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# Job Satisfaction and Turnover among IT Professionals: A Cognitive Dissonance Approach

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## ABSTRACT

Organizations are increasingly recognizing their workers as valuable resources. Therefore, workforce planning and policies that minimize the voluntary turnover of IT professionals are important. Using cognitive dissonance theory as a theoretical foundation, we propose and test research hypotheses that combine traditional voluntary turnover constructs with constructs of interest to the IT profession. Data are collected from a sample of 179 IT workers in one agency within a large multi-agency governmental organization. These initial results indicate skill-set obsolescence and fairness of rewards are direct antecedents of job satisfaction. Organizational commitment, job alternatives, and perceived workload directly impact turnover intention, but job satisfaction impacts turnover intention only when mediated by organizational commitment.

## Keywords

Turnover, IT professionals, skill obsolescence, cognitive dissonance theory, perceived workload

## INTRODUCTION

There is evidence that demand for IT workers is once again expanding. A recent survey showed that 55% of the 545 companies responding anticipated an increase in IT headcount in the next year (Prewitt and Ware, 2006). Companies are becoming aware of their dependence on IT to help achieve their objectives, and that the successful exploitation of IT capabilities is dependent upon the availability of IT professionals to design and integrate IT infrastructure and applications (Agarwal and Ferratt, 2002). Therefore, workforce planning and developing policies that minimize voluntary turnover of IT professionals are important. Using the theoretical foundation of cognitive dissonance theory, we investigate these issues. Specifically, we examine job satisfaction and voluntary turnover among IT professionals. In doing so, we combine traditional constructs with constructs of particular interest to the IT profession. According to Agarwal and Ferratt (2002, p. 73), "the IT profession possesses some unique characteristics, including rapid changes in technology that quickly render existing skill sets obsolete." Another characteristic prior research has identified as important to the IT profession is work overload (Moore, 2000). We therefore consider the impact of skill set obsolescence and perceived workload on job satisfaction and turnover.

The organization of the remainder of this paper is as follows. First we discuss the theoretical background for our investigation as we formulate our hypotheses. Next, we describe the methodology of the study followed by the results. We discuss these results and highlight their implications before concluding the paper.

## THEORETICAL BACKGROUND AND HYPOTHESES

### Cognitive Dissonance Theory

Festinger (1957) proposed the theory of cognitive dissonance that posits when a person maintains two conflicting ideas, termed cognitive structures, a state of dissonance occurs. Because of this, the individual tries to achieve a state of consistency by changing one of the two conflicting ideas by taking actions that reduce dissatisfaction associated with the cognitive

anxiety. Thus, individuals try to curtail dissonance either by lessening self-interested behavior or by attempting to deceive themselves.

Cognitive dissonance theory was first introduced in the psychological literature, but is a theory that has been, and continues to be, used in many different disciplines. For example, in economics, Gilad, Benjamin, Kaish, Stanley, Loeb, (1987) used cognitive dissonance theory to develop a utility maximization model; in public health, Chapman, Wong, and Smith (1993) used the theory to investigate differences between smokers and ex-smokers; in organizational behavior, Koh and Boo (2004) used cognitive dissonance theory to explain organizational ethics. In the information systems literature, cognitive dissonance theory has only been used in a couple of studies. Szajna and Scamell, (1993) used cognitive dissonance theory to examine how information system user expectations influenced performance and perceptions. Jiang and Klein (2002) used an offshoot of cognitive dissonance theory, discrepancy theory, to examine how the difference between IT employee wants and the ways in which the organization satisfied those wants affected an employee's intention to leave the organization. Their data showed that in order to improve turnover, managers must reduce the disparity between employee desires and their perception of what the organization supplies. A literature search revealed no other use of cognitive dissonance theory in the information systems literature.

