =$

0.1913,  $t = 1.5018$ ,  $p > 0.05$ ) and H7g ( $\beta = 0.1796$ ,  $t = 0.9965$ ,  $p > 0.05$ ) were not supported.

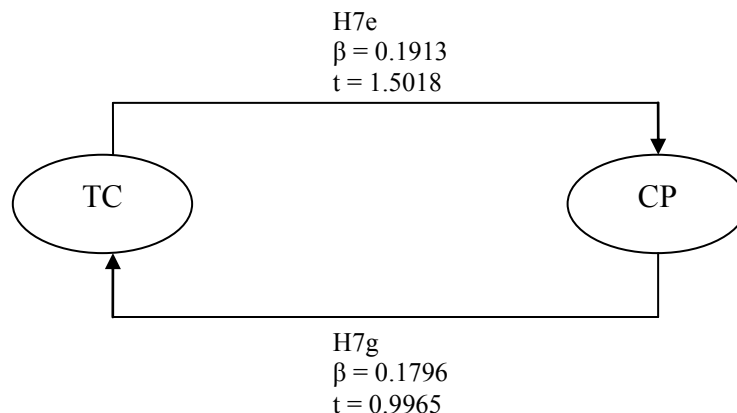


Figure 4.13. Simplified PLS Results (TC – CP Link).

*Hypothesis 8: Job Stress (JS) and Commitment to Organization (CO) and Profession (CP)*

Hypothesis 8a proposed that an IT professional's job stress will have a negative impact on commitment to the organization. Hypothesis 8c proposed that an IT professional's commitment to the organization will have a negative impact on job stress. The results of PLS analysis showed that both H8a ( $\beta = -0.587$ ,  $t = 8.756$ ,  $p < 0.05$ ) and H8c ( $\beta = -0.5189$ ,  $t = 3.439$ ,  $p < 0.05$ ) were supported (see Figure 4.14). These mean that there was a negative reciprocal relationship between JS and CO. Thus, both H8a and H8c were supported.

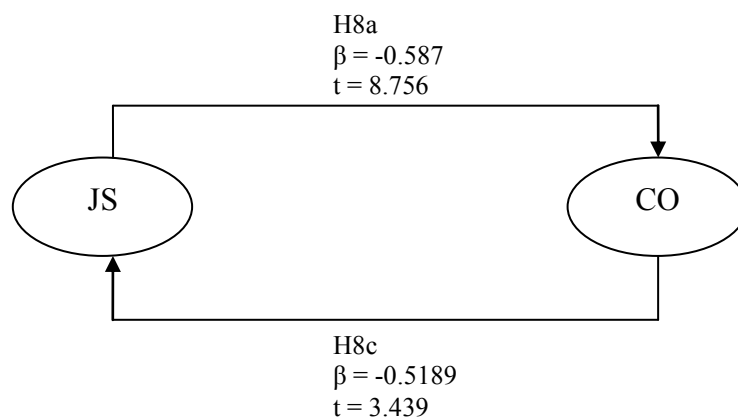


Figure 4.14. Simplified PLS results (JS – CO Link).

Hypothesis 8b proposed that an IT professional's JS will have a negative impact on CP and hypothesis 8d proposed that an IT professional's CP will have a negative impact on JS. The results of PLS analysis (see Figure 4.15) showed that JS had a significantly negative impact on CP ( $\beta = -0.4331$ ,  $t = 3.545$ ,  $p < 0.05$ ). Thus, H8b was supported. Surprisingly, the results failed to support that CP had an impact on JS ( $\beta = -0.1172$ ,  $t = 0.6814$ ,  $p > 0.05$ ). Therefore, H8d was not supported. Although H8d was not supported, the results confirmed the negative relationship between CP and JS.

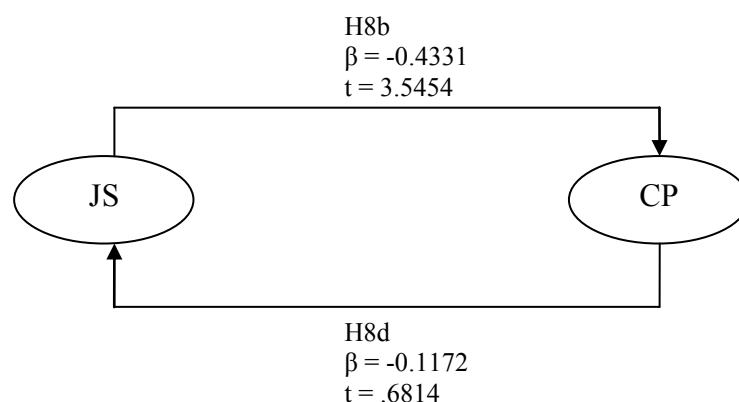


Figure 4.15. Simplified PLS results (JS – CP Link).

*Control Variables: Age, Gender, Tenure with the Organization, and Tenure in the Profession*

To analyze the degree of OCB exhibited by an IT professional, this research controlled for the effect of age, gender, tenure with organization, and tenure in profession on OCB. This is because that several prior OCB studies have found a significant impact of these demographic variables on OCB exhibited by an individual (e.g., Chattopadhyay, 1999; Farh et al., 1997; Ryan, 2001). Age, tenure with organization, and tenure in profession were measured by open-ended questions while gender was measured by a categorical question.

It is important to note that the four control variables were tested individually. Specifically, this research conducted four separate PLS analyses in order to test control variables. This is because of the requirement of sample size for PLS analysis suggested by Chin (1998). The results of PLS analysis (see Figure 4.2) showed that all the four control variables included in the model were not significantly related with OCB.

#### **4.7 Summary of Hypothesis Testing**

The major purpose of this research is to show how cognitive forces influence an IT professional's OCB. By assessing IT work environment, this research identified five cognitive forces including job stress, trust in supervisors, trust in coworkers, commitment to organization, and commitment to profession. Utilizing Vroom's (1964) expectancy theory, the proposed model explains a substantial amount of variability of OCB exhibited by an IT professional ( $R^2 = .361$ ). In addition, the model explains 35.6% of variability of an IT professional's job satisfaction. Table 4.11 summarizes the results of hypothesis testing.

#### **4.8 Summary**

In this chapter, procedures and techniques used to assess the measurement and structural models are described. In addition, the results of hypothesis testing are provided. In chapter 5, a detailed discussion on the results and findings, limitations and suggestions for future research, and, contributions of this research is provided.



