

## THE RELATIONSHIP BETWEEN WORKING OVERTIME AND KNOWLEDGE SHARING IN THE FOOD CATERING SERVICE INDUSTRY – WITH WORK STRESS AS THE MEDIATOR

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### Abstract

Working overtime has long existed in business enterprises, but past studies were generally focused on its negative aspects, such as costs, accidents and work–family conflicts. There has not been extensive exploration of the possibility that an appropriate amount of overtime could have a positive impact. Based on the literature review, we show that working overtime can have a significantly positive impact on knowledge sharing among employees, but significant differences are reflected in the effect of knowledge sharing due to varying degrees of working overtime. Also, through the introduction of work stress and leisure participation as mediation and regulatory factors, working overtime can be shown to have remarkable influences on employees' knowledge sharing. It is confirmed that varying degrees of working overtime will produce different levels of work stress. Work stress indeed has a partially mediating effect on the relationship between working overtime and knowledge sharing, but the regulatory effect of leisure participation is not obvious. Finally, in the light of our research results, we recommend that similar topics be studied from the perspective of organisational culture.

**Key words:** overtime, job stress, knowledge sharing, leisure participation

JEL: J580, O150

### 1 Introduction

In recent years, the food catering service industry has had diversified development and substantial growth. Concurrently, it has successfully replaced electronic and high-tech industries to be one of the most popular and emerging industries in Taiwan. According to published data, the average overtime per month in the manufacturing industries in the U.S. is 4.2 hours, 14 hours in Japan, and up to 27.4 hours in South Korea. For Taiwan's food catering service industry, the average overtime is 16.5 hours per month according to the 2012 Bureau of International Labor Statistics (International Labor Statistics, 2010). Generally speaking, working overtime has been a prevalent trend among industries in Asia. Related research studies have reported that working overtime is the main source of work stress (Cartwright & Cooper, 1997). Most studies have concentrated on the negative effects of working overtime (Baird & Beccia,

1980; Jamal & Crawford, 1981; Snir & Harpaz, 2012). For example, excessive overtime tends to increase the probability of accidents, and interferes with other part-time work of employees, and it increases the number of work-family conflicts among employees. Thus, it is generally agreed that overtime requires proper management in business enterprises as it would otherwise increase their operating costs (Schuster & Rhodes, 1985; Caudron, 1998; Babbar & Aspelin, 1998; Golden & Wiens-Tuers, 2005; Renna, 2006).

In this study, however, we started from a different perspective and meaning. We explore the relationship between working overtime and knowledge sharing among employees in the food catering service industry. For the 21st century, knowledge is an important tool for gaining a competitive advantage in business competition. The sharing and circulation of knowledge among employees can indeed produce multiple value for business (Taylor, 2004). Davenport and Prusak (1998) raise the possibility that employee interaction in informal

occasions can help employees in knowledge sharing. When they ask each other about their recent work conditions, they will provide suggestions and recommendations for solving existing problems, besides the usual exchange of information. Though working overtime have potential negative effects, in this study we believe that working overtime can increase the chance of informal interaction outside of official working hours, so it can lower the social barriers for knowledge sharing due to lack of time (Davenport & Prusak, 1998). Thus, an appropriate amount of overtime can enhance the opportunities for knowledge sharing among employees.

The best method to ease or relieve work pressure produced from working overtime is to participate in outside sports and leisure activities (Lovallo, 2005). Stewart (2005) believe that employees should try to attain a balance between work and leisure, and they need appropriate leisure activities to prepare themselves for future work. Thus, in this study leisure participation is treated as a mediator that can regulate the effects over the relationships between overtime, job stress, and knowledge sharing.

## 2

### Literature review

#### 2.1 Working overtime

From past research studies, working overtime is generally treated from the viewpoints of motivation, cost, or management theories. Firstly, from motivation theory, it was believed that employees may choose voluntarily to work overtime because of financial pressure or their own disposition. However, overly relying on working overtime may result in long-term inefficiency for work performance. Nevertheless, this is an opportunity to earn overtime pay for employees (Jevons, 1965; Ehrenberg & Smith 1982; Renna, 2006). From the cost theory aspect, it is believed that an enterprise's strategy to implement working overtime often entails many hidden costs. For example, employees physically exhausted from overtime work are more prone to accidents. Also, the equipment, employees, and other resources used in overtime are usually not utilized in the

most efficient manner, so it opens the door for more overtime. On the other hand, working overtime often entails opportunity costs as employees are deprived from their family lives and social activities which they otherwise would take part in (Baird & Beccia, 1980; Schuster et al., 1985). Finally, from the point of view of management theory, it is believed that if enterprises lack an effective system to manage overtime, it may lead to deterioration of product quality, increased unnecessary tasks, lower morale, and increased reliance on overtime to complete what is considered a normal workload (Baird & Beccia, 1980). Babbar and Aspelin (1998) propose that businesses may hire retirees as part-time workers. This can reduce the number of overtime hours for the regular staff, plus it can also decrease the cost of training new recruits. Schuster et al. (1985) propose that through the regulation of overtime, the probability of accidents due to working overtime can be minimized. However, the negative effects of working overtime are generally recognized by researchers in past studies.

