

# A Multilevel Association Model for IT Employees' Life Stress and Job Satisfaction: An Information Technology (IT) Industry Case Study

Khalid Mehmood<sup>1\*</sup>, Amir Hussain<sup>2</sup>

<sup>1</sup> Department of Organization Behavior and Human Resource Management, Beijing Institute of Technology, Beijing, China

<sup>2</sup> School of Natural Sciences, University of Stirling, Stirling, FK9 4LA, Scotland, UK

**Abstract.** The aim of this research was to investigate the association among IT employees' life stress and job satisfaction in information technology (IT) firms. Data on 250 IT employees' in 30 working groups was obtained from 10 Information Technology (IT) Chinese firms from Beijing, and analyzed using hierarchical linear modeling (HLM). Results found momentous association among life stress of IT employees' and their job satisfaction at an individual-level and group-level in IT firms. Furthermore, life stress in Beijing at group-level moderates the association among job satisfaction and IT employees' life stress at an individual-level. Finally, limitations and implications of the present study are also discussed.

## 1 Introduction

Over the past couple of decades, stress has been turning into an inexorably significant issue in IT firms. Stress is a constructive condition of chance, demand, or assets related to an employee's wants and the outcomes are viewed as obscure and important [1]. According to [2], stress is an unfavourable response which occurs when an individual applies huge pressure or different sorts of desires upon themselves. This was delivered when individuals feared not being able to deal with stress during work. Life Stress has a hopeful upshot on employees' of IT firms, however the degree to which an IT employee can deal with it, by and large surpasses bearable limits and has a negative outcome on IT employees' [3]. IT employees' countenance pressures in family life, include salary, working hours and housing problems in Beijing etc.

In every IT firm and at each juncture of IT management, IT executives and specialized IT professionals, a customary level of stress is to be found, fundamentally influencing the job satisfaction of employees [4]. The job satisfaction of an IT employee may be an indispensable variable related to stress during work. Researchers deem that job satisfaction relies upon substance and circumstances outside of themselves, and in addition inside objectives, discernments and wishes [5]. As per the viewing of [6], job satisfaction alludes to the "gratifying enthusiastic stipulation approaching from the evaluation of one's job as accomplishing or encouraging one's job standards". The relationship among uneasiness stress with job satisfaction in IT firms and the execution of IT employees' had been inspected, and discovered that lower stress advances the performance of IT employees' which they premeditated across various IT administrative levels of the firm [3]. On the foundation of literature, the accompanying hypotheses were estimated:

Hypothesis 1: IT employees' life stress pessimistically influences on job satisfaction at individual level in IT firms.

Hypothesis 2: IT employees' life stress pessimistically influence on job satisfaction at group level in IT firms.

Hypothesis 3: IT firms' group level life stress moderates the association among IT employees' life stress and job satisfaction at individual level.

## 2 Methodology

### 2.1 Research sample

Participants of the study were employees in ten indigenous Chinese firms based in Beijing, capital of P.R. China and the sample was taken randomly from Beijing based organization. Among all, ten firms were private owned. The number of employees range from 50 to 200 in these IT firms. Prior to data collection, members of the research team obtained consent from the HR departments of every IT firm. They clarified the objective and purpose of the research and ensured confidentiality and voluntary participation of employees. Employees from all departments voluntarily participated in the survey. All participants gathered in the main hall of their respective organizations. In order to minimize potential common method bias, one of the research team members explains the objective of the study and also clarifies that there is no right and wrong answer and that they should give answer as honestly as possible. Moreover, an ample distance was observed between the participants to reduce eye contact. During a survey research members seated outside of the hall and within were free to fill in questionnaires. All participants returned their feedback in an anonymous envelope. We distributed 300 questionnaires, recovered 270 questionnaires and after removal of outliers and incomplete information were left with 250 for further analysis, providing a response rate of 83%. The participants average age was 30 years (SD=10.47). The

\* Corresponding author: [khalidmir@bit.edu.cn](mailto:khalidmir@bit.edu.cn)

employees had an average workday of 8.5 hours. All the respondents had at least an undergraduate university education, with 66.7% having Master's degrees.

