
Work-leisure conflict and facilitation: a study based on the JD-R model

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Abstract: It is important to understand the interactions between an individual's work and leisure life domains. This study aimed to examine the relationship between work and leisure interaction (including work-to-leisure conflict, leisure-to-work conflict, work-to-leisure facilitation, and leisure-to-work facilitation) and the job demand-resource model. A quantitative research design was also conducted. A questionnaire was used for data collection. A total of 473 valid responses were retained, and the effective response rate was 86%. Structured equation modelling was used for data analysis and hypothesis testing. The results indicate that job demand is positively related to work-to-leisure conflict and negatively related to work-to-leisure facilitation, and job resources are positively related to work-to-leisure facilitation and

leisure-to work facilitation but negatively related to work-to-leisure conflict and leisure to-work conflict. Based on the findings, suggestions were provided to human resource managers.

Keywords: work-to-leisure conflict; leisure-to-work conflict; work-to-leisure facilitation; leisure-to-work facilitation; job demand; job resource; job-demand resource model; tourism industry; leisure industry; work characteristics.

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1 Introduction

The importance of leisure time has increased dramatically in recent years (Lin et al., 2014). The interactions between our work and leisure lives are also worth exploring (Staines, 1980). The current study aims to explore the interactions between work and leisure roles using a work – non-work framework (Rice et al., 1992; Tsaut and Yen, 2018; Kirchmeyer, 1995; Liang, 2020). Studies on the interaction between work and non-work roles have focused more on work-family relationships. Over the past three decades, several studies have achieved a broader understanding of the interaction between work and family roles (Michel et al., 2011; Xu and Cao, 2019). Work and family roles have mutually complementary and beneficial aspects, as well as being incompatible and in conflict with each other on specific occasions. The mutually complementary and beneficial aspects are a form of positive spillover (work-family facilitation), while the incompatible and conflicting aspects are a form of negative spillover (work-family conflict) (Geurts et al., 2005). Although work-family relationships have been the subject

of frequent studies in the field of organisational behaviour, yielding a variety of results, few studies have been conducted on work-leisure relationships (Staines and O'Connor, 1980; Rice et al., 1992; Wong and Lin, 2007; Tsaur and Yen, 2018). Rice et al. (1992) were the first scholars to regard work-leisure conflict as a dimension of work – non-work conflict. Researchers have categorised work – non-work conflict into work-family conflict and work-leisure conflict. Subsequently, Wong and Lin (2007) used the job demand control-support (JDCS) model to study the impact of job characteristics (such as job requirements, work control, and job support) on work-leisure conflict. Tsaur et al. (2012) proposed that work and leisure roles conflicted with each other and categorised work – leisure conflict into work-to-leisure conflict and leisure-to-work conflict.

Research on work-leisure relations has primarily focused on the study of work-leisure conflict. Few studies have argued that work and leisure may be mutually beneficial or have explored the driving forces of work-leisure facilitation (Liang, 2018), and many empirical studies have confirmed that leisure is an important resource that helps individual's combat stress. Liang (2020) also pointed out that the benefit of achieving balance between work and leisure can help improve character self-efficacy and life satisfaction. According to Clark's (2000) work – non-work balance perspective, individuals must be responsible for border keepers (supervisors, colleagues) in the work domain, but in the leisure domain, individuals do not need to be responsible for anyone. Because of the lack of border keepers, the leisure domain is easily invaded by other life domains. Thus, an imbalance may arise in work-leisure life. In particular, the negative impact of work life on leisure life may be greater than the impact of leisure life on work life. However, the benefit of leisure activities for individuals has been verified (Elbaz et al., 2020; Liang, 2020). No systematic research has been conducted on how the characteristics of the work environment affect the interaction between work and leisure domains, in particular, how work characteristics affect the facilitation from work to leisure and the facilitation from leisure to work. To fill this theoretical gap, this study aims to examine the impact of job characteristics on work-leisure conflict and work-leisure facilitation.

A review of studies on work-family relations has shown that job characteristics are the key to constructing a productive work environment (Karasek, 1979; Hackman and Oldham, 1976). While most studies consider work – non-work conflict to be stressful (Bakker and Geurts, 2004), stress-related research has indicated how job resources can affect mental conditions (Karasek, 1979; Hobfoll, 1989; Demerouti et al., 2001; Xu and Cao, 2019). The theoretical framework used in this study was based on the job demand-resource model (JD-R model), which was proposed by Demerouti et al. (2001). It illustrates the challenges caused by job characteristics from the perspectives of job demands and job resources. The purpose of this study is to explore the impact of job demands and resources on work-leisure conflict and facilitation.