#### 2.2 Job stress

Different views have been proposed by many researchers with regard to the work stress development process. Some researchers investigate the working environment, while others examined job demand, working conditions, or other job-related factors (Steers, 1988; Robbins, 2001; Pearson & Moomaw, 2005). However, the majority of research work in recent years all have work stress connected with job performance and work-family conflicts. According to a study by Netemeyer, Maxham and Pullig (2005), their research findings showed that work-family conflicts and family-work conflicts have direct influences on work stress and job performance of employees. The findings by Bolino and Turnley (2005) suggest that work overload and work-family conflicts of employees are positively related to work pressure. Hunter, Sherry and Thatcher (2007) raised that as enterprises have higher organisational commitment, and employees have acquired more work experience, work stress of employees will increase correspondingly, and in turn it will influence the company's sales performance. But if enterprises have lower organisational

commitment and employees have not acquired sufficient work experience, the situation can be reversed, and work stress and job performance will be negatively correlated. When employees have acquired more work experience, organisational commitment and work stress will have a positive influence on job performance. From the above statements, it is verified that an appropriate amount of work stress can help enhance the individuals' job performance.

### 2.3 Knowledge sharing

In recent years, many research work which cover knowledge sharing have pointed out that knowledge management and knowledge sharing are closely correlated (Yang & Chen, 2007; Chang et al., 2007). Indeed, many similar concepts were produced in the past, such as employees' trust, level of communication, occasions for employee interaction, and all have an impact on the quality of knowledge sharing among employees (Soonhee & Hyangsoo, 2006; Mooradian et al., 2006; Ding & Cai, 2007). Other research was from the perspective of organisational culture. Hsu (2006) suggest that organisations need to create an atmosphere conducive to learning, increase the implementation of management systems, and promote the sharing of public information in order to uphold knowledge sharing among employees. However, from the perspective of a reward system, Al-Alawi et al. (2007) showed that the level of trust among employees, communication facilities, the information system, and organisational reward structure all have positive influences on knowledge sharing within an organisation. Lee and Ahn (2007) found that organisations can promote knowledge sharing through a reward system and knowledge management system to encourage knowledge sharing among employees. The reward system has a better effect on individual employees rather than on groups. Chang et al. (2007) show that a common reward system can effectively enhance the willingness of members of the new product development team to share their new knowledge and performance results in the new product development process.

### 2.4 Leisure participation

Ragheb and Griffith (1982) believed that leisure participation refers to the frequency of

participation in certain kinds of leisure activities or the type of activity that an individual voluntarily takes part in. Through leisure participation, individuals acquire the necessary socialization experience for gaining entry into a community, and at the same time leisure participation allows individuals to enhance their job performance by enriching their job skills and social interaction skills (Iso-Ahola, 1980). Thompson et al. (2002) believed that individuals participating in leisure activities often use their own time outside of the job obligation time, and tend to choose recreational activities that are enjoyable. The nature of leisure activity is "freedom of choice" rather than "restricted choice" (Kelly, 1996). Effective participation in leisure activities can help to develop an individual's personality and work efficiency, which in turn can improve the effectiveness in cooperation (Godbey, 2003).

## 3

### Research hypotheses

#### 3.1 Relationship between working overtime and knowledge sharing

Davenport and Prusak (1998) raise the idea that interaction in informal occasions can help enhance employees' knowledge sharing. When employees ask each other about their recent working conditions, they not only get a chance to exchange ideas, but concurrently they will provide problem-solving suggestions in the communication process. Working overtime is usually defined as working hours beyond the defined work conditions set by laws, enterprises, unions, or contracts agreed between employees and enterprises (Renna, 2006). Working overtime refers to working hours beyond the job requirements for individual workers, so it has an informal connotation. Also, working overtime will increase the chance of interaction among employees and getting along with other members in the organisation. Thus, it may help to increase the frequency and quality of interaction with other people, improve the interactive relationship, establish mutual trust, and enhance the willingness to share knowledge with each other.

Pleck et al. (1980) believed that, from a management perspective, working overtime has another main function for an enterprise in an emergency situation. When an emergency situation breaks out, since there is a need to deal with the situation in the shortest time, employees would be asked to put in additional work hours to meet the needs, which are beyond normal job requirements. Under the extra workload, employees have to help each other out to get the job done, so they may develop a mutual dependence. This demonstration of mutual dependence will be stronger than that in the normal work situation. Anderson and Narus (1990) believe that people working together will become dependent on each other, and the result of this mutual dependence will lead to the generation of common feelings or mutual dependence, which is necessary for understanding each other. In addition, knowledge sharing can be considered a necessary process for professionals in order to complete their missions, which are often referred to as mutual dependence (Postrel, 2002). Mutual dependence actually reflects the degree of interaction needed for knowledge sharing. The higher degree of mutual dependence between the knowledge provider and knowledge recipient, the closer the extent of interactive sharing can be attained (Janz, Colquitt & Noe, 1997). Jarvenpaa and Staples (2001) expressed that mutual dependence often exists among employees through interaction and knowledge sharing. Jacobs (1982) suggests that the basic relationship between any two persons is established through some common ground and established ties. Based on common ties, people often consider how much feeling and human sentiment they can obtain from the other person before they decide to reciprocate to the other person. The human sentiment standing in for this kind of human relationship is often used by ordinary people to judge their relationship with other persons. Finally teamwork, social support, sharing of workload, communication and team cooperation will enhance the chances of interaction among team members (Campion et al., 1993). Thus the following hypotheses are formulated:

Hypothesis 1: Working overtime will have significant impact on knowledge sharing.