Table 4.11

*Summary of Hypothesis Testing*

Hypothesis	Hypothesized Path	Standardized $\beta$	t-value	Result
H1	VJSAT $\rightarrow$ OCB	0.601	10.289*	Supported
H2	OCB $\rightarrow$ JSAT	0.597	8.789*	Supported
H3a	JS $\rightarrow$ VJSAT	-0.031	0.310	Not Supported
H3b	JS $\rightarrow$ VJSAT $\rightarrow$ OCB	-0.1982	1.467	Not Supported
H4a	TS $\rightarrow$ VJSAT	-0.044	0.415	Not Supported
H4b	TC $\rightarrow$ VJSAT	0.058	0.590	Not Supported
H4c	TS $\rightarrow$ VJSAT $\rightarrow$ OCB	0.205	1.492	Not Supported
H4d	TC $\rightarrow$ VJSAT $\rightarrow$ OCB	0.169	1.264	Not Supported
H5a	CO $\rightarrow$ VJSAT	0.365	2.368*	Supported
H5b	CP $\rightarrow$ VJSAT	0.496	4.377*	Supported
H5c	CO $\rightarrow$ VJSAT $\rightarrow$ OCB	0.357	2.738*	Supported
H5d	CP $\rightarrow$ VJSAT $\rightarrow$ OCB	0.384	2.623*	Supported
H6a	TS $\rightarrow$ JS	-0.4737	4.5866*	Supported
H6b	TC $\rightarrow$ JS	-0.2519	2.0456*	Supported
H6c	JS $\rightarrow$ TS	-0.5969	7.7141*	Supported
H6d	JS $\rightarrow$ TC	-0.4824	5.0658*	Supported
H7a	TS $\rightarrow$ CP	0.3683	3.3217*	Supported
H7b	TS $\rightarrow$ CO	0.6708	8.5967*	Supported
H7c	CP $\rightarrow$ TS	0.0441	0.3737	Not Supported
H7d	CO $\rightarrow$ TS	0.6934	7.372*	Supported
H7e	TC $\rightarrow$ CP	0.1913	1.5018	Not Supported
H7f	TC $\rightarrow$ CO	0.0972	0.8329	Not Supported
H7g	CP $\rightarrow$ TC	0.1796	0.9965	Not Supported
H7h	CO $\rightarrow$ TC	0.3183	1.8624	Not Supported
H8a	JS $\rightarrow$ CO	-0.587	8.756*	Supported
H8b	JS $\rightarrow$ CP	-0.5189	3.439*	Supported
H8c	CO $\rightarrow$ JS	-0.4331	3.5454*	Supported
H8d	CP $\rightarrow$ JS	-0.1172	0.6814	Not Supported

Note: \* =  $p < 0.05$

## CHAPTER 5

## DISCUSSION AND CONCLUSIONS

**5.1 Introduction**

The purpose of this research was to utilize Vroom's (1964) expectancy theory to explain how an IT professional's OCB is motivated. To achieve this purpose, this research first identified five cognitive forces (i.e., job stress, commitment to organization, commitment to profession, trust in supervisors, and trust in coworkers) and a job related intrinsic outcome (i.e., job satisfaction). Next, this research developed a theoretical model that links these cognitive forces with an IT professional's perceived valence of job satisfaction and OCB. Data were collected using a snowball sampling approach from IT professionals across various states in the U.S.

In order to develop the theoretical model, an extensive literature review was conducted. Based on the constructs included in the model, an instrument was developed through adopting existing validated and tested scales and was revised through pilot testing. After the pilot testing, the instrument was placed on a survey website (Questionpro.com). Invitations requesting participation were first emailed to IT professionals at a large mid-western university and used their referrals to obtain data. The data collection process and preliminary data screening yielded 85 usable cases, which were included in the statistical analyses.

The proposed hypotheses were tested through partial least squares (PLS) approach using SmartPLS 2.0 and multiple regression technique using SPSS 17. The results of PLS analyses suggested that an IT professional's perceived valence of job satisfaction had a significant impact on the degree of OCB he or she exhibited ( $R^2 = .361$ ). In addition, the

analyses demonstrated that the proposed cognitive forces, as a whole, explain 62.67% of variability of an IT professional's perceived valence of job satisfaction. Discussions on hypothesis testing can be found in chapter 4.

The emphasis of this chapter is as the follows. First, a detailed discussion on key findings is provided. This is followed by contributions to academic research and practice. Finally, limitations and suggestions on future research directions are provided.

## **5.2 Discussion of Key Findings**

PLS and multiple regression techniques were employed to test the proposed hypotheses. The results of the analyses showed that 16 of the 28 hypotheses were supported.

### **5.2.1 The Force Model (Valence of Work Outcome and Effort)**

The force model in expectancy theory suggests that an individual will exert high levels of work effort if he or she perceives high levels of valence of work outcome. Using this concept, hypothesis 1 posited that there will be a positive relationship between valence of job satisfaction (VJSAT) and OCB. Results from the PLS analysis supported H1. This means that an IT professional will exhibit high levels of OCB if they perceive obtaining job satisfaction is attractive. This result is not surprising as previous studies that utilized expectancy theory have demonstrated that an individual's perceived valence of a work outcome has a significant impact on his or her motivation to put high levels of work effort in order to obtain the outcome. For instance, Lawler and Suttle (1973) examined managers of a retail organization and found valence of job outcome to be significantly related to job effort. Mitchell and Nebekker (1973) investigated college students' academic effort and performance by using expectancy theory and found that effort was

related to desired outcomes. Matsui, Kagawa, Nagamatsu, and Ohtsuk (1977) studied life insurance sales representatives and found that valence of outcome was related to performance level. Geiger et al. (1998) assessed students' motivation across ten countries and found that valence of outcomes (i.e., academic image, job performance, and personal satisfaction) was significantly related to the students' motivation to improve course performance. Extending Geiger et al.'s (1998) study, Campbell et al. (2003) examined the impact of valence of outcomes (i.e., improving overall grade-point average, increased personal satisfaction, and increased esteem within the group) on Russian students' effort decision and found that the valence of outcomes was a significant predictor of effort decision. Given previous studies that utilized expectancy theory have demonstrated the support for the positive relationship between valence and effort, the result of the positive relationship between VJSAT and OCB provides an additional support for expectancy theory.

### **5.2.2 Outcome of Organizational Citizenship Behavior**

Hypothesis 2 proposed that high levels OCB exhibited by an IT professional will result in high levels of JSAT experienced by him or her. Results from PLS analysis found the support for H2. Based on the findings, one can state that the more OCB exhibited by an IT professional, the higher JSAT he or she experiences. The positive relationship between OCB and JSAT has been supported by previous OCB research in various work settings. For instance, Bateman and Organ (1983) found a significant relationship between JSAT and OCB in an academic setting. Konovsky and Organ (1996) found JSAT was significantly related to all five sub-constructs of OCB in a health care setting. Lowery et al. (2002) found that OCB of blue collar workers were related to job

satisfaction. Although the result of H2 is consistent with the previous finding, it confirms OCB and JSAT relationship in the IT work setting.