2 Literature review

2.1 Work-leisure interactive relationship

In this section, the theoretical basis of the work-leisure relationship was reviewed, and the interactions between work and leisure were explored from the viewpoint of work-leisure conflict and work-leisure benefits. Both a conflict model and a spillover

model were adopted to explore the conflicts between work and leisure roles and mutual benefits, respectively.

2.1.1 Work-leisure conflict

Work-leisure conflict has attracted the attention of a limited number of scholars (Staines and O'Connor, 1980; Rice et al., 1992; Wong and Lin, 2007; Tsaur et al., 2012). Staines and O'Connor (1980) proposed the concept of work-leisure conflict, and Rice et al. (1992) were the first to consider work-leisure conflict as a sub-dimension of work – non-work conflict. Thus, research on work-leisure relations has focused more on conflicts than on mutual benefits. However, on the basis of theories proposed by Greenhaus and Beutell (1985) and Frone et al. (1992), Tsaur et al. (2012) further expanded the scope of work-to-leisure and leisure-to-work conflicts. They confirmed that leisure time had a negative influence on work life. Specifically, regulated by the rules that leisure groups impose on their members, work time might be sacrificed to accommodate the activities organised by these groups. Furthermore, leisure activities that cause psychological stress and physical exhaustion may lead to difficulties in concentrating at work (Hsu, 2008).

Hence, from the perspective of role conflict, work-leisure conflict was defined in this study as the conflict between time and effort invested in work and leisure caused by an incompatibility between work requirements and leisure needs. Work-leisure conflict can be categorised into work-to-leisure conflicts and leisure-to-work conflicts. Work-to-leisure conflict refers to situations in which individuals' input into their work roles reduces their time, energy, and opportunities for engaging in leisure activities and impedes performance in such activities (Tsaur and Yen, 2018). Leisure-to-work conflict refers to situations in which the time, energy, and opportunities that individuals invest in work are reduced, and their job performance is affected by the requirements of the leisure groups in which they participate. In this study, the work-leisure conflict scale proposed by Tsaur et al. (2012) was adopted to measure work-to-leisure conflict and leisure-to-work conflict.

2.1.2 Work-leisure facilitation

The relationship between work and non-work life involves more than conflict. There is a positive interaction between work and non-work life. While studying work-family relations, many scholars have noticed the existence of positive work-home interactions; work and family life were found to enrich, facilitate, and positively influence one another (Greenhaus and Powell, 2006). According to the definition proposed by Kirchmeyer (1992) and Geurts et al. (2005), work-to-non-work facilitation refers to improving non-work (work) roles through the benefits of work (non-work) activities. Therefore, this study defined work-to-leisure facilitation as the improvement of personal leisure time caused by the benefits of work and leisure-to-work facilitation and as the improvement in work life caused by the benefits of leisure activities.

Marks (1977) showed that when individuals simultaneously fulfil different life roles, they create new resources, such as energy mobilisation, skill acquisition, and increased self-esteem, which are conducive to the successful functioning of life roles. A work environment that provides resources such as job autonomy, performance feedback, and opportunities for professional development is conducive to personal growth, which

contributes to non-work life (Staines, 1980). De Bloom et al. (2018) explore the influence of leisure activities on health and job performance of personnel. The study revealed that leisure activities benefit employees' job performance. Kirchmeyer (1992) showed that the positive spillover effect caused by non-work activities was greater than its negative spillover effect. Non-work-to-work positive spillovers were grouped into four categories:

- 1 privileges gained – the more roles an individual has in life, the clearer is the position of each role, with distinctive rights and obligations, which helps in managing each role
- 2 status security – when individuals experience difficulty in one life role and feel stressed, they can relieve stress and seek emotional stability by switching to another role
- 3 status enhancement – individuals develop a role by investing time and energy in another role
- 4 personality enrichment – playing different roles in life requires meeting the demands of different life partners.

Consequently, individuals' flexibility and personal vision are expanded, and their tolerance of differences is enhanced.

On the basis of the above literature review, it can be concluded that the interaction between work and leisure is not limited to conflict. Thus, in-depth studies should be conducted on the mutual benefits of work and leisure. This study modified the positive spillover scale from non-work to work proposed by Kirchmeyer (1992) and developed work-to-leisure facilitation and leisure-to-work facilitation scales.