Hypothesis 2: Different levels of working

overtime will produce significant differences in the effects of knowledge sharing.

### **3.2 Relationship between working overtime and work stress**

Past research has reported that when a woman has been working for a long time, she will feel more work stress, and the job will affect her family life. For a man, if he has not considered his family in setting his career, he would be faced with more family pressure, which will in turn affect his career performance (Burley, 1995). Other studies also suggest that work-family conflicts may cause physiological and negative impacts, so work productivity will decline, cause delays, low morale, job dissatisfaction as well as job quitting (Frone et al., 1992; Higgins & Duxbury, 1992). Cartwright and Cooper (1997) proposed that the source of work stress may come from the working environment, such as the work itself, overtime, time pressures, new technologies, workload, etc. Thus the following assumptions are made:

Hypothesis 3: Working overtime has significant impact on work stress.

Hypothesis 4: Different levels of working overtime will produce significant differences in the effects of work stress.

### **3.3 Relationship between working overtime, work stress, and knowledge sharing**

Meglino (1977) points out that when work stress is increased, job performance will be increased correspondingly, but when work stress reaches a certain level, job performance will instead start to decrease. Davenport and Prusak (1998) point out that factors such as too much pressure or lack of a meeting place would hamper the progress in knowledge sharing. Anderson and Narus (1990) propose that when people work together, they will tend to depend on each other, and the result of this mutual dependence will lead to a kind of interpersonal relationship. In addition, knowledge sharing can be said to be a necessary process of mutual dependence among professionals (Postrel, 2002). Mutual dependence reflects the level of common needs for knowledge among employees. The higher the

degrees of mutual dependence between the knowledge provider and recipient, the closer the degree of interactive sharing (Janz et al., 1997). People having mutual dependence are more likely to share knowledge and interact with others more frequently (Jarvenpaa & Staples, 2001). Thus, the following assumptions are made:

Hypothesis 5: Work stress will have significant impact on knowledge sharing.  
Hypothesis 6: Varying degrees of work stress will produce significant differences in the results of knowledge sharing.

Hypothesis 7: Work stress has a mediating effect on the relationship between working overtime and knowledge sharing.

### **3.4 Regulatory effects of leisure participation over the relationship among working overtime, work stress, and knowledge sharing.**

Work stress is derived from work-related factors and interaction with other employees. It may change or undermine the physiological and psychological conditions of individual workers, and force the workers to deviate from normal operation conditions (Beehr & Newman, 1978). However, appropriate levels of leisure activities can help individual workers reduce work stress. Cordes and Ibrahim (1999) also mention that employees' participation in leisure activities can relieve work stress, ease physical conditions, and allow the body to return to the original state of physical and mental balance. Thus, leisure participation can enhance the overall job performance of workers, and concurrently promote social interaction ability and knowledge acquisition (Rousseau, 1978). Thus, the following hypotheses are formulated:

Hypothesis 8: Organisational justice can produce a mediating effect over the relationship between working overtime and working pressure.

Hypothesis 9: Organisational justice can produce a mediating effect over the relationship between working overtime and knowledge sharing.

## **4**

### **Research methodology**

#### **4.1 Sampling method**

In this study, restaurant workers were invited to participate in the questionnaire survey. Before handing out the questionnaires to participants, our research workers first interviewed executives and employees of listed restaurant groups, and then based on the interview results, the draft questions in the questionnaire were revised. As a pretest, we selected 80 restaurant workers from three restaurant groups and issued the revised questionnaires to the participants to obtain their responses. The test reported a reliability of over 0.7. Then, the questionnaire was again revised by experts. Finally, a total of 2,500 questionnaires were formally issued to first-line employees of 22 well-known restaurants. Out of the total number of questionnaires sent, 348 were returned, for a return rate of 13.92 per cent. Of these, 266 were considered valid questionnaires (after removing 82 samples with incomplete answers and invalid items). Looking at the structure of test samples, most are women workers numbering 165 participants (62.03 per cent). For the age of the test samples, the majority are 26-35 years old representing 143 participants (53.75 per cent). For the marital status of the test samples, the majority are married (55.26 per cent) and represent 147 participants. In terms of education level, most of the test samples had one or more university degrees which represent 197 participants (74.06 per cent). For the position, since this research has targeted general employees, and basic managers, most of the test samples are general employees representing 202 participants (75.95 per cent). For industry types, the food catering services is the largest sector representing 186 participants (69.92 per cent). In terms of years in service, the majority had one to three years of service experience, with 113 participants (42.48 per cent), which were followed by interviewees with four to nine years, with 79 participants (29.69 per cent), which were followed by people with more than 10 years, with 74 participants (27.8 per cent).

## 4.2 Using research variables

### 4.2.1 Work stress

The questionnaires design has taken the viewpoints of Karasek and Theorell (1990) into consideration by using the revised work stress scale. Twelve questions are set in this category, with an overall reliability of 0.816 per cent. The questions are factor analysed (after the varimax rotation) from which two items produce an eigenvalue greater than 1. After deleting those with an eigenvalue of less than 5, the cumulative explanatory variance is 62.207 per cent. Each item in this category is named after the meaning of each question, such as job demand and job control.