## 2.2 Measures

### 2.2.1 Life stress

The 10 items tool of [7] is used in this study to measure the life stress of IT employees' in the IT firm. The tool is associated with standard family life, including salary, working hours and housing problems and etc. The items range for measure stress is commencing from (no stress= 1 to strongly stress= 5) from respondents in IT firms. The coefficient alpha for this scale was 0.92.

### 2.2.1 Job satisfaction

The single item tool [4] is used in this study to measure job satisfaction of IT employees'. The tool is associated how fulfilled they were with their jobs in IT firms, taking everything together: "Everything well thought-out, how fulfilled are you with your job as a whole these days? It would be an ideal if you utilize this card to help your answer [1= disappointed to 5= satisfied]". The (ICC1) intraclass correlation for this variable [8] was 0.15.

## 3 Analysis strategy

While our model was multilevel on the whole, we choose an appropriate regression analysis for each hypothesis according to the level involved. We analyzed our multilevel study by using hierarchical linear modeling (HLM) [9]. Hierarchical linear modeling (multilevel analysis) is an iterative process. The objective of multilevel modeling is to permit more precise prediction of dependent variable based on a function of predictor variables, at more than one level.

In our multilevel study, we used the individual and group level into three models. If life stress variable at group level is associated "variability of the intercept", which shows that the variable at group-level is forthwith associated to job satisfaction as dependent variable and also variable at group- level is forthwith associated to the "variability of the slope", it gives indication of cross level moderating effect. IT employees' job satisfaction was predicted in Model 1 as a null model where and it satisfies the hierarchical linear modeling first condition. Model 2 included only the random intercept for the group that is individual level main effect among IT employees' life stress and IT employees' job satisfaction was anticipated. This provides test of hypothesis 1. Life stress variable was analyzed as group level variable at Model 3. Also, in model 3 we analyzed individual level interaction among life stress of group level, job satisfaction and individual level IT employees' life stress. This model 3 provides assay of hypothesis 2 and 3. The multilevel analysis permissible the researcher to establish at what level these predictive interactions was operative.

## 4 Results

### 4.1 Correlation analysis

Summary statistics of the variables and the individual level correlations showed in table I. job satisfaction of employees' and IT employees' life stress has negative significant correlation( $r=-0.52$ ,  $p<0.01$ ). Significant negatively correlation among life stress and age was established ( $r=-0.40$ ,  $p<0.01$ ) and also positively correlation is established between job satisfaction of IT employees' and age ( $r=0.30$ ,  $p<0.01$ ). Represented gender as (1= male, 2= female) and also gender and job satisfaction of IT employees' were negatively correlated.

**Table 1.** Descriptive statistics and correlations

Descriptive Statistics and Correlation				
Variables	1	2	3	4
1) Life stress	1			
2) Job satisfaction	-.52**	1		
3) Age	-.40**	.30**	1	
4) Gender	.17	-.15**	-.31**	1
Mean	4.10	4.19	30.12	1.56
S.D.	.77	.94	10.47	.57
**P<0.01(two tailed test); *P<0.05(two tailed test)				

### 4.2 Multilevel Moderation Effect and Main Effect

Results of job satisfaction of IT employees' were provided in table II for model 1 and model 2. It showed that hypothesis 1 has significant support in this study. In table II,  $Y_{00}$  showed that either departments of IT in firms as group can be eminent from one another by their IT employees' job satisfaction. Job satisfaction of IT employees' might vary at group level according to significant results of table II. There is abundant significance for hierarchical linear modeling. IT employees' life stress has a pessimistic significance association with job satisfaction of IT employees' in table II, and showed that ( $Y_{10} = -0.43$ ,  $p<0.05$ ). The senior oldest males of IT firms are most likely to be content with their jobs at IT firms ( $Y_{20} = 0.19$ ,  $p<0.05$ ;  $Y_{30} = -0.11$ ,  $p<0.05$ ).

Moderating effects findings for life stress showed in table III and also suggested significant validation for hypotheses 2 and 3. Association among individual level IT employees' life stress and employees' job satisfaction moderated by life stress at group-level ( $Y_{11} = 0.21$ ,  $p<0.05$ ) showed in table III. Furthermore, according to results life stress at group-level had a negative momentous association with job satisfaction at individual level ( $Y_{01} = -0.19$ ,  $p<0.05$ ) showed in table III. Moreover, model I, model II and model III value of  $\sigma^2$  progressively decreased from ( $0.89 > 0.72 > 0.68$ ).