2.2 Theories on job characteristics

This study aimed to explore the relationship between job characteristics and work-leisure interactions from a resource perspective. Therefore, the JD-R theory was adopted as the foundation for selecting job characteristic-related variables. The research achievements regarding the correlations between job characteristics and work – non-work interactions are also discussed

2.2.1 The JD-R model

Studies on job characteristics have approached the topic from two perspectives: the job characteristics model (JCM) and the job strain model, which emphasise the positive and incentive effects of job characteristics and the negative effects of job characteristics, respectively. The JCM was initially proposed by Hackman and Lawler (1971) to identify a job design that motivates employees and improves job performance. The JD-R model proposed by Demerouti et al. (2001) explores the motivational dimensions of job characteristics and the formation of corresponding stress (Xanthopoulou et al., 2007). In the JD-R model, job demands refer to the physical, psychological, social, and organisational aspects of a job that requires physical and psychological investment (Demerouti et al., 2001). Workload, contact with customers, and time pressure are components of job demands (Bakker et al., 2003). Job resources refer to the physical, psychological, social, and organisational factors that contribute to achieving

organisational goals, as they reduce the negative effects of job demands and provide opportunities for personal growth (Demerouti et al., 2001). Job autonomy, time control, job benefits, and social support are widely accepted components of job resources (Bakker et al., 2003; Bakker and Geurts, 2004). While job demands lead to job stress, job resources motivate employees. Since this study aimed to explore the impact of job characteristics on work-leisure interactions, including both work-leisure conflict (negative interaction) and work-leisure facilitation (positive interaction), the JD-R model was introduced as a basis for constructing the dimensions of job characteristics.

On the basis of the JD-R model, job demands in this study were defined as the time requirements, workload, and contact with the recipients of one's services. Time requirements include time input (a measure of the length of time invested) and work speed (a measure of the time taken to complete the tasks). Workload refers to the perceived burden of work. Contact with clients was introduced to determine whether the job required frequent contact with them. The items used to measure time input, workload, and work speed were introduced from the job demands scale developed by Karasek (1979), while items used to measure contact with the recipients of one's services scale were introduced from the scales developed by Diefendorff et al. (2005). Job resources mainly refer to work environment characteristics that reduce work-leisure conflict and enhance work-leisure facilitation, including job autonomy, time control, work support, and leisure time benefits. Time control was categorised into work-time control (to measure how freely an individual can arrange his/her work procedures) and non-worktime control (to measure how freely an individual can arrange his/her leisure time). Autonomy refers to decision-making power. Leisure benefits represent the level of satisfaction with the job-based leisure benefits system, such as annual leave, free air tickets, discount air tickets for family members, and travel allowance. Work support included physical and psychological support from supervisors and colleagues. This study employed the items in the job autonomy scale developed by Hackman and Oldham (1975). The work-time and non-work-time control scales were modified based on the scales developed by Breugh (1985). Support from supervisors and colleagues were compiled based on the scales developed by Anderson et al. (2002) and Voydanoff (2004). The leisure benefits scale was compiled based on the benefit system satisfaction scale developed by Williams et al. (2002) and the leisure benefit system scale created by Lin et al. (2013).

2.3 *Hypotheses*

2.3.1 *Job characteristics and work-leisure conflict*

Studies on the relationship between job characteristics and work – non-work interactions have shown a significant and positive correlation between job demand and work – non-work conflict (Butler et al., 2005; Wong and Lin, 2007; Wong et al., 2014). According to conservation of resource theory (COR), workload, work speed, and work time are challenges from within the work environment, which requires individuals to invest personal resources (such as time and energy) to cope with such challenges (Hobfoll, 1989). Investment in time leads to time conflicts between multiple tasks (Greenhaus and Beutell, 1985). As the consumption of resources increases, the perceived stress rises, leading to conflicts between stress and behaviour (Greenhaus and Beutell, 1985; Hobfoll, 2002). Therefore, individuals who engage in more demanding jobs have

fewer opportunities and time to participate in leisure activities, which limits the possibility of restoring personal resources and relieving stress. As a result, work-to-leisure conflict increases. Given that job demands increase job responsibilities (Frone et al., 1992), more demanding jobs tend to cause a greater responsibility-related burden (Wong et al., 2014; Gao et al., 2019). Excessive engagement in leisure activities ties up resources (such as time and energy) that would otherwise be invested in work, and the remaining resources are not sufficient to fulfil the responsibilities (Tsauro and Yen, 2018). Thus, leisure-to-work conflict increases further.