### 4.2.2 Knowledge sharing

For the questions in this category, the study has chosen the viewpoints of Senge (1997) and the overall reliability for the items is 0.883. The questions are factor analysed (after the varimax rotation) from which two items

produce an eigenvalue of greater than 1, which is all inclusive and consistent with the original design. The cumulative explanatory variance is 65.543 per cent. Each item in this category is named after the meaning of each question, such as personal and assisted sharing.

### 4.2.3 Leisure participation

Leisure participation can be divided into two types: static and dynamic (Ragheb & Griffith, 1982). For the questions in this category, the study has chosen the viewpoints of Ragheb & Griffith (1982) by classifying leisure participation into static and dynamic types. The questions in this category are factor analysed (after the varimax rotation) in which two items produce an eigenvalue greater than 1, all inclusive and are consistent with the original design. The cumulative total variance is 75.322 per cent. Each item is named after the meaning of each question, such as static activity or dynamic activity. Analysis of all related variables is given in Table 1.

**Table 1**  
Correlation analysis over research variables

	1	2	3	4	5	6	7
Working overtime	-						
Job demand	.053	(0.867)					
Job control	.093	.153*	(0.852)				
Assisted sharing	.110	.045	.370**	(0.745)			
Personal sharing	.156**	.159**	.475**	.648**	(0.887)		
Static activities	.039	-.133*	.172**	.112	.176**	(0.932)	
Dynamic activities	.018	-.065	.156*	.043	.184**	.708**	(0.921)
Mean values	14.7537	3.2292	3.4794	4.0625	3.9265	2.9343	2.7375
Standard deviations	14.60179	.74767	.72520	.45274	.48797	.79058	.86288

Note:  $n = 266$ . The values in parentheses represent Cronbach's alpha values of variables; \* $p < .05$ ; \*\* $p < .01$ .

## 5

### Hierarchical regression analysis and results

Testing whether varying degrees of working overtime will produce significant differences in the results of knowledge sharing and work stress.

Firstly, working overtime is classified into three groups according to the sliced observation values in the frequency distribution table, and then a single-factor variance analysis is taken. For knowledge sharing, it is found that test samples with working overtime of 11-

19 hours and over 20 hours all have significant impact on personal sharing and assisted sharing. For the part of work pressure, it is found that when test samples log overtime work of 1-10 hours, significant differences are produced in job control. Lastly, test samples with overtime work of 11-19 hours have shown significant differences in job demand, and for test samples with overtime work of 20 hours or more, significant differences are produced in job demand and job control. Thus, hypotheses 2 and 4 are established, as shown in Table 2.

**Table 2**

One-way ANOVA analysis of factors include working overtime, knowledge sharing and work stress

Factors		Working overtime			F	P	Scheffe
		1.(n=93) 1- 10 hrs	2. (n=89) 11-19 hrs	3. (n=84) 20 hrs or more			
Knowledge sharing	Personal sharing	3.8027	3.7081	4.1565	7.224	.003*	(3>2)(3>1)
	Assisted sharing	4.1198	3.9834	4.2631	3.876	.022*	(3>2)(3>1)
Work stress	Job demand	3.1732	3.1032	3.3865	3.358	.037*	(3>1)(3>2)
	Job control	3.3589	3.4254	3.6789	5.208	.005*	(3>1)(3>2)

\*p <.05; \*\*p <.01.

### 5.1 Testing the influence of working overtime over work stress

In step 1, the control variables are input into the regression model. Then in step 2, the independent variable working overtime is put into the step 1 model to predict the effect on the dependent variable work stress as it relates to two sub-dimensions, job demand and job

control. The analysis results show that work stress has a significant influence over job demand ( $\Delta R^2 = .002$ ,  $p = .014$ ) and job control ( $\Delta R^2 = .004$ ,  $p = .032$ ). Thus, hypothesis 3 is proven, which stands for working overtime as having a significant impact on work stress, which is presented in Table 3.

**Table 3**

Hierarchical regression analysis of the effects of working overtime on work stress

Main effects	Job demand			Job control		
	B	R <sup>2</sup>	$\Delta R^2$	B	R <sup>2</sup>	$\Delta R^2$
Step 1: Control variables		.019	.019		.045	.045
Step 2: Working overtime	.055*	.019	.002	.056*	.051	.004

Population N = 266; The demographic variables include gender, age, education, and years of service; \*p <.10; \*\*p <.05; \*\*\*p <.01.

### 5.2 Testing the influence of working overtime on knowledge sharing

In step 1, the demographic variables are input into the regression model. Then in step 2, the independent variable working overtime is put into the step 1 model to predict the effect on dependent variable knowledge sharing as it relates to the two sub-dimensions, assisted sharing and personal sharing. The analysis results show that working overtime has influence on knowledge sharing as the two sub-dimensions, personal sharing ( $\Delta R^2 = .017$ ,  $p = .031$ ) and assisted sharing ( $\Delta R^2 = .008$ ,  $p = .131$ ). Thus, hypothesis 1 is partially proven. However, it is learned that working overtime has a positive correlation with personal sharing ( $\beta = .133$ ,  $p <.05$ ) and assisted sharing ( $\beta = .093$ ,  $p = .131$ ) as shown in Table 4.