### **5.2.3 The Valence Model (Cognitive Forces, VJSAT, and OCB)**

#### **5.2.3.1 Job Stress, VJSAT, and OCB**

The valence model in expectancy theory posits that an individual's perceived valence of a work outcome is influenced by the cognitive forces result from his or her work environment. When applying expectancy theory, this research identified five cognitive forces including job stress, commitment to organization, commitment to profession, trust in supervisors, and trust in coworkers and examined their impact on an IT professional's perceived valence of job satisfaction. Thus, hypothesis 3a proposed that an IT professional's job stress will have a negative impact on valence of job satisfaction. The results showed that H3a was not supported. This result is surprising as previous research has demonstrated that job stress has a negative impact on job satisfaction (e.g., Bacharach et al., 1991; Cullen et al., 2008; Veloutsou & Panigyrakis, 2004). Since the valence of an individual's anticipation of job satisfaction or dissatisfaction can result from work-related cognitive forces (Behling & Starke, 1973), the negative impact of job stress on valence of job satisfaction should be expected. However, there are several possible explanations for the finding. First, as firms continue to invest in IT outsourcing (Barthelemy 2001; Mason, 2000; Oh, Gallivan, & Kim, 2006), they obtain a deeper source of IT talent, knowledge, and expertise (Barthelemy 2001; Loh & Venkatraman 1992; Smith, Mitra, & Narasimhan, 1998). This deeper source of IT talent, knowledge, and expertise, therefore, could reduce in-house IT workers' job loads or pressure. In other

words, current IT workers might not experience as much job stress as previous research has identified.

Another possible explanation is the career opportunities in IT-related industries. According to Fanning's (2006) projection on the IT profession in 2010, it is expected that the employment in IT-related industries will increase. Similarly, Geer (2006) cited the forecast of the U.S. Bureau of Labor Statistics and suggested that the gap between IT professional supply and demand will widen through 2012. Meanwhile, previous research has shown suggested that IT professionals are particularly vulnerable to work exhaustion and stress (Kalimo & Toppinen 1995, McGee 1996), which in turn leads to intentions to leave (Moore & Burke, 2002). It is also argued that turnover can be affected by an individual's perceived ease of movement (Levy, 2003). Similarly, Moore (2000) suggested that IT professionals are likely to find alternative employment opportunities plentiful. The projected increasing career opportunities, therefore, might be responsible for the non-significant relationship between job stress and valence of job satisfaction. In other words, because of ease of movement, an IT professional could cope with job stress by moving to another organization where obtaining job satisfaction is more attractive.

Hypothesis 3b stated that the negative relationship between job stress and OCB will be positively mediated by VJSAT. The regression and PLS analyses did not support H3b.

However, as the non-significant relationship found between job stress and VJSAT, it is expected that the mediating role of JSAT to be non-significant. It is important to note that when examining the relationship between job stress and OCB as one of the steps for assessing H3b, this research found the relationship between job stress and OCB also to be

non-significant. This additional finding was not surprising given previous findings on this relationship have been mixed. For instance, Chu et al. (2006) found that workload had a negative impact on OCB. Boerner et al. (2008) demonstrated that job stress only had an indirect impact on OCB. Noblet et al. (2006) reported that job stress was not a significant predictor of OCB.

A possible explanation for non-significant relationship between job stress and OCB is that because of the effect of workplace computerization, IT professionals may have more opportunities to exhibit behaviors that are not required by their job descriptions but are important to organizational performance. In other words, one may observe that IT professionals in an organization are expected to help other organizational members solve IT related issues. Thus, it is expected regardless the degree of job stress of an IT professional experiences, their OCB is usually expected.

### **5.2.3.2 Trust in Supervisors and Coworkers, VJSAT, and OCB**

Hypothesis 4a (H4a) posited that an IT professional's trust in supervisors will have a positive impact on his or her perceived valence of job satisfaction. Hypothesis 4b proposed that an IT professional's trust in coworkers will have a positive effect on his or her perceived valence of job satisfaction. The results of PLS analyses failed to support both H4a and H4b. A possible explanation is that computerization may reduce the importance of supervisory function as it enables workers to have more autonomy (Dawson & McLoughlin, 1986). Specifically, Buchanan and Boddy (1983) found that computerization erodes the role of supervisor in that it enables automatic capture and analysis of performance information. In the context of IT work environment, computerization may enable IT professionals to perform their tasks and to analyze their

work outcomes easily without relying much on their supervisors. From this viewpoint, one may expect that trust in supervisors may have a relatively small impact on an IT professional's perceived job related outcomes such as VJSAT.

Another possible explanation for this phenomenon is that as IT jobs tend to be rather autonomous with low levels of interaction and communication as well as reduced supervision (Moore & Love, 2005), one can expect that IT professionals' perception on the attractiveness of job satisfaction would be largely influenced by other incentives such as promotions, bonus, or other rewards. In other words, based on the nature of IT jobs, financial rewards could have more impact on an IT professional's perceived valence of job satisfaction than non-financial rewards such as trust.

Hypothesis 4c proposed that the positive relationship between an IT professional's trust in supervisors and OCB will be positively mediated by his or her perceived valence of job satisfaction. Hypothesis 4d stated that the positive relationship between an IT professional's trust in coworkers and OCB will be positively mediated by his or her perceived valence of job satisfaction. The results of regression and PLS analyses failed to supported H4c and H4d. However, the regression analyses did find a significant direct impact of trust in supervisors on OCB. This finding is consistent with previous OCB studies (e.g., Chiaburu & Lim, 2008; Deluga, 1994; Korsgaard et al., 2002; Mayer & Gavin, 2005). Meanwhile, trust in coworkers was found to be not related to OCB. As previous research has suggested that trust in coworker has a positive impact on an employee's attitude toward workplace (e.g., Karl et al., 2005), one could expect that high levels of trust in coworkers might influence the attractiveness of job satisfaction. However, as argued above, IT professionals tend to have great autonomy, and job



performance is mainly influenced by the knowledge and skills possessed by them, which in turn could have a great impact on job satisfaction. Therefore, the impact of interpersonal trust on the valence of job satisfaction could be rather small. The findings on the relationships among interpersonal trust, valence of job satisfaction, and OCB in this research show that when examining an individual's perception of the valence of work outcomes, researchers need to take consideration into not only cognitive forces but also the characteristics of the job.

### **5.2.3.3 Commitment to Organization and Profession, VJSAT, and OCB**

Hypothesis 5a stated that an IT professional's commitment to organization will have a positive impact on his or her perceived valence of job satisfaction. Similarly, hypothesis 5b proposed an IT professional's commitment to profession will have a positive impact on his or her perceived valence of job satisfaction. The results of PLS analyses supported both H5a and H5b. Based on the finding of H5a, an IT professional will perceive high levels of valence of job satisfaction if he or she has high levels of commitment to organization. This finding is consistent with previous theoretical and empirical studies suggests that job satisfaction is an antecedent to commitment to organization (e.g., Bagozzi, 1980; Bartol, 1979; Brown & Peterson, 1994; Dirani, 2009; Hausknecht, Rodda, & Howard, 2009; Mathieu & Hamel, 1989; Reichers, 1985; Yousef, 2002). The result of H5b suggests that an IT professional who has high levels of commitment to profession perceives high levels of valence of job satisfaction. The finding of commitment to IT profession is important in that it has not been receiving much attention by previous OCB studies. The result of H5b is expected as it is argued that professionally committed individuals are more responsive to the professional values

and their own job performance (Larson, 1977), which in turn could have an impact on the valence of job satisfaction.