Furthermore, most studies have supported the claim that job resources are conducive to reducing the impact of work – non-work conflict (Michel et al., 2011; Xu and Cao, 2019). When organisations can provide resources to assist employees in managing their work – non-work life, employees are likely to maintain a balance and avoid negative spillovers (Kirchmeyer, 1995; Liang, 2018). Work resources are perceived as external resources; when personal resources are insufficient, external resources increase in importance (Hobfoll, 1989). Many studies have pointed out that support from supervisors and colleagues, whether tangible or intangible (mental support), reduces the interference of work in non-work life (Geurts et al., 2005). Organisations' provisions of benefits help employees balance their work and non-work lives (Kirchmeyer, 1992; Muse et al., 2008). When employees can control the time invested in work and leisure activities, they can schedule their work appropriately, avoid unnecessary waste of resources, and restore personal resources through leisure activities to avoid work-leisure conflict (Wong and Lin, 2007; Wong et al., 2014). Liang (2018) proposed a conceptual framework that claimed that job support (support from supervisors and co-workers) is positively associated with work-leisure facilitation. In addition, they demonstrated that leisure support (support from leisure partners and friends) is positively related to leisure-work facilitation. Accordingly, the authors of the current study summarise that higher job demands lead to stronger perceived work-leisure conflict, which is reduced when organisations provide more work resources. Hence, the following hypotheses are proposed:

H₁ There is a significantly positive correlation between job demand and work-leisure conflict.

- H_{1a}: There is a significantly positive correlation between job demand and work-to-leisure conflict.
- H_{1b}: There is a significantly positive correlation between job demand and leisure-to-work conflict.

H₂ There is a significantly negative correlation between job resources and work-leisure conflict.

- H_{2a}: There is a significantly negative correlation between job resources and work-to-leisure conflicts.
- H_{2b}: There is a significantly negative correlation between job resources and leisure-to-work conflicts.

2.3.2 Job characteristics and work-leisure facilitation

Studies on job characteristics and work – non-work facilitation have focused on the relationship between job resources and work – non-work facilitation, but few studies

have explored the relationship between job demands and work – non-work facilitation. Excessive job demands are likely to require investment of more resources in work (Dierdorff and Ellington, 2008). Even if a person can gain personal development through his/her work, there may not be sufficient time to participate in leisure activities, which reduces work-to-leisure facilitation. In addition, excessive job demands reduce opportunities to participate in leisure activities (Wong and Lin, 2007; Son and Chen, 2018), resulting in increased difficulty in gaining personal development through leisure time or restoring consumed resources; hence, leisure-to-work facilitation is suppressed. Therefore, this study inferred that job demand and leisure-to-work facilitation were negatively correlated.

The results of several studies have confirmed that job resources have a positive correlation with work – non-work facilitation. Geurts et al. (2005) found that job autonomy, time control, and support from supervisors and colleagues help workers to cope with work challenges and equip individuals with sufficient resources to deal with non-work life issues. Kirchmeyer (1995) pointed out that the adoption of both respectful (such as providing job autonomy and flexible working hours) and integrated (such as providing benefits) approaches to assist employees in managing work – non-work lives enhances the positive spillover effect of non-work life on work life. In particular, respectful responses allow individuals to manage their work and non-work lives and enjoy the benefits of participating in non-work lives (such as learning and positive mood) while planning and managing these lives. Such benefits also facilitate work life (Kirchmeyer, 1995). When organisations can provide a good welfare policy, they spare the psychological costs and the additional time invested by their employees to participate in non-work activities, which enhances the benefits of non-work life (Williams et al., 2002; Liang, 2018). A convenient leisure benefit system encourages employees to participate in leisure activities, allowing leisure time to exert its function of restoring personal resources (Iwasaki, 2003). With sufficient time to recover, employees have enough resources to fight work challenges. Therefore, in this study, it was inferred that job demands have a negative correlation with work-to-leisure and leisure-to-work facilitation, while job resources have a positive correlation with work-to-leisure and leisure-to-work facilitation. Hence, the following hypotheses are proposed:

H₃ There is a significantly negative correlation between job demand and work-leisure facilitation.

- H_{3a}: There is a significantly negative correlation between job demand and work-to leisure facilitation.
- H_{3b}: There is a significantly negative correlation between job demand and leisure-to work facilitation.

H₄ There is a significantly positive correlation between job resources and work-leisure facilitation.