### 5.3 Testing the influence of work stress on knowledge sharing

In step 1, the control variables are input into the regression model, and then in step 2, the

independent variable work stress (job demand and job control) is input into the step 1 model to predict the effect on dependent variable knowledge sharing as it relates to the two sub-dimensions, personal sharing and assisted sharing. The analysis results show that working overtime has significant influence on personal sharing ( $\Delta R^2 = .219$ ,  $p <.000$ ) and assisted sharing ( $\Delta R^2 = .117$ ,  $p <.000$ ). Thus hypothesis 5 is proven. But it is also found that the influence of job demand and job control over personal sharing has a positive correlation with job demand ( $\beta = .096$ ,  $p <.079$ ) and job control ( $\beta = .441$ ,  $p <.000$ ). The influence of job demand on assisted sharing has a negative correlation ( $\beta = -.013$ ,  $p = .823$ ), and the influence of job control on assisted sharing has a positive correlation ( $\beta = .356$ ,  $p <.000$ ). All analysis results are shown in Table 4.

**Table 4**

Hierarchical regression analysis to study the effect of variables including working overtime, knowledge sharing and work stress

Main effects	Personal sharing			Assisted sharing		
	B	R <sup>2</sup>	Δ R <sup>2</sup>	B	R <sup>2</sup>	Δ R <sup>2</sup>
Step 1 Control variables		.042	.042		.036	.036
Step 2 Working overtime	.129*	.059	.017*	.093	.041	.008
Work stress						
Step 1 Control variables		.042	.042		.036	.036*
Step 2 Job demand	.096 <sup>+</sup>			-.013		
Job control	.441**	.255	.219**	.356**	.150	.117**
Mediating effects						
Step 1 Control variables		.042	.042		.036	.036
Step 2 Job demand	.091 <sup>+</sup>			-.014		
Job control	.436**	.255	.208**	.355**	.151	.119**
Step 3 Working overtime	.104 <sup>+</sup>	.265	.010	.074	.156	.005

Note: Population N = 266; The demographic variables including gender, age, education, and service seniority; +p < .10; \* p < .05; \*\* p < .01.

#### 5.4 Testing the mediating effect of work stress on the relationship between working overtime and knowledge sharing

This study has referenced the viewpoints of Baron and Kenny (1986) and used hierarchical regression analysis to test the mediating effects. In step 1, control variables are input into the regression model, and in step 2, work stress is input into the step 1 model, and finally the independent variable “working overtime” is input into the step 2 model to predict the effect on the dependent variable knowledge sharing as it relates to the two sub-dimensions, personal sharing and assisted sharing. The analysis results show that working overtime has a significant effect on personal sharing ( $\Delta R^2 = .017$ ,  $p = .022$ ). After inputting the mediator, the effect of working overtime on personal sharing ( $\Delta R^2 = .010$ ,  $p = .056$ ) reflects the influence of working overtime on personal sharing which has changed from the previous “rather significant” to “insignificant.” Under the full mediation effect, the relationship between working overtime and personal sharing is completely influenced by the mediating factor known as “work stress.” However, work stress has no mediating effect on the relationship between working overtime and assisted sharing. Therefore hypothesis 7 is

only partially proven, as shown in Table 4.

#### 5.5 Testing whether varying degrees of work pressure will produce different effects on knowledge sharing

Firstly, work stress is separated into different types using the mean values. This study makes reference to Miao and Zhang's (2002) clustering method by classifying the work conditions into four types:

- 1) High strain type, represented by work conditions with high job demand/low controllability;
- 2) Active type, described as work situations with high job demand/high job control;
- 3) Low strain type, indicated by work situations with low job demand/high job control; and
- 4) Passive type, illustrated as work situations with low job demand/low job control.

The analysis results show that work stress has significant influence on knowledge sharing, and that varying degrees of work stress will produce distinct differences in knowledge sharing. For the active type, the influence of work stress on personal sharing and assisted sharing are larger than the other types. Moreover, for the low strain type, the influence

of work stress is greater than the passive type under the condition of personal sharing.

Therefore, hypothesis 6 is partially proven as shown in Table 5.

**Table 5**

One-way ANOVA analysis to study the influence of work stress on knowledge sharing

Factors		Work stress				F value	P value	Scheffe
		1. active N=74	2. High strain N=62	3. Low strain N=61	4. passive N=69			
Knowledge sharing	Personal sharing	4.1651	3.8151	3.8783	3.7130	15.814	.000	(1>2) (1>3>4)
	Assisted sharing	4.2783	3.8996	4.1367	3.9487	7.678	.000	(1>2) (1>4)

When the SD value is within .05, this indicates that the effect is significant.

### 5.6 Testing the mediating effect of leisure participation on the relationship between working overtime and work stress

For the interference effect, the study has chosen the viewpoints of Baron and Kenny (1986) and used hierarchical regression analysis. In step 1, control variables are input into the regression model. In step 2, independent variables are input into the step 1

model. In step 3, the mediators are input into the step 2 model. And finally, the mutual effects between independent and interference variables are input into the step 3 model. The analysis results are shown in Table 6. It can be concluded that leisure participation has no significant mediating effect on the relationship between working overtime and knowledge sharing. Therefore, hypothesis 8 is not proven.