Cognitive dissonance theory is useful in investigating employee turnover and job satisfaction. Halpern (2005) investigated whether the high turnover rates of expatriates upon returning home from an international assignment were due to unmet expectations. She found that cognitive dissonance resulting from the inconsistency between an expatriate's expectations prior to return and the reality experienced upon return is an important predictor of repatriate retention. In a longitudinal study, Doran, Stone, Brief, and George (1991) found that workers' intentions to leave when initially hired predicted subsequent job satisfaction. We use this theory as our theoretical basis to evaluate constructs of particular interest to the IT profession when investigating job satisfaction and voluntary turnover.

### **Turnover**

There are many attempts to create a model that explains the process through which employees voluntarily leave an organization (see Griffeth et al., 2000 for a meta-analysis). The most common model of voluntary turnover in the current literature is founded on the March and Simon (1958) model. They postulated that there are two main classes of predictor variables: (1) the ease of movement, such as alternative job opportunities and (2) the desirability of movement, reflected by job attitudes such as job satisfaction and organizational commitment. The traditional model shows that when employees become dissatisfied with their jobs and the job alternatives appear favorable to their current positions, then via an expected-value type decision process, they will choose to voluntarily leave their current jobs. Past research has supported the positive connection between job alternatives and the intention to quit (Hom and Hulin, 1981). In addition, empirical tests consistently support the significant negative relationships between job satisfaction with turnover intention and organizational commitment with turnover intention (Griffeth et al., 2000).

In the information systems literature, Guimaraes and Igarria (1992) used the traditional turnover constructs of organizational commitment and overall satisfaction, but added role stressors, participation on boundary spanning activities, and demographic variables when investigating the differences between Information Center (IC) and Information Systems (IS) personnel intention to leave. They found that with IC personnel, job satisfaction had both direct and indirect effects on turnover intention. However, with IS employees, it only had indirect effects through organizational commitment. Organizational commitment, with both samples, predicted turnover intention.

In a study of 191 IT workers from 17 different agencies of a southeastern state, Thatcher, Stepina, and Boyle (2002-2003) also investigated elements of the traditional model of voluntary turnover. They found that organizational commitment and perceived job alternatives had a direct effect on turnover intention, which in turn had a direct relationship with actual turnover. The effect of job satisfaction on turnover intention was mediated by organizational commitment.

Another model of turnover outlined by Moore (2000) includes a number of different variables such as perceived workload, role ambiguity, role conflict, autonomy, and fairness of rewards. This model purports that the higher levels of work exhaustion, also thought of as job burnout, will result in higher intentions to leave the job.

### **Proposed Research Hypotheses**

Our proposed research hypotheses include constructs from traditional models of turnover in addition to perceived workload, skill obsolescence, pay satisfaction and fairness of rewards. The hypotheses and the literature that supports them follow.

### **Job Alternatives**

Prior research has found that if the opportunity to find another job is considered good, the employee will then form an intention to quit (Hom and Hulin, 1981). According to Johnson, Griffeth, and Griffin (2000), as alternative job opportunities go up so does the likelihood of seeing a superior opportunity, which will fit the needs of the employee. This favorable evaluation results in voluntary turnover. Hence,

*H1: Job alternatives will demonstrate a positive relationship with turnover intention.*

### **Organizational Commitment**

The introduction of organizational commitment into the desirability of movement component of the traditional voluntary turnover model is a result of the work done by Meyer and Allen (1991). Organizational commitment is the strength of one's identification with an organization and its objectives. The stronger one identifies with his or her organization the less likely he or she is to leave. Having incompatible core beliefs with that of the organization creates cognitive dissonance. For example, if one holds conflicting cognitions such as believing that corporations should have good environmental policies but learn of EPA rule violations, cognitive dissonance may result. The outcome can be a distancing from the values of the organization, thus a lower level of organizational commitment.