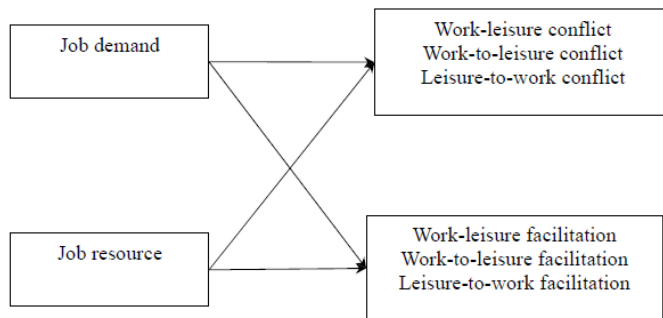
- H_{4a}: There is a significantly positive correlation between job resources and work-to leisure facilitation.
- H_{4b}: There is a significantly positive correlation between job resources and leisure to-work facilitation.

3 Methodology

3.1 Conceptual framework

This study focused on the impact of job characteristics on work-leisure interactions. Specifically, the impacts of two categories of job characteristics (job demands and resources) and work-leisure interactions (work-leisure conflict and work-leisure facilitation) were explored. The conceptual framework is illustrated in Figure 1.

Figure 1 Theoretical model



3.2 Participants and procedure

Frontline employees in the tourism and leisure industries have long working hours and usually work in shifts. Their standard working hours are also different from those of other industries. In particular, during the holiday seasons, when others enjoy leisure time, the tourism and leisure industries have extended their business hours. Frontline employees in the tourism and leisure industries are often required to be in direct contact with customers; hence, job demands are high, and the possibility of work-leisure conflicts is foreseeable. Thus, the characteristics of the tourism and leisure industry make it suitable for exploring work-to-leisure facilitation and obtaining a comprehensive understanding of work-leisure interactions. Therefore, frontline employees of the tourism and leisure industries were chosen as the research subjects of this study. According to the industry classification defined by the Taiwan Tourism Bureau, the tourism and leisure industry can be further categorised into travel agencies and tour operators, hotels and home-stay facilities, and amusement parks (Tourism Bureau, Republic of China, 2021). In this study, 550 questionnaires were distributed to frontline employees working in travel agencies and hotels, and 516 responses were collected. Through the elimination of 43 invalid responses, 473 valid responses were retained (effective response rate = 86%).

3.3 Measurement

The conceptual framework and corresponding constructs were determined following a review of domestic and foreign research. The constructs of the questionnaire included work-leisure conflict, work-leisure facilitation, role importance, job demand, and job resources.

3.3.1 *Work-leisure conflict*

Work-to-leisure conflict was defined as the situation in which individuals' input into work roles reduces their time, energy, and opportunities for engaging in leisure activities and prevents them from participating in leisure activities. Leisure-to-work conflict was defined as the situation in which the time, energy, and opportunities that individuals invest in work are reduced, and their job performance is affected by the requirements of leisure groups in which they participate. The work-leisure conflict scale proposed by Tsauro et al. (2012) was adopted to measure the work-leisure conflict in this study.

3.3.2 *Work-leisure facilitation*

Work-to-leisure facilitation was defined as the enhancement of personal leisure time resulting from the benefits of work; leisure-to-work facilitation was considered an improvement in one's working life resulting from the benefits of leisure activities. By referring to the non-work-to-work positive spillover scale proposed by Kirchmeyer (1992), this study developed work-to-leisure facilitation and leisure-to-work facilitation scales, which included dimensions such as role privileges, status security, and personality enrichment.

3.3.3 *Job demands*

Job demands included work time, work speed, and workload required by the organisation, and the frequency of contact with the customer. The job demand scale developed by Karasek (1979) and interaction frequency scale developed by Diefendorff et al. (2005) were combined and modified into the job demand scale for this study.

3.3.4 *Job resources scale*

Job resources refer to the work environment characteristics that reduce work-leisure conflict and improve work-leisure facilitation, such as job autonomy (employees' freedom to arrange their own work tasks), time control (employees' freedom to arrange their workflow and leisure time), job support (tangible and mental support from supervisors and colleagues), and leisure benefit system (satisfaction with the company's benefit system, such as annual leave, free air tickets for employees, discounted air tickets for family members, and employee travel allowance). Job autonomy was measured based on the job autonomy scale developed by Hackman and Oldham (1975). The work scheduling autonomy scale developed by Breaugh (1985) was used to measure time control. The job support scale was modified based on the scales developed by Anderson et al. (2002) and Voydanoff (2004). All scales adopted a five-point Likert scale ranging from '1' (totally disagree) to '5' (totally agree). The scale used to measure the leisure benefit system was designed based on the scale proposed by Williams et al. (2002) and Lin et al. (2014).