The PLS analyses also showed that commitment to profession has a greater effect on an IT professional's perceived valence of job satisfaction than commitment to organization. This finding confirms Lee, Yen, Havelka, and Koh's (2001) claim that as IT professionals progress in their career they are required to maintain and build professional competencies that could be difficult to transfer to other professions. In other words, because of the difficulty of changing their profession and the ease of changing workplace, IT professionals might have high levels of commitment to IT profession compared to commitment to their organizations.

Hypothesis 5c stated that an IT professional's perceived valence of job satisfaction will positively mediate the relationship between commitment to organization and OCB. Hypothesis 5d proposed that the relationship between commitment to profession and OCB will be positively mediated by an IT professional's perceived valence of job satisfaction. The results of PLS analyses supported both hypotheses. This means that a highly organizational and/or professional committed IT professional will exhibit higher levels of OCB if he or she perceives higher levels of valence of job satisfaction. This finding is not surprising in that it is argued that the professional development of IT professionals is critical to their employability with their organizations and/or in the profession (Schambach & Blanton, 2002). Thus, one can expect that an IT professional who is highly committed to the organization/profession may constantly acquire and update his or her IT competence in order to maintain or increase his or her performance, which in turn may influence his or her job satisfaction. In other words, an

IT professional with high levels of commitment to organization and commitment to profession is expected to perceive high levels valence of job satisfaction.

#### **5.2.3.4 Relationships among Cognitive Forces**

##### **5.2.3.4.1 Relationship between Job Stress and Trust in Supervisors and Coworkers**

Hypothesis 6a posited that an IT professional's trust in supervisors will have a negative impact on job stress. Hypothesis 6b proposed that an IT professional's trust in coworkers will have a negative impact on job stress. Hypothesis 6c stated that an IT professional's job stress will have a negative impact on trust in supervisors. Hypothesis 6d hypothesized that an IT professional's job stress will have a negative impact on trust in coworkers. Results from PLS analyses found the support for all H6a, H6b, H6c, and H6d.

These findings may suggest the followings. First, an IT professional may utilize interpersonal trust to cope with job stress. Specifically, an IT professional may invoke his or her trust to supervisors that the organization and/or supervisors will fulfill their exchange obligations of rewarding his or her effort (Eisenberger, Fasolo, & Davis-LaMastro, 1990) in order to lower his or her job stress. In addition, since IT jobs tend to be skill-driven, trust in coworkers may be used as a means to lower one's job stress as it is argued that high levels of trust results in an trustor's perceived high levels of relevant skills, knowledge, and ability of the trustee (e.g., Sonnenberg, 1994). In other words, when an IT professional has high levels of trust in coworkers, he or she may perceive the coworkers are competent. This perception, therefore, can serve as a coping strategy of job stress such as asking a competent coworker for help.

Second, the findings suggest that job stress had a negative impact on trust in supervisors and trust in coworkers. It is argued that an individual experiences job stress because of multiple job demands, difficulty of the job, insufficient supplies or support (Caplan et al., 1975), which in turn may result in negative psychological reactions (Kahn & Byosiere, 1992) such as reduced trust in supervisors and/or coworkers. Since IT professionals constantly experience high levels of job stress (Moore, 2000), the negative impact of job stress on trust in supervisors and coworkers is expected.

In sum, as previous studies have found the negative correlation between trust in supervisors and coworkers and job stress (e.g., Cummins, 1990; Russell, Altmaier, & Van Velzen, 1987; Sethi, King, & Quick, 2004; Timms et al., 2006) in various work settings such as education and nursing, the results of the above hypotheses provide additional evidence on the relationship between job stress and interpersonal trust in the IT work setting.

#### **5.2.3.4.2 Relationship between Trust in Supervisors and Coworkers and Commitment to Organization and Profession**

When investigating the relationship between trust and commitment, eight hypotheses were proposed. Hypothesis 7a proposed that an IT professional's trust in supervisors will have a positive impact on commitment to profession. Hypothesis 7b posited that an IT professional's trust in supervisors will have a positive impact on commitment to organization. Hypothesis 7c stated that an IT professional's commitment to profession will have a positive impact on trust in supervisors. Hypothesis 7d proposed that an IT professional's commitment to organization will have a positive impact on trust in supervisors. Hypothesis 7e proposed that an IT professional's trust in coworkers will

have a positive impact on commitment to profession. Hypothesis 7f stated that an IT professional's trust in coworkers will have a positive impact on commitment to organization. Hypothesis 7g posited that an IT professional's commitment to the profession will have a positive impact on trust in coworkers. Hypothesis 7h proposed that an IT professional's commitment to organization will have a positive impact on trust in coworkers. Results from PLS analyses supported H7a, H7b, and H7d but failed to support H7c, H7e, H7f, H7g, and H7h.

The findings suggest that an IT professional's trust in supervisors has stronger effect on commitment to organization (H7b) than on commitment to profession (H7a). This is consistent with previous research that an employee may see the supervisor as a representative of the organization and may extend his or her attachment to the organization (e.g., Konovsky & Pugh, 1994; Tan & Tan, 2000). The practical implication of this finding is that in order to reduce or minimize turnover or intention to leave, managers should take actions into building high levels of interpersonal trust with IT professionals.

The results also suggest that an IT professional's commitment to organization has a significant impact on his or her trust in supervisors (H7d). However, an IT professional's commitment to profession did not have a significant effect on his or her trust in supervisors (H7c). As argued above, employees often see their supervisors as representatives of the organization (Konovsky & Pugh, 1994; Tan & Tan, 2000). Therefore, one could expect to see a strongly organizationally committed individual to be highly committed to his or her supervisors, which in turn enhances his or her trust in the supervisors. Although H7c was not supported, the finding is not surprising. Specifically,

commitment to profession refers to the relative strength of an individual's willingness to accept the beliefs, goals, and values of the profession, to exert effort on its behalf, and to maintain membership in the profession (Aranya & Ferris, 1984). It is suggested that when there is a disagreement between the organization and the profession in their values, beliefs, or goals, an employee might be committed to the organization or to the profession, but not to both (Meyer & Allen, 1997). From this perspective, one would expect that a strongly professionally committed IT professional might have relatively little concern about trusting the organization as well as the supervisors.

All H7e, H7f, H7g, and H7h were not supported. This set of hypotheses assessed the reciprocal relationship between trust in coworkers and commitment to organization and profession. A possible explanation for the non-significant reciprocal relationship is that unlike trust in supervisors, trust in coworkers could have little influence on an IT professional's perceptions toward the organization and the profession. Specifically, as argued above, because IT jobs tend to be independent and autonomous (Moore & Love, 2005), committing to organization and profession would be mainly decided by the individuals. In other words, if agreeing with the organizational or professional goals, an IT professional might put high levels of work effort to complete his or her own tasks. Since trust in coworkers is suggested to have a positive impact mainly on group outcomes (e.g., Hansen, Morrow, & Batista, 2002; Mayer et al., 1995; McAllister, 1995; Pillai & Williams, 2004), the independent and autonomous nature of IT jobs would limit the effect of an IT professional's trust in coworkers on commitment to organization and to profession.