Organizational commitment is a construct that has been used in many studies concerning voluntary turnover in organizations. It has been consistently linked with withdrawal cognitions, resulting in withdrawal behaviors. Overall, empirical tests consistently support the significant negative relationships between organizational commitment with turnover intention (Griffeth et al., 2000). Hence,

*H2: Organizational commitment will demonstrate a negative relationship with turnover intention.*

### **Job Satisfaction**

A substantial amount of literature has found that overall job dissatisfaction leads to intention to leave (e.g., Lee and Mowday, 1987). A number of factors influence job satisfaction including the job and tasks, the work environment, pay, and rewards (Locke, 1976). In addition, characteristics of both the employee and the work environment determine the level of job satisfaction or job dissatisfaction (Spector, 1997). Overall, empirical tests consistently support the significant negative relationships between job satisfaction with turnover intention (Griffeth et al, 2000). Hence,

*H3a: Job satisfaction will demonstrate a negative relationship with turnover intention.*

While past empirical studies of workers support the direct relationship between job satisfaction and turnover intention, recent studies involving IT professionals found that job satisfaction predicts organizational commitment and mediates the effect on turnover intention. For example, Igarria and Guimaraes (1999), in a study investigating telecommuters, found that overall satisfaction was a predictor of organizational commitment. Thatcher et al. (2002) in a study of 193 IT government workers also found that the relationship between job satisfaction and turnover intention was mediated by organizational commitment. Hence,

*H3b: Job satisfaction will demonstrate a positive relationship with organizational commitment.*

### **Fairness of Rewards**

According to Festinger (1957), two ideas become dissonant if one idea is logically expected to follow the other but does not. For example, the ideas "I believe in equality" and "I receive 5 times more rewards than my coworker who does the same job" will likely create dissonance (Burnett, Williamson, and Bartol, 2005). When an individual does not have the capacity or opportunity to adjust dissonance by altering other behaviors (e.g., working 5 times harder to match a five-fold reward advantage or modifying reward structures) a cognitive adjustment in job satisfaction may result. Carr and McLoughlin (1996) researched this concept by investigating 126 Australian workers receiving wages equal to, lower than, or higher than their counterparts. Employees who felt they were being under- or over rewarded reported lower job satisfaction and greater readiness to change jobs as compared with those who felt they were being rewarded fairly. Hence:

*H4: Fairness of rewards will demonstrate a positive relationship with job satisfaction.*

### Pay Satisfaction

The contradictory desires for both self interest and fairness create cognitive dissonance (Burnett, Williamson, and Bartol, 2005). Thus, satisfaction with one's pay, and the evaluation of the fairness of one's pay and other rewards can be related. If an individual believes that he or she is unfairly rewarded, he or she may become dissatisfied with pay as well as the process by which it was determined. However, while there may be a strong correlation between pay satisfaction and fairness of rewards, the dissonance created by these two constructs can differ based upon variations in inputs and outputs or if the evaluation processes vary. In terms of pay satisfaction, cognitive dissonance can be created by evaluating the pay of others in different organizations and becoming dissatisfied because there is an awareness that pay is "below market levels." For example, Thatcher et al. (2002) found that those who perceived that their pay was not competitive with market norms were less satisfied with their jobs. Hence:

*H5: Pay satisfaction will demonstrate a positive relationship with job satisfaction.*

### Perceived Workload

For decades it was said that IS workers in many organizations are continually asked to take on unachievable workloads and unrealistic completion dates (Bartol and Martin, 1982). Over fifteen years ago, in a field study of 109 IS managers, work overload was reported as the major source of perceived work stress (Li and Shani, 1991). However, during the economic downturn in 2001, the workload of IT professionals was predicted to increase by 50% as a result of increased layoffs, greater demands for profitability, and the requirements for greater organizational responsiveness (Fox, 2002). Work overload and inadequate time to complete projects and work assignments have been identified as problems in the IT work environment. Evidence has found that workload overload is the strongest predictor of work exhaustion and perceived workload significantly predicts turnover intention (Moore, 2000).

This creates a prime opportunity for cognitive dissonance to occur. Professionals who were in the IT workforce prior to the economic downturn earlier this decade may have been caught off-guard at the drastic increase in expectations. Family/balance of life expectations can butt against workplace demands, causing dissatisfaction and withdrawal behaviors such as seeking other employment.