Because the samples were tourism-related employees in Taiwan, the translation back-translation procedure recommended by Brislin (1980) was conducted. All items of each construct passed the content validity test. Two researchers in the field of tourism, one hotel HR manager, and one senior manager of a travel agency were invited to be judges for reviewing the content of the questionnaire. They were asked to judge whether each item was suitable for measuring the construct it belonged to. Each item was rated on

a 4-point scale from 1 (not relevant, clear, complete, or meaningful) to 4 (highly relevant, clear, complete, or meaningful) by three studies. According to Lynn's (1986) suggestion, the content validity index (CVI) for each item was calculated. The CVI of the items was between 0.92 and 1.00, which is higher than the threshold (0.8). The content validity of the constructs was supported.

4 Results

4.1 Sample characteristic

Table 1 shows the demographic distribution of the sample, with 473 respondents. Of the respondents, 38.48% were employees of tourism agencies, and 61.52% were hotel staff. Most of the respondents were women (52.85%). More respondents (32.77%) belonged to the 26-to-30 age group than to other age groups. The proportion of respondents with three years of work experience (or less) was the highest (30.44%) among other similar categories. Most of the respondents (66.38%) reported that they were frequently on night shifts, and 30.02% reported that they were almost always on night shifts. More than half of the respondents (52.43%) reported that they were frequently on duty during the weekend, and 35.94% of the respondents reported that they were almost always on duty during weekends. More than half of the respondents were married (54.33%) and had at least one child (52.85%).

4.2 Measured model fit

First, confirmatory factor analysis (CFA) was introduced to examine the validity of the constructs proposed in the study, which analysed the validity and reliability of the questionnaire. The results of the measured model are shown in Table 2. The composition reliability and convergent validity were used for the tests. The average variance extracted (AVE) measure was used to determine the convergent validity, and the square root of the AVE values was compared with the correlation coefficient of each construct to examine convergence validity (Fornell and Larcker, 1981). Then, a structural equation model (SEM) was adopted to analyse the covariance between variables. Linear structural relation (LISREL) analysis was used for parameter estimation and hypothesis verification, and the chi-square test was used to assess the fitness of the model to understand the fitness between the causal pattern of the study and the actual data (Bagozzi and Yi, 1988).

The results of the CFA of the work-leisure interactions showed that χ^2 (1,815.76) was significant, and GFI (0.884) and AGFI (0.87) did not reach the threshold (0.9); SRMR = 0.03, and NCI = 1.14. RMSEA (0.03), NFI (0.99), NNFI (0.99), and CFI (0.99) reached the threshold. Factor loadings were between 0.66 and 0.93 (greater than the threshold of 0.5). The results of the CFA of job characteristics showed that χ^2 (547.87) was not significant; SRMR = 0.02, and NCI = 1.2. GFI (0.93), AGFI (0.93), RMSEA (0.03), NFI (0.99), NNFI (0.99), and CFI (0.99) reached the threshold. The factor loadings were between 0.87 and 0.93 (greater than the threshold of 0.5).

Table 1 The demographic distribution of the sample

<i>Demographic variables</i>	<i>Level</i>	<i>N</i>	<i>%</i>	<i>Demographic variables</i>	<i>Level</i>	<i>N</i>	<i>%</i>
Industry	Travel agency	182	38.48	Sex	Female	250	52.85
	Hotel	291	61.52		Male	223	47.15
Age	Under 25 years old	120	25.37	Work experience	Under 3 years	144	30.44
	26–30 years old	155	2.77		4–6 years	116	24.52
	31–40 years old	101	21.35		7–10 years	49	10.36
	41–50 years old	50	10.57		11–15 years	55	11.63
	Over 50 years old	47	9.94		16–20 years	68	14.38
					21 years	41	8.67
Night shifts	Occasionally	17	3.59	Weekend shifts	Occasionally	55	11.63
	Frequently	314	66.38		Frequently	248	52.43
	Always	142	30.02		Always	170	35.94
Marital status	Unmarried or otherwise	182	38.48	Child	No children	223	47.15
	Married	291	61.52		At least one	250	52.85

Table 2 The result of CFA, CR and AVE

<