## 5 Conclusions

This multilevel study concentrated on the interaction among the IT employees' life stress and job satisfaction in IT firms. The outcome of this study uncovers that IT employees' life stress is pessimistically allied with job satisfaction in IT firms at an individual level which

supports hypothesis 1. Life stress at group level was adversely related with job satisfaction and supports hypothesis 2. Group- level life stress is also moderated by association among life stress of IT employees' and job satisfaction on an individual-level, which supports hypothesis 3.

**Table 2.** Hierarchical linear models of Model 1 and Model 2

	<b>Model 1</b>	<b>Model 2</b>
	<b><math>\beta</math> (S.E.)</b>	<b><math>\beta</math> (S.E.)</b>
<b>Fixed effect</b>		
<b>job satisfaction (<math>\beta_0</math>)</b>		
<b>Intercept (<math>Y_{00}</math>)</b>	3.43** (0.09)	3.41** (0.09)
<b>Life stress (<math>\beta_1</math>)</b>		
<b>Intercept (<math>Y_{10}</math>)</b>		-0.43* (0.06)
<b>Age (<math>\beta_2</math>)</b>		
<b>Intercept (<math>Y_{20}</math>)</b>		0.19* (0.03)
<b>Gender(<math>\beta_3</math>)</b>		
<b>Intercept (<math>Y_{30}</math>)</b>		-0.11*
<b>Variance component</b>		
<b>Group Level</b>		
<b>Average intercept (<math>\tau_{00}</math>)</b>	0.19*	0.20*
<b>Slope (<math>\tau_{11}</math>)</b>		
<b>Individual Level (<math>\sigma_2</math>)</b>	0.89	0.72
**P<0.01(two tailed test); *P<0.05(two tailed test); "Y" as intercept"; " $\tau$ " as slope		

**Table 3.** Hierarchical linear models of Model 3

	<b>Model 3</b>
<b>Factors</b>	<b><math>\beta</math> (S.E.)</b>
<b>Fixed effect</b>	
<b>job satisfaction (<math>\beta_0</math>)</b>	
<b>Intercept (<math>Y_{00}</math>)</b>	2.12* (0.13)
<b>Slope ( <math>Y_{01}</math>)</b>	-0.19*(0.09)
<b>Life stress (<math>\beta_1</math>)</b>	
<b>Intercept (<math>Y_{10}</math>)</b>	-0.29* (0.19)
<b>Slope ( <math>Y_{11}</math>)</b>	0.21*(0.11)
<b>Variance component</b>	
<b>Level 2</b>	
<b>Average Intercept (<math>\tau_{00}</math>)</b>	0.15*
<b>Slope (<math>\tau_{11}</math>)</b>	0.11*
<b>Level 1 (<math>\sigma_2</math>)</b>	0.68
**p<0.01(two tailed); *p<0.05(two tailed)	

The result in table II of job satisfaction and IT employees' life stress being adversely correlated shows that minor stress increases performance during the job in IT firms. IT firms management bolster helps in diminishing worry in employees, authoritative help and management boost acts during work as a lagging which acts decidedly in diminishing work related stress in employees' [10]. According to [11], Job satisfaction of IT employees' was adversely associated with work related anxiety or stress and as a result the employees' encounter lower job satisfaction due to high stress during work. Furthermore, employees' encounter lower job satisfaction during work not only due to work related stress, but higher life stress.

This multilevel study was intended to analyze at cross level, the moderating impact of life stress at group-

level on associations among IT employees' life stress at individual level as well as employees' job satisfaction in IT firms. Many studies have been conducted on job satisfaction of employees [12], but the association between individual level job satisfaction and group level stress had not been examined. Consequently, this research suggested life stress implicit the contextual variable role in group level in IT firms.