### **5.2.3.4.3 Relationship between Job Stress and Commitment to Organization and Profession**

Hypothesis 8a stated that an IT professional's job stress will have a negative impact on commitment to organization. Hypothesis 8b proposed that an IT professional's job stress will have a negative impact on commitment to profession. Hypothesis 8c posited that an IT professional's commitment to organization will have a negative impact on job stress. Hypothesis 8d proposed that an IT professional's commitment to profession will have a negative impact on job stress. Results from PLS analyses supported H8a, H8b, and H8c but failed to support H8d.

Although previous studies predominately found the negative correlation between job stress and commitment to organization and profession (e.g., Jamal, 1990; Jackson et al., 1987; Spector et al., 1988), this research explains the result of H8d by stating the followings. First, it is suggested that an IT professional who is committed to the IT profession might engage in professional behaviors such as professional reading and ongoing learning in order to hold a membership in the profession (Davis, Pawlowski, & Houston, 2006; Morrow & Wirth, 1989). Similarly, Schambach and Blanton (2002) argued that IT professionals have no choice but to maintain personal competency through regular professional training and development in order to maximize personal potential for life-long employability. Thus, the pressure to a part of IT profession could become an additional job stressor. In other words, a highly committed IT professional might introduce him or herself additional stress because of his or her desire to stay in the profession.

### 5.3 Contributions to Academic Research and Practice

As was mentioned in the first chapter, this research has a number of contributions. In the following sections, contributions of this research to academic research and to practice are discussed.

#### 5.3.1 Contributions to Academic Research

Previous OCB studies have been based on various theoretical aspects such as social learning theory or leadership theory. However, the OCB-related literature review conducted by this research found a lack of theoretical foundations in OCB research involving the process by which OCB is motivated. Specifically, to our knowledge, how OCB is motivated remains unanswered. Recognizing this gap, this research utilized a process theory of motivation, expectancy theory, to explain the process by which OCB is motivated and exhibited. Results showed that the theoretical model proposed by this research explained 36% of variability of OCB. Utilizing the concepts from expectancy theory, this research found that the attractiveness (valence) of job desired intrinsic work outcome (job satisfaction) was a significant predictor of OCB. As being one of the first few studies that examined the process by which OCB is motivated, this research filled the gap in OCB literature by applying one of the most important motivation theory, expectancy theory, to OCB research.

As part of the theory, expectancy theory suggests that an individual's cognitive forces resulted from the work environment have a great influence on his or her perceived valence of a work outcome. Using this concept and suggestions from Moore and Love (2005), this research included job stress, commitment to organization, commitment to profession, trust in supervisors, and trust in coworkers as cognitive forces. Results



showed that these five cognitive forces determined 62.7% of variability of valence of job satisfaction. Thus, a practical contribution of this finding is that to enhance the attractiveness of job satisfaction, organizations or managers should pay more attention to intangible aspects (e.g., reducing job stress or increasing commitment) than tangible aspects (e.g., increasing pay) of the job.

### **5.3.2 Contributions to Practice**

Another contribution of this research is that Moore and Love (2005) found that IT professionals tended to exhibit significantly less OCB than non-IT professional. The researchers concluded that to encourage IT professionals to exhibit OCB naturally, work environments must be well managed. Building on their conclusive statement, this research empirically tested the relationships among an IT professional's cognitive forces derived from the IT work environment. By understanding the relationships among cognitive forces, organizations and managers may be able to establish a work environment where OCB can naturally occur. For instance, results showed that both commitment to organization and commitment to profession have a significant impact on valence of job satisfaction, which in turn significantly affects OCB. Meanwhile, results also showed that job stress could significantly reduce commitment to organization and commitment to profession. Thus, by applying managerial strategies such as reducing workloads, providing time management training, and setting clear goals, managers should be able to enhance or at least maintain high levels of commitment to organizations and commitment to profession and therefore elicit an IT professional to exhibit high levels of OCB.

#### 5.4 Limitations and Suggestions for Future Research

Although this research used precise theoretical concepts and employed suitable statistical procedures, it is not without limitations. The limitations encountered by this research are discussed in the following sections.

First, because this research experienced difficulties in reaching its target population, it utilized a snowball sampling approach as it was the best available approach. However, bias could occur because an IT professional referred by another IT professional to participate in this research might have a higher probability of being similar (Zikmund, 2003). However, as was mentioned in the beginning of this chapter, respondents in this research were located across 21 states in the U.S. with significant variability in demographic backgrounds. Thus, sample representative in this research could be assumed. However, future studies are still needed to reexamine the proposed model using probability sampling techniques with a larger sample size.

A second limitation is that this research used an online cross-sectional survey that makes it difficult to identify the direction of causality. Thus, it is important to note that the results of this research can only show the causality of the proposed model. As all cross-sectional studies suffer this limitation (Gallivan, Spitler, & Koufaris, 2005), future longitudinal studies are needed to strengthen the proposed model.

Third, as this research utilized expectancy theory, which is one of the process theories of motivation, a methodological issue, tautology, might occur in this research. For instance, valence of job satisfaction and actual job satisfaction might be difficult to define and measure independently. In other words, an IT professional's perceived valence of job satisfaction might be determined largely by his or her actual job satisfaction. In

addition, the potential tautological issue might lead to definitions of constructs in this research to be unbounded. Thus, future research may strengthen this research by overcoming this methodological issue.

Fourth, it is important to acknowledge there are other important cognitive forces and situational conditions. For instance, job security or job status might have an important effect on an IT professional's perceived valence of job satisfaction. By including those cognitive and situational forces, future research may extend our understanding of OCB exhibited by IT professionals.

Finally, since investigating the degree of OCB exhibited by an IT professional was the major purpose of this research, OCB was measured by a summated scale that included five sub-constructs. However, as the nature of IT jobs is relatively different from others, one can expect that certain aspects of OCB may be exhibited by an IT professional more than other aspects. For instance, since IT professionals usually possess specific knowledge or skills that are necessary for their tasks and crucial for others' job outcomes, they might exhibit more altruistic behavior (e.g., covering a task for a sick IT professional) than civic virtue behavior (e.g., discussing how to improve organizational image on personal time). Thus, future research may extend the proposed model and examine the degree of each five OCB sub-construct is exhibited by an IT professional.

## **5.5 Conclusions**

This research systematically examined the process by which an IT professional's OCB is motivated. By applying and incorporating the concepts from expectancy theory including valence of a work outcome, work effort, and cognitive forces, this research provided an additional approach to understand OCB. In addition to enriching OCB

literature, this research also studied an understudied research population and validated the predictive power of expectancy theory with rigorous statistical procedures. These features, therefore, highlight the importance of this research.

The results confirmed the significant relationship between valence of job satisfaction and OCB and the significant relationship between OCB and job satisfaction. Moreover, among five cognitive forces, commitment to organization and commitment to profession contributed significantly to perceived valence of job satisfaction. Furthermore, the results showed some significant relationships among five cognitive forces. Although this research is not without limitations especially with the use of a snowball sampling approach, it is expected that the findings and discussions of this research may be used by organizations and managers to establish a work environment where employees' OCB is maximized.