Workload-based cognitive dissonance can also occur as a result of perceived discrimination in the workplace. When examining gender-based inequalities, Kjeldal and Rindfleish (2005) found that cognitive dissonance resulted from the disparity between formal organizational policies espousing equity and the individuals' perceptions of actual workload allocations. Hence,

*H6a: Perceived workload will demonstrate a positive relationship with turnover intention.*

*H6b: Perceived workload will demonstrate a negative relationship with job satisfaction.*

### Skill Obsolescence

To leverage opportunities that are made available through advances in technology, such as agile organizational structure through the use of virtual teams, firms are requiring new and different skills from their IT professionals. Unlike other fields in which basic knowledge is fairly stable, it is estimated that half of the knowledge and skills acquired by an IT professional will be obsolete in less than two years. Information technology professionals typically have high growth needs in which these professionals desire to learn the latest technologies. Agarwal and Ferratt and (2002) suggest that one savvy HR policy to retain top IT professionals is to provide them with training on updated technologies. Without updated skills, we argue that IT professionals will become dissatisfied with their jobs and become more likely to seek other employment opportunities. Cognitive dissonance of the competing desires and unmet expectations may occur when employees view themselves as having technical proficiencies, yet are confronted with the reality that the fast-paced technical environment has rendered their skill-set obsolete. Hence,

*H7a: Skill obsolescence will demonstrate a direct positive relationship with turnover intention.*

*H7b: Skill obsolescence will demonstrate a negative relationship with job satisfaction.*

## METHODOLOGY

This research is part of a larger study conducted with a large national-level U.S. government department. The research team joined with government employees in creating a taskforce to study workforce requirements. The research team searched the academic literature and selected preexisting scales where possible for inclusion in a survey of the IT workforce. An initial set of survey questions consisting of the research constructs, demographics, training, and career aspirations were put on a secured Internet site. The government taskforce and their designees piloted the survey. Written and oral comments were provided. Modifications were made and after two additional rounds of testing the final survey was established.

### Survey Administration

The taskforce sent an initial electronic message to government IT supervisors announcing that the survey was available. The supervisors then forwarded the email to the IT workers in their departments, along with a letter from the Assistant Secretary for Information and Technology (i.e., the CIO) asking that all IT workers complete the survey. Each email contained the URL of the survey website, instructions for logging in and completing the survey, and contact information for the research team and help desk in case of emergencies or questions. Each potential respondent was informed that all individual responses would be kept anonymous and only aggregated results would be shared with the government. Two weeks later a second email was sent to the IT supervisors, asking them to remind their employees to complete the survey.

IT workers at one of the large agencies were the target respondents for data collected in this research. Of those 439 employees, 201 responded, resulting in a response rate of 45.8%. As a result of the data cleaning process, employees who entered invalid emails for ID purposes were eliminated as well as participants providing erroneous data (i.e., specified opposite attitudes on reversed items). The final number of respondents was 179.

The respondents are 44.4% females and 55.6% males with the average IT experience being 14.04 years. Twenty four percent of the respondents are between the ages of 25 and 39, 42.7% between the ages of 40 and 49, and 33.1 percent are 50 years or older. The respondents are well educated and all but 4.5% have at least some college.

### Measures

The four-item scale from Moore (2000) was used on the survey to assess the employee's attitudes towards leaving the organization within the next calendar year. Availability of job alternatives is based on the perceived ease by which one can find another job. Two items were adapted from Lee and Mowday (1987). To assess overall organizational commitment, we used nine items from the Mowday, Steers, and Porter (1979) organizational commitment scale. Organizational commitment is the strength of one's identification with an organization and its objectives. Perceived workload is defined as the degree to which an individual believes the tasks assigned to him/her cannot be completed in a normal workweek. Perceived skill obsolescence is defined as the degree to which an individual believes his/her job related knowledge and skills are out-of-date. Four items were used from Ryan and Harrison (2001). Fairness of rewards is the perception of the fairness of the outcomes an employee receives. The two item scale from Moore (2002) was used. Pay satisfaction is the degree to which an individual has a positive emotional state resulting from the appraisal of his/her compensation.