In table III, life stress at group level strongly moderated the association among individual-level IT employees' life stress and employees' job satisfaction in IT firms ( $Y_{11} = 0.21$ ,  $p < 0.05$ ). Also, it showed that the general understanding of group level life stress would emphatically encourage the connection among individual-level IT employees' life stress and employees' job satisfaction. Findings of this research uncovered that amid accentuation on the association among IT employees' life stress and job satisfaction, basic function of the well IT firms working conditions and customs climate in developing low sentiment of stress for IT employees' ought to be given more vigilant consideration. According to [1], employees in socioeconomic status firms tend to have mediocre job satisfaction compared to those in privileged socioeconomic status firms. We instigate that male IT employees were more happy and content with their jobs than females IT employees in IT firms in Beijing. The results from table II showed that older IT employees were more happy and content with their job than younger IT employees' ( $Y_{20} = 0.19$ ,  $p < 0.05$ ).

Finally, this study has some limitations which can provide further study roadmaps for careful consideration. First, the sample size of this study is relatively small (the total population), which may limit the effectiveness of this study. The respondents in this study came from Beijing, China. Since the results of this study are based on a sample of Beijing based IT employees', the universality of the findings is limited. Furthermore, to evaluate job satisfaction of IT employees' using single item might be not imitate this construct as utterly as would the exploit of multi items. In fact, according to [13], single item measures illustrate good reliability and good contemporaneous validity in surveys of IT firms. Future studies needs to replicate this study in different environments or use cross-cultural data to determine the universality of our findings. Unstructured feedback from employees, in the form of natural language text, could also be collated and analyzed using advanced sentiment and opinion mining techniques [14]. The findings could be correlated where appropriate, with analytical outcomes from conventional structured studies reported in this paper, and also elsewhere.

## References

1. U. Bashir and M. I. Ramay, "Impact of stress on employees job performance: A study on banking sector of Pakistan," J. Mark., **2**, 122–126, (2010)
2. S. E. Anderson, B. S. Coffey, and R. T. Byerly, "Formal organizational initiatives and informal workplace practices : links to work – family conflict

- and job-related outcomes,” J. Manage., **28**, 787–810, (2002)
3. J. M. Ivancevich and J. H. Donnelly, “Relation of organizational structure to job satisfaction, anxiety-stress, and performance,” Adm. Sci. Q., **20**, 272–281, (1975)
  4. M. Rose, “Good deal, bad deal? Job satisfaction in occupations,” Work Employ. Soc., **17**, 503–530, (2003)
  5. R. G. Netemeyer, J. G. Maxham, and C. Pullig, “Conflicts in the work–family interface: links to job stress, customer service employee performance, and customer purchase intent,” J. Mark., **69**, 130–143, (2005)
  6. C. L. Ho and W. T. Au, “Teaching satisfaction scale: measuring job satisfaction of teachers,” Educ. Psychol. Meas., **66**, 172–185, (2006)
  7. R. P. Chaplain, “Stress and job satisfaction: a study of english primary school teachers,” Educ. Psychol., **15**, 473–489, (1995)
  8. L. R. James, R. G. Demaree, and G. Wolf, “Rwg: An assessment of within-group interrater agreement,” J. Appl. Psychol., **78**, 306–309, (1993)
  9. A. S. Bryk and S. W. Raudenbush, *Hierarchical Linear Models for Social and Behavioral Research: Applications and Data Analysis Methods* ( Newbury Park, CA: Sage, 1992)
  10. C. L. Stamper and M. C. Johlke, “The impact of perceived organizational support on the relationship between boundary spanner role stress and work outcomes,” J. Manage., **29**, 569–588, (2003)
  11. H. M. Weiss, “Deconstructing job satisfaction: Separating evaluations, beliefs and affective experiences,” Hum. Resour. Manag. Rev., **12**, 173–194, (2002)
  12. J. L. Romano and K. Wahlstrom, “Professional stress and well-being of K-12 teachers in alternative educational settings: a leadership agenda,” Int. J. Leadersh. Educ., **3**, 121–135, (2010)
  13. A. M. Abdel-Khalek, “Measuring happiness with a single-item scale,” Soc. Behav. Pers., **34**, 139–150, (2006)
  14. Poria, S., Cambria, E., Bajpai, R. and Hussain, A. "A review of affective computing: From unimodal analysis to multimodal fusion". Information Fusion, **37**, 98-125, (2017)