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## APPENDICES

## APPENDIX A

### Survey Questionnaire

#### Survey

Please indicate the extent of your agreement or disagreement with the following statements

	Strongly Disagree		Neutral			Strongly Agree	
1. I am willing to put in a great deal of effort beyond what is normally expected in order to help the organization that I work for be successful.	1	2	3	4	5	6	7
2. I talk up the organization that I work for to my friends as a great organization to work for.	1	2	3	4	5	6	7
3. I feel very little loyalty to the organization that I work for.	1	2	3	4	5	6	7
4. I would accept almost any type of job assignment in order to keep working for my organization.	1	2	3	4	5	6	7
5. I find that my values and the values of the organization that I work for are very similar.	1	2	3	4	5	6	7
6. I am proud to tell others that I am part of the organization that I work for.	1	2	3	4	5	6	7
7. I could just as well be working for a different organization as long as the type of work was similar.	1	2	3	4	5	6	7
8. The organization that I work for really inspires the very best in me in the way of job performance.	1	2	3	4	5	6	7
9. It would take very little change in my present circumstances to leave the organization that I work for.	1	2	3	4	5	6	7
10. I am extremely glad that I chose this organization to work for over others I was considering at the time I joined.	1	2	3	4	5	6	7
11. There is not too much to be gained by sticking with the organization that I work for indefinitely.	1	2	3	4	5	6	7
12. Often, I find it difficult to agree with my organization's policies on important matters relating to its employees.	1	2	3	4	5	6	7
13. I really care about the fate of the organization that I work for.	1	2	3	4	5	6	7
14. For me, this is the best of all possible organizations for which to work.	1	2	3	4	5	6	7
15. Deciding to work for my organization was a definite mistake on my part.	1	2	3	4	5	6	7

**Please indicate the extent of your agreement or disagreement with the following statements**

	Strongly Disagree			Neutral			Strongly Agree
1. I do not feel emotionally drained from my work.	1	2	3	4	5	6	7
2. I feel used up at the end of the workday.	1	2	3	4	5	6	7
3. I feel fatigued when I get up in the morning and have to face another day on the job.	1	2	3	4	5	6	7
4. I do not feel burned out from my work.	1	2	3	4	5	6	7
5. I feel working all day is really a strain for me.	1	2	3	4	5	6	7

**Please indicate how much you disagree or agree with the following statements**

	Strongly Disagree			Neutral			Strongly Agree
1. If I got into difficulties at work, I know my coworkers would try and help me out.	1	2	3	4	5	6	7
2. I can trust the people I work with to lend me a hand if I needed it.	1	2	3	4	5	6	7
3. Most of my coworkers can be relied upon to do as they say they will do.	1	2	3	4	5	6	7
4. I have full confidence in the skills of my coworkers.	1	2	3	4	5	6	7
5. Most of my coworkers would get on with their work even if supervisors were not around.	1	2	3	4	5	6	7
6. I can rely on coworkers not to make my job more difficult by careless work.	1	2	3	4	5	6	7

**Please indicate how much you disagree or agree with the following statements**

	Strongly Disagree			Neutral			Strongly Agree
1. The security in my position is attractive.	1	2	3	4	5	6	7
2. The opportunity to give help to others in this job is attractive.	1	2	3	4	5	6	7
3. The opportunity to develop close friendships in this job is not attractive.	1	2	3	4	5	6	7
4. The self-esteem I get from being in this job is attractive.	1	2	3	4	5	6	7
5. The prestige of this job inside the organization that I work for (that is, the regard received from others in the organization) is not attractive.	1	2	3	4	5	6	7
6. The prestige of this job outside the organization	1	2	3	4	5	6	7

	that I work for (this is, the regard received from others not in the organization) is attractive.							
7.	The authority connected with this job is not attractive.	1	2	3	4	5	6	7
8.	The opportunity for independent thought and action in this job is attractive.	1	2	3	4	5	6	7
9.	The opportunity in this job for participation in the setting of goals is not attractive.	1	2	3	4	5	6	7
10.	The opportunity in this job for participation in the determination of methods and procedures is attractive.	1	2	3	4	5	6	7
11.	The opportunity for personal growth and development in this job is attractive	1	2	3	4	5	6	7
12.	The self-fulfillment I get from being in this job position (that is, the feeling of being able to use my own unique capabilities and realizing my own potentialities) is attractive.	1	2	3	4	5	6	7
13.	The worthwhile accomplishment in this job is not attractive.	1	2	3	4	5	6	7

**Please indicate how much you disagree or agree with the following statements**

		Strongly Disagree			Neutral			Strongly Agree
1.	Supervisors at my organization are sincere in their attempts to understand the workers' point of view.	1	2	3	4	5	6	7
2.	My organization has a poor future unless it can attract better supervisors.	1	2	3	4	5	6	7
3.	Supervisors can be trusted to make sensible decisions for the future of my organization.	1	2	3	4	5	6	7
4.	Supervisors at work seem to do an efficient job.	1	2	3	4	5	6	7
5.	I feel quite confident that the supervisors will always try to treat me fairly.	1	2	3	4	5	6	7
6.	My supervisors are prepared to gain advantage by deceiving the workers.	1	2	3	4	5	6	7



Please indicate the extent of your agreement or disagreement with the following statements

	Strongly Disagree		Neutral			Strongly Agree	
1. I am willing to put in a great deal of effort beyond what is normally expected in order to help this profession be successful.	1	2	3	4	5	6	7
2. I talk up this profession to my friends as a great profession to work in.	1	2	3	4	5	6	7
3. I feel very little loyalty to this profession.	1	2	3	4	5	6	7
4. I would accept almost any type of job assignment in order to keep working in this profession.	1	2	3	4	5	6	7
5. I find that my values and the profession's values are very similar.	1	2	3	4	5	6	7
6. I am proud to tell others that I am part of this profession.	1	2	3	4	5	6	7
7. I could just as well be working in a different profession as long as the type of work was similar.	1	2	3	4	5	6	7
8. This profession really inspires the very best in me in the way of job performance.	1	2	3	4	5	6	7
9. It would take very little change in my present circumstances to leave this profession.	1	2	3	4	5	6	7
10. I am extremely glad that I chose this profession over others I was considering at the time I joined.	1	2	3	4	5	6	7
11. There is not too much to be gained by sticking with this profession indefinitely.	1	2	3	4	5	6	7
12. Often, I find it difficult to agree with this profession's policies on important matters.	1	2	3	4	5	6	7
13. I really care about the fate of this profession.	1	2	3	4	5	6	7
14. For me, this is the best of all possible professions in which to work.	1	2	3	4	5	6	7
15. Deciding to work in this profession was a definite mistake on my part.	1	2	3	4	5	6	7

Please indicate the extent of your agreement or disagreement with the following statements

	Strongly Disagree		Neutral			Strongly Agree	
1. I help others who have heavy workloads.	1	2	3	4	5	6	7
2. I always help others who have been absent.	1	2	3	4	5	6	7