**Table 6**

Using hierarchical regression analysis to study the mediating effect of leisure participation over the relationship between working overtime and work stress

Main effects	Job demand			Job control		
	B	R <sup>2</sup>	Δ R <sup>2</sup>	β	R <sup>2</sup>	Δ R <sup>2</sup>
Step 1 Control variables		.019	.019		.045	.045*
Step 2 Working overtime	.058	.017	.003	.058	.051	.003
Step 3 Static activities Dynamic activities	-.183 .069	.037	.020 <sup>+</sup>	.142 <sup>+</sup> .048	.082	.029*
Step 4 Working overtime*passive activities Working overtime*active activities	-.186 -.364	.060	.023	.532 -.239	.091	.009

Note: N = 266; The demographic variables include gender, age, education, and years of service; +p < .10; \*p < .05; \*\*p < .01

### 5.7 Testing the mediating effect of leisure participation in the relationship between working overtime and knowledge sharing

In step 1, control variables are input into the regression model, and in step 2, the independent variable "working overtime" is input into the step 1 model. In step 3, the mediator "leisure

participation" is input into the step 2 model. In step 4, the mutual effect of independent and interference variables are input into the step 3 model. The analysis results are shown in Table 7, it displays that leisure participation has no significant mediating effect in the relationship between working overtime and knowledge sharing. Therefore, hypothesis 9 is not established.

**Table 7**

Hierarchical regression analysis to study the mediating effect of leisure participation over the relationship between working overtime and knowledge sharing

Main effects	Personal sharing			Assisted sharing		
	B	R <sup>2</sup>	Δ R <sup>2</sup>	β	R <sup>2</sup>	Δ R <sup>2</sup>
Step 1 Control variables		.042	.042*		.036	.036
Step 2 Working overtime	.138*	.064	.017*	.093	.040	.008
Step 3 Static activities Dynamic activities	.117 .111	.105	.038*	.198* -.095	.061	.021*
Step 4 Working overtime*Static activities Working overtime*Dynamic activities	.207 -.159	.106	.001	.018 .177	.064	.003

Note: population N = 266; The demographic variables including gender, age, education, and years of service; +p < .10; \*p < .05; \*\*p < .01

## 6

### Research conclusions and recommendations

Past analyses and discussions on the topic of working overtime generally focused on the negative aspects, but in this study, working overtime is treated from the viewpoint of knowledge management. From the research results, it is found that a moderate amount of overtime work can produce beneficial effects on knowledge sharing among employees. The analysis results are presented as below:

#### 6.1 Influence of working overtime on work stress and knowledge sharing

The analysis results show that working overtime has a significant influence on work stress, in which working overtime of more than 11 hours but less than 19 will produce the greatest influence on work stress, greater than any other length of overtime. Thus, it can be confirmed that working overtime has been the main source of work stress for restaurant workers. In addition, by analysing the influence of working overtime on knowledge sharing, working overtime of more than 20 hours per week produces the most significant effect, greater than working overtime of 1-10 hours per week and 11-19 hours per week, under the conditions of personal sharing and assisted sharing. Therefore this study suggests that working overtime can increase the chance of interaction among employees. If coupled with the use of working overtime in labour

management, when an emergency situation breaks out and the enterprise has to take action in the shortest time, employees will be asked to put in more work hours to meet emergency needs, beyond the level of normal work conditions (Baird and Beccia, 1980). Thus, under the extra workload and emergency situation, employees are more willing to help out each other, so the extent of mutual dependence shown will be higher than that in the normal work situation.

The study suggests that when enterprises try to implement overtime strategies, they need to control the total number of working hours for individual employees so as to avoid excessive pressure of working overtime by employees. Also, the design of the work environment should incorporate more open space and free moving lines so as to increase the chance of interaction with others. Under such conditions, working overtime or even on weekdays can allow employees to create added value by sharing their knowledge with each other, which may enhance the company's competitiveness in the future.

#### 6.2 Influence of work stress over knowledge-sharing

From the analysis results, it can be learned that work stress of the active type is greater than that of the low strain type, and the effect of knowledge sharing produced from the passive type and high strain type work pressure is greater than for the other types. The work situation of the active type usually involves

high job demand/high job control, which may promote active learning and personal growth among employees. Thus, in this study, it is suggested that enterprises should provide an appropriate work environment for employees with suitable work stress, and they should also provide appropriate job control to allow employees to adjust their work content, so that the employees can take the initiative to learn and grow with each other, and to promote the exchange of knowledge among fellow employees.

### 6.3 Influence of mediating factor work stress in the relationship between working overtime and knowledge sharing

The analysis results also suggest that work stress has a significant mediating effect, but if employees have adverse work stress, it can instead produce negative effects. According to Webber et al., (1987), the reaction from work stress can often be divided into subjective responses, behavioral responses, cognitive responses, physiological responses, and organisational responses. In addition, the results show that if employees have inappropriate work stress, it may lead to poor interpersonal relationships, work dissatisfaction, negative deterioration of work efficiency, and other factors. Thus, such situations could adversely affect the relationship between working overtime and knowledge sharing. In this study, it is suggested that managers in the food catering service industry should properly deal with work pressure shown on employees, so that appropriate and positive work pressure

can be produced to benefit all employees and the company. At a time when an enterprise needs to implement an overtime strategy as in an emergency situation, overtime can encourage employees to interact with each other to attain knowledge sharing.