## RESULTS

### Assessing the Measurement Model

The adequacy of the measurement model is determined by examining internal consistency and convergent and discriminant validities (Hulland, 1999). To assess internal consistency in PLS, internal composite reliability (ICR) is typically used (Chin, 1998). Interpreted like Cronbach's alpha, acceptable values for perceptual measures should exceed .70 (Fornell and Larcker, 1981). Table 1 also shows the mean and standard deviation of each construct.

The square root of the average variance extracted (AVE), which provides a measure of the variance shared between a construct's indicators relative to the amount captured due to measurement error, is shown on the diagonal in Table 1. Thus, convergent validity is established since each construct has an AVE of at least .5 (Fornell and Larcker, 1981).

Discriminant validity is the extent that one construct is distinct from other constructs. The first way to evaluate discriminant validity is to compare the AVE with the square of the correlations among the latent variables (Chin 1998). All AVEs are greater than the off-diagonal elements in the corresponding rows and columns demonstrating discriminant validity. The second procedure to evaluate discriminant validity is to examine each within-construct item to ensure that it loads highly on

the construct it intends to measure and that cross-loadings are lower than the within-construct loadings. When assessing discriminant validity, items not loading on their own construct or highly cross-loading on other constructs were deleted until acceptable psychometric properties were displayed.

	Mean	Std.	ICR	OrgCo	JobAlt	JobSat	PaySat	PWork	Fair.	SkillOb	TurnInt
<b>OrgComm</b>	4.66	0.71	0.88	<b>0.77</b>							
<b>JobAlt</b>	4.38	1.37	0.83	-0.06	<b>0.84</b>						
<b>JobSat</b>	4.66	1.12	0.90	0.70	-0.07	<b>0.9</b>					
<b>PaySat</b>	4.13	1.46	0.88	0.17	-0.09	0.23	<b>0.88</b>				
<b>PWork</b>	3.81	0.97	0.81	-0.01	0.30	0.02	0.04	<b>0.82</b>			
<b>Fairness</b>	4.11	1.10	0.83	0.33	-0.06	0.26	0.65	-0.06	<b>0.78</b>		
<b>SkillOb</b>	4.18	1.24	0.82	-0.06	0.04	-0.11	-0.02	0.48	-0.04	<b>0.84</b>	
<b>TurnInt</b>	3.47	1.08	0.88	-0.27	0.36	-0.21	-0.26	0.25	-0.28	0.14	<b>0.89</b>

Table 1. Square Root of AVE Values and Construct Correlations

**Assessing the Structural Model**

The structural model shown in Figure 1 was tested using PLS Graph V 3.0. Our research model predicts the following three equations:

$$\text{JobSat} = 0.103 \text{ PaySAT} + 0.193 \text{ Fairness}^* - 0.144 \text{ SkillObs}^{***} - 0.099 \text{ Perceived workload} \tag{1}$$

$$\text{Organizational Commitment} = 0.697 \text{ JobSatisfaction}^{****} \tag{2}$$

$$\text{TurnIntention} = -0.029 \text{ JobSat} - 0.226 \text{ OrgCommitment}^{****} + 0.304 \text{ JobAlt}^{****} + 0.047 \text{ SkillOb} + 0.14 \text{ Pwork}^* \tag{3}$$

\*:10% significance \*\*: significance at 5% ;\*\*\*: significance at 1%; \*\*\*\*: significance at 0.1%

Equation 1 shows that skill obsolescence and fairness of rewards are significant predictors of job satisfaction but perceived workload and pay satisfaction are not. Equation 2 shows that job satisfaction is a significant predictor for organizational commitment. Equation 3 shows that job satisfaction, organizational commitment, job alternatives, and perceived workload are significant predictors of turnover intention but skill obsolescence is not. Perceived workload is only moderately significant in predicting turnover intention. This model explains 21.9% of the variance in turnover intention.

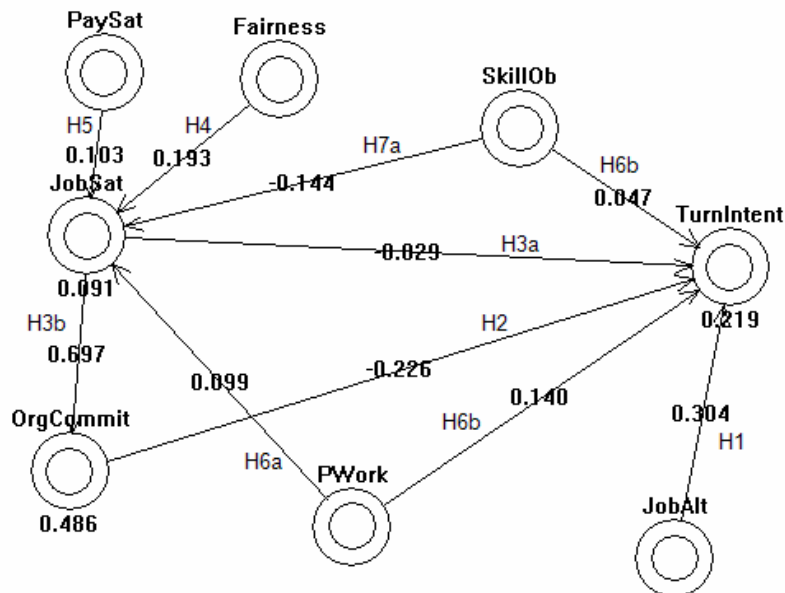


Figure 1. Results of PLS Analysis

## DISCUSSION

Our results confirm that the “traditional” turnover constructs of organizational commitment and job alternatives significantly predict turnover intention. However, our data support the few studies with samples of IT professionals that examine the relationship between job satisfaction, organizational commitment, and turnover and demonstrate that job satisfaction directly predicts organizational commitment, but only indirectly predicts turnover intention. This implies that while job satisfaction is important in engendering commitment to the organization, it may not be sufficient to retain employees should better job alternatives become available. This also highlights the importance of managerial practices in creating positive connections between employees in committing to the organizations’ values and recognizing when cognitive dissonance occurs in employees so that withdrawal behaviors can be circumvented or minimized.

Our data also show that perceived workload is moderately important in predicting turnover intention. Workload is a lever that managers can partially control by dispersing workload fairly and recognizing work overload situations. Thus, managerial attention is necessary to proactively manage this relationship. While our data show that job satisfaction only influences turnover intention indirectly, previous studies have shown other important outcomes of job satisfaction such as increased prosocial behaviors or willingness to take on greater job responsibilities (Thatcher et al., 2003). Results indicate that perceived skill-set obsolescence negatively affects job satisfaction, while the fairness of rewards is positively related to job satisfaction. Skill-set obsolescence uniquely affects the IT profession because the rapidly changing technical environment. Managers can have a direct affect on this by refreshing employee skills with training and providing employees with opportunities to attend other educational events such as conferences. By doing so, employee cognitive tensions between desired and existing levels of expertise can be minimized. Managers can also influence the cognitive dissonance created by perceived unfairness of rewards. Fully communicating policies and procedures regarding reward distribution may reduce the dissonance-based dissatisfaction employees may experience. Also, reviewing these practices on a regular basis may allow managers to identify issues that cause problems. Such practices, however, should be studied further to substantiate positive outcomes.

## CONCLUSION

In this study we used cognitive dissonance theory to explore IT professional turnover intentions and job satisfaction in a large organization. These results provide initial support empirically how two distinctive characteristics of a dynamic technical environment, perceived skill-set obsolescence and work overload, significantly influence job satisfaction and turnover intention. These results also lend further support to previous findings that with IT professionals, job satisfaction directly predicts organizational commitment but only indirectly predicts turnover intention.

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