3.	I am always willing to give my own time to help others with work problems.	1	2	3	4	5	6	7
		Strongly Disagree			Neutral			Strongly Agree
1.	I take steps to prevent problems with other workers.	1	2	3	4	5	6	7
2.	I always try to avoid creating problems for coworkers.	1	2	3	4	5	6	7
3.	I do not abuse the rights of others.	1	2	3	4	5	6	7
4.	I touch base with others before initiating actions.	1	2	3	4	5	6	7
5.	I am generally mindful of how my own behavior affects other people's jobs.	1	2	3	4	5	6	7
		Strongly Disagree			Neutral			Strongly Agree
1.	I do not focus on what is wrong with my own situation.	1	2	3	4	5	6	7
2.	I spend a lot of time complaining about trivial matters.	1	2	3	4	5	6	7
3.	I am not the classic "squeaky wheel" that always needs greasing.	1	2	3	4	5	6	7
4.	I do not find fault with what my organization is doing.	1	2	3	4	5	6	7
5.	I do not make "mountains out of molehills".	1	2	3	4	5	6	7
6.	I express resentment with any new changes in the organization that I work for.	1	2	3	4	5	6	7
		Strongly Disagree			Neutral			Strongly Agree
1.	I never take long lunches or breaks.	1	2	3	4	5	6	7
2.	I do not take unnecessary time off work.	1	2	3	4	5	6	7
3.	I do not take extra breaks.	1	2	3	4	5	6	7
4.	My attendance at work is above the norm.	1	2	3	4	5	6	7
5.	I typically obey my organization's rules and regulations even when no one is watching.	1	2	3	4	5	6	7
		Strongly Disagree			Neutral			Strongly Agree
1.	I generally attend and participate in meetings regarding my organization.	1	2	3	4	5	6	7
2.	I attend functions that are not required, but help	1	2	3	4	5	6	7

my organization's image.

3.	I keep abreast of changes in the organization that I work for.	1	2	3	4	5	6	7
4.	I read and keep up with my organization's announcements, memos, etc.	1	2	3	4	5	6	7
5.	I keep up with developments in the organization that I work for.	1	2	3	4	5	6	7

**Please indicate your response to the following statements**

		Strongly Disagree			Neutral			Strongly Agree
1.	How satisfied are you with supervision you receive at work?	1	2	3	4	5	6	7
2.	How satisfied are you with your organization as an employer?	1	2	3	4	5	6	7
3.	How satisfied are you with career opportunities within your organization?	1	2	3	4	5	6	7
4.	At your organization, how satisfied are you with the financial rewards?	1	2	3	4	5	6	7
5.	How satisfied are you with your coworkers?	1	2	3	4	5	6	7
6.	At your organization, how satisfied are you with the nature of the work?	1	2	3	4	5	6	7
7.	At your organization, how satisfied are you with recreational activities?	1	2	3	4	5	6	7
8.	How satisfied are you with fringe benefits (e.g. vacation, holiday time, insurance coverage, retirement plans, sick leave, and family leave) provided by your organization?	1	2	3	4	5	6	7
9.	How satisfied are you with the work environment related to generating new client business?	1	2	3	4	5	6	7
10.	How satisfied are you with the work environment related to competitive pressures?	1	2	3	4	5	6	7
11.	At your organization, how satisfied are you with the work environment related to autonomy of the work?	1	2	3	4	5	6	7
12.	How satisfied are you with the work environment related to pressure at work?	1	2	3	4	5	6	7
13.	How satisfied are you with the work environment related to time flexibility?	1	2	3	4	5	6	7

### Demographic Information

Age:

Gender:  Male  Female

Years with current organization:

Years in information technology profession:

## APPENDIX B

## Descriptive Analysis of Measurement Scales

B1

*Descriptive Analysis of Job Satisfaction*

Item	Description	Mean $\bar{X}$	Standard Deviation (S)
JSAT1	How satisfied are you with supervision you receive at work?	4.892	1.779
JSAT2	How satisfied are you with your organization as an employer?	5.257	1.518
JSAT3	How satisfied are you with career opportunities within your organization?	4.500	1.815
JSAT4	At your organization, how satisfied are you with the financial rewards?	4.135	1.739
JSAT9	How satisfied are you with the work environment related to generating new client business?	4.460	1.075
JSAT10	How satisfied are you with the work environment related to competitive pressures?	4.743	1.171
JSAT12	How satisfied are you with the work environment related to pressure at work?	4.987	1.340

B2

*Descriptive Analysis of Organizational Citizenship Behavior*

Item	Description	Mean $\bar{X}$	Standard Deviation (S)
OCBA1	I help others who have heavy workloads.	5.784	0.955
OCBA2	I always help others who have been absent.	5.432	1.061
OCBA3	I am always willing to give my own time to help others with work problems.	5.784	0.911
OCBCOU1	I take steps to prevent problems with other workers.	5.662	0.940
OCBCOU2	I always try to avoid creating problems for coworkers.	6.054	0.992
OCBCOU3	I do not abuse the rights of others.	6.365	0.853
OCBCOU5	I am generally mindful of how my own behavior affects other people's jobs.	5.865	0.881
OCBS2*	I spend a lot of time complaining about trivial	5.581	1.499

	matters.		
OCBS5	I do not make “mountains out of molehills”.	5.676	1.136
OCBS6*	I express resentment with any new changes in the organization.	5.581	1.216
OCBCON1	I never take long lunches or breaks.	4.446	1.807
OCBCON2	I do not take unnecessary time off work.	5.487	1.572
OCBCON3	I do not take extra breaks.	5.473	1.537
OCBCON4	My attendance at work is above the norm.	5.649	1.475
OCBCON5	I typically obey organizations rules and regulations even when no one is watching.	6.068	0.865
OCBCV1	I generally attend and participate in meetings regarding the organization.	5.716	0.958
OCBCV2	I attend functions that are not required, but help the organizational image.	4.608	1.560
OCBCV3	I keep abreast of changes in the organization.	5.351	1.128
OCBCV4	I read and keep up with organization announcements, memos, etc.	5.649	1.221
OCBCV5	I keep up with developments in the organization.	5.500	1.208

Note. \* = Reverse-coded items

B3

### *Descriptive Analysis of Valence of Job Satisfaction*

Item	Description	Mean $\bar{X}$	Standard Deviation (S)
VJSAT1	The security in my position is attractive.	5.541	1.406
VJSAT4	The self-esteem I get from being in this job is attractive.	5.230	1.080
VJSAT5*	The prestige of this job inside the organization (that is, the regard received from others in the organization) is not attractive.	4.676	1.481
VJSAT7*	The authority connected with this job is not attractive.	4.514	1.407
VJSAT8	The opportunity for independent thought and action in this job is attractive.	5.824	1.025
VJSAT9*	The opportunity in this job for participation in the setting of goals is not attractive.	5.014	1.448
VJSAT10	The opportunity in this job for participation in the determination of methods and procedures is attractive.	5.108	1.429
VJSAT11	The opportunity for personal growth and development in this job is attractive.	5.176	1.398
VJSAT12	The self-fulfillment I get from being in this job	5.676	1.429

	position (that is, the feeling of being able to use my own unique capabilities and realizing my own potentialities) is attractive.		
VJSAT13*	The worthwhile accomplishment in this job is not attractive.	5.432	1.405