### 6.4 Regulatory effect of leisure participation

As a whole, the regulatory effect of leisure participation is not significant. Our guess is that the majority of employees in the food catering service industry have to work overtime with an average of 5 hours per week, so the service personnel are quite used to working overtime in the food catering service industry. Working overtime has already become the norm for the industry, or has even become an organisational culture for the industry. Moreover, the majority of employees in the food catering service industry pursue their leisure activities using their own free time. It is suggested that due to the special organisational culture of the food catering service industry, though leisure participation can relieve the work pressure for individual employees, it will not have any direct or indirect impact on knowledge sharing among employees, so its regulatory effect is not significant. It is suggested that future research work with similar topics may considered more from the perspective of organisational culture, in order to further understand the relationship between working overtime and knowledge sharing.

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### References

- INTERNATIONAL LABOR STATISTICS. 2012 DGBAS. Available at: <http://statdb.cla.gov.tw/html/nat/0009menu.htm> [accessed February 2012].
- AL-ALAWI, A.I., AL-MARZOOQI, N.Y. & MOHAMMED, Y.F. 2007. Organisational culture and knowledge sharing: critical success factors. *Journal of Knowledge Management*, 11(2):22.
- ANDERSON, J.C. & NARUS, J.A. 1990. A model of distributor firm and manufacturer firm working partnerships. *Journal of Marketing*, 54:42-58.
- BAIRD, L.S. & BECCIA, P.J. 1980. The potential misuse of overtime. *Personnel Psychology*, 33:557-565.

- BABBAR, S. & ASPELIN, D.J. 1998. The overtime rebellion: Symptom of a bigger problem? *The Academy of Management Executive*, 12(1).
- BARON, K.M. & KENNY, D.A. 1986. The moderator-mediator variable distinction in social psychology research: conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6):1173-1182.
- BEEHR, T. & NEWMAN, J. 1978. Job stress, employee health, and organisational effectiveness: a facet analysis, model and literature review. *Personal Psychology*, 31:665-699.
- BOLINO, M.C. & TURNLEY, W.H. 2005. The personal costs of citizenship behavior: the relationship between individual initiative and role overload, job stress, and work-family conflict. *Journal of Applied Psychology*, 90(4):740.
- BURLEY, K.A. 1995. Family variables as mediators of the relationship between work-family conflict and marital adjustment among dual-career men and women. *The Journal of Social Psychology*, 135:483-497.
- CAMPION, M.A., MEDSKER, G.J. & HIGGS, A.C. 1993. Relations between work group characteristics and effectiveness: implication for designing effective work groups. *Personnel Psychology*, 46:823-850.
- CARTWRIGHT, S. & COOPER, C.L. 1997. *Managing workplace stress*. California: Sage.
- CAUDRON, S. 1998. Recognize the link between workplace violence and workplace change. *Workforce Journal*, 77:51.
- CORDES, K.A. & IBRAHIM, H. 1999. *Recreation & leisure: the nature of leisure, recreation, and play. Leisure, recreation, and the individual* (2nd ed.) McGraw-Hill Book Company Europe.
- CHANG, T.J., YEH, S.P. & YEH, I. 2007. The effects of joint reward system in new product development. *International Journal of Manpower*, 28(3/4):276-297.
- DAVENPORT, T.H. & PRUSAK, L. 1998. *Working knowledge*. Boston: Harvard Business School Press.
- DING, Z., NG, F. & CAI, Q. 2007. Personal constructs affecting interpersonal trust and willingness to share knowledge between architects in project design teams *Construction Management and Economics*. London: 25(9):937.
- EHRENBERG, R.G. & SMITH, R.S. 1982. *Modern labor economics*. Glenview, IL: Scott, Forsman.
- FRONE, M.R., RUSSELL, M. & COPPER, M.L. 1992. Antecedents and outcomes of work-family conflict: testing a model of the work-family interface. *Journal of Applied Psychology*, 77(1):65-78.
- GODBEY, G. 2003. *Leisure life: An exploration* (6<sup>th</sup> ed.) Venture publishing, Inc. PA.
- GOLDEN, L. & WIENS-TUERS, B. 2005. Mandatory overtime work in the United States: who, where and what? *Labor Studies Journal*, 30(1).
- HIGGINS, C.A. & L.E. DUXBURY, 1992. Work-family conflict in dual-career family. *Organisational Behavior and Human Decision Processes*, 51:151-75.
- HSU, I. 2006. Enhancing employee tendencies to share knowledge- Case studies to nine companies in Taiwan. *Journal of Information Management*, 26(4):326-338.
- HUNTER, L.W. & SHERRY M.B. & THATCHER. 2007. Feeling the heat: effects of stress, commitment, and job experience on job performance. *Academy of Management Journal*, 50(4):953.
- ISO-AHOLA, S.E. 1980. *The social psychology of leisure and recreation*. Dubuque, IA: W.C. Brown.
- JACOBS, J.B. 1982. The concept of guanxi and social politics in a rural Chinese cultural setting. In S.L. Greenblatt, R.W. Wilson & A.A. Wilson (eds.) *Social Interaction in Chinese society*. New York: Praeger.
- JAMAL, M., & CRAWFORD, R.L. 1981. Consequences of extended work hours: A comparison of moonlighters, overtimers, and modal employees. *Human Resource Management*, 20(3):18-23.
- JANZ, B.D., COLQUITT, J.A. & NOE, R.A. 1997. Knowledge worker team effectiveness: the role of autonomy, interdependence, team development, and contextual support variables, *Personnel Psychology*, 50(4):877-904.
- JARVENPAA, S.L. & STAPLES, D.S. 2001. Exploring perceptions of organisational ownership of information and expertise, *Journal of Management Information Systems*, 18(1):151-183.
- JEVONS, N. 1965. *The theory of political economy*. NY: Augustus Kelley.
- KARASEK, R.A. & THEORELL T. 1990. *Healthy work: Stress, productivity and the reconstruction working life*, New York: Basic Book.
- KELLY, J.R. 1996. *Leisure* (3<sup>rd</sup> ed.) Boston: Allyn & Bacon.