Note. \* = Reverse-coded items

B4

#### Descriptive Analysis of *Job Stress*

Item	Description	Mean $\bar{X}$	Standard Deviation (S)
JS1*	I do not feel emotionally drained from my work.	3.608	1.774
JS2	I feel used up at the end of the workday.	4.000	1.821
JS3	I feel fatigued when I get up in the morning and have to face another day on the job.	3.311	1.712
JS4*	I do not feel burned out from my work.	3.419	1.736
JS5	I feel working all day is really a strain for me.	2.905	1.572

Note. \* = Reverse-coded items

B5

#### Descriptive Analysis of *Commitment to Organization*

Item	Description	Mean $\bar{X}$	Standard Deviation (S)
CO1	I am willing to put in a great deal of effort beyond what is normally expected in order to help this organization be successful.	5.770	1.267
CO2	I talk up this organization to my friends as a great organization to work for.	5.149	1.496
CO5	I find that my values and the organization's values are very similar.	4.676	1.571
CO6	I am proud to tell others that I am part of this organization.	5.581	1.499
CO8	This organization really inspires the very best in me in the way of job performance.	4.460	1.563
CO10	I am extremely glad that I chose this organization to work for over others I was considering at the time I joined.	5.378	1.478
CO12*	Often, I find it difficult to agree with this	4.284	1.692

	organization's policies on important matters relating to its employees.		
CO13	I really care about the fate of this organization.	5.784	1.358
CO14	For me, this is the best of all possible organizations for which to work.	4.743	1.434
CO15*	Deciding to work for this organization was a definite mistake on my part.	6.068	1.286

*Note:* \* = Reverse-coded items

B6

### *Descriptive Analysis of Commitment to Profession*

Item	Description	Mean $\bar{X}$	Standard Deviation (S)
CP1	I am willing to put in a great deal of effort beyond what is normally expected in order to help this profession be successful.	5.730	1.011
CP2	I talk up this profession to my friends as a great profession to work in.	5.365	1.278
CP3*	I feel very little loyalty to this profession.	5.487	1.417
CP5	I find that my values and the profession's values are very similar.	5.068	1.209
CP6	I am proud to tell others that I am part of this profession.	5.878	0.936
CP8	This profession really inspires the very best in me in the way of job performance.	5.351	1.128
CP10	I am extremely glad that I chose this profession over others I was considering at the time I joined.	5.460	1.305
CP11*	There is not too much to be gained by sticking with this profession indefinitely.	5.446	1.491
CP12*	Often, I find it difficult to agree with this profession's policies on important matters.	5.108	1.299
CP13	I really care about the fate of this profession.	5.716	1.360
CP14	For me, this is the best of all possible professions in which to work.	5.081	1.586
CP15*	Deciding to work in this profession was a definite mistake on my part.	6.081	1.247

*Note:* \* = Reverse-coded items



B7

*Descriptive Analysis of Trust in Supervisors*

Item	Description	Mean $\bar{X}$	Standard Deviation (S)
TS1	Supervisors at my organization are sincere in their attempts to understand the workers' point of view.	4.946	1.735
TS2*	My organization has a poor future unless it can attract better supervisors.	4.568	1.952
TS3	Supervisors can be trusted to make sensible decisions for the organization's future.	4.676	1.822
TS4	Supervisors at work seem to do an efficient job.	4.824	1.650
TS5	I feel quite confident that the supervisors will always try to treat me fairly.	4.797	1.828
TS6*	My supervisors are prepared to gain advantage by deceiving the workers.	5.297	1.750

Note. \* = Reverse-coded items

B8

*Descriptive Analysis of Trust in Coworkers*

Item	Description	Mean $\bar{X}$	Standard Deviation S
TC1	If I got into difficulties at work, I know my coworkers would try and help me out.	5.689	1.313
TC2	I can trust the people I work with to lend me a hand if I needed it.	5.689	1.334
TC3	Most of my coworkers can be relied upon to do as they say they will do.	5.649	1.243
TC4	I have full confidence in the skills of my coworkers.	5.365	1.234
TC5	Most of my coworkers would get on with their work even if supervisors were not around.	5.716	1.548
TC6	I can rely on coworkers not to make my job more difficult by careless work.	4.987	1.676

## APPENDIX C

Permission to Reprint for Figure 1.1



Shih Chou &lt;syhou@siu.edu&gt;

## Request for Permission

Lawler, Ed <elawler@marshall.usc.edu>

Fri, Mar 5, 2010 at 8:30 AM

To: Shih Chou <syhou@siu.edu>

OK

**From:** Shih Chou [mailto:[syhou@siu.edu](mailto:syhou@siu.edu)]  
**Sent:** Thursday, March 04, 2010 4:42 PM  
**To:** Lawler, Ed  
**Subject:** Request for Permission

Dear Professor Lawler,

My name is Shih Yung Chou. I am a doctoral student at Southern Illinois University Carbondale and am currently writing my dissertation under the supervision of Dr. John M. Pearson. In my dissertation, I would like use a figure from your book, *Motivation in Work Organizations*. It is Figure 3-1. Expectancy motivation model in page 50. Thus, I would like to ask you for your permission of using the figure. Thank you for your help.

Sincerely,

Shih Yung Chou  
 Department of Management  
 College of Business  
 Southern Illinois University Carbondale

## VITA

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Information Technology Professionals as Citizens: An Expectancy Theory Perspective

Major Professor: Dr. John M. Pearson

Conference Proceedings:

1. Chou, S. (2009). "Perceived Dissimilarity: A Moderating Effect between Group Demographic Diversity and Group Social Integration." *The 2009 Midwest Academy of Management Conference*, Chicago, IL, October 22-24, 2009.

2. Chou, S. (2008). "Big Five Personality: Moderation Effect on People Management and Organizational Citizenship Behavior." *The 2008 Midwest Academy of Management Conference*, St. Louis, MO, October 2-4, 2008.
3. Chou, S. (2008). "Within-Group Diversity: A Moderating Effect between Organization Demography and Group Social Integration." *The 2008 International Conference on Business and Information*, Seoul, South Korea, July 7-9, 2008.
4. Chou, S. (2008). "A Study of Creating Workforce Diversity from the Views of Organizational Settings." *The International Academy of Business and Public Administration Disciplines*, Orlando, FL. January 3-6, 2008.
5. Chou, S., & Lertpittayapoom, S. (2007). "Receptivity to Charismatic Leadership in Organizations." *The 7<sup>th</sup> Hawaii International Conference on Business*, Honolulu, HI, May 24-27, 2007.

#### Presentations at Processional Meetings:

1. Poster session with Mrs. Koine, Evelyn, "Considering the U.S. Equivalence of the Three-Year Degree in India." *The National Association of Foreign Student Advisers Region V Conference*, Kalamazoo, MI, November 7-9, 2007.
2. Poster session with Mrs. Koine, Evelyn and Dr. Svec, Christine, "How to Reach the Masses." *The National Association of Foreign Student Advisers Region V Conference*, Kalamazoo, MI, November 7-9, 2007.