- LEE, D. & AHN, J. 2007. Reward systems for intra-organisational knowledge sharing European. *Journal of Operational Research*, 180(2):938.
- LOVALLO, W.R. 2005. *Stress & health: biological and psychological interactions*. Thousand Oaks, Calif: Sage Publications.
- MEGLINO, B.M. 1977. Stress and performance: Are they always incompatible: *Supervisory Management*, 22:2-12.
- MIAO MING-CHIH, ZHANG HUO-CHAN, 2002. The study on the impact of organisational and strategic changes over the managers' work stress, *Chung Shan Management Review*, 10(4):683-706 (Chinese).
- MOORADIAN, T., RENZL, B. & MATZLER, K., 2006. Who trusts? Personality, trust and knowledge sharing management learning. *Management Learning*, 37(4):523-540.
- NETEMEYER, R.G., MAXHAM, J.G. & PULLIG, C. 2005. Conflicts in the work-family interface: Links to job stress, customer service employee performance, and customer purchase intent. *Journal of Marketing*, 69(2):130.
- PEARSON, L.C. & MOOMAW, W. 2005. The relationship between teacher autonomy and stress, work satisfaction, empowerment, and professionalism. *Educational Research Quarterly*, 29(1):37-53.
- PLECK, J.H., STAINES, G.L. & LANG, L. 1980. Conflicts between work and family life, *Monthly Labor Review*, 103(3):29-32.
- POSTREL, S. 2002. Islands of shared knowledge: specialization and mutual understanding in problem-solving team. *Organisation Science*, 13(3):303-302.
- RAGHEB, M.G. & GRIFFITH, C.A. 1982. The contribution of leisure participation and leisure satisfaction to life satisfaction of older persons. *Journal of Leisure Research*, 14(4):295-306.
- RENNA, F. 2006. Moonlighting and overtime: a cross-country analysis. *Journal of Labor Research*, 27(4):575.
- ROBBINS, S.P. 2001. *Organisational behavior*. Upper Saddle River, NJ: Prentice Hall Inc.
- ROUSSEAU, D.M. 1978. Relationship of work to nonwork. *Journal of Applied Psychology*, 63:513-517.
- SCHUSTER, M. & RHODES, S. 1985. The impact of overtime work on industrial accident rates. *Industrial Relations*, 24(2):234.
- SENGE, P. 1997. Sharing knowledge: the leader's role is key to a learning culture. *Executive Excellence*, 11(14):17.
- SNIR, R. & HARPAZ, I. 2012. Beyond workaholicism: Towards a general model of heavy work investment. *Human Resource Management Review*, 22(3):232-243.
- SOONHEE, K. & HYANGSOO, L. 2006. The impact of organisational context and information technology on employee knowledge-sharing capabilities. *Public Administration Review*, 66(3):370-385.
- STEERS, R.M. 1988. Work and stress, *Introduction to Organisational Behavior*:89.
- STEWART, S.I. 2005. Balancing leisure and work: evidence from the seasonal home. In: Peden, John G.; Schuster, Rudy M., Comps. (eds.) *Proceedings of the 2005 Northeastern recreation research symposium*; 2005 April 10-12; Bolton Landing, NY. Gen. Tech. Rep. NE-341. Newtown Square, PA: U.S. Forest Service, Northeastern Research Station.
- TAYLOR, W.A. 2004. Computer-mediated knowledge sharing and individual user difference ; an exploratory study. *European Journal of Information Systems*, 13(1):52-64.
- THOMPSON, E., PALACIOS, A. & VARELA, F.J. 2002. Ways of coloring: Comparative color vision as a case study for cognitive science. In A. Noe & E. Thompson (eds.) *Vision and mind: Selected readings in the philosophy of perception* (pp. 351-418). The MIT Press.
- WEBBER, R.A., HAMPTON, D.R. & SUMMER, C.E. 1987. *Organisational behavior and the practice of management*. (5th ed.) U.S.A.: Scott, Foreman and Company.
- YANG, C. & CHEN, L. 2007. Can organisational knowledge capabilities affect knowledge sharing behavior? *Journal of Information Science Amsterdam*, 33(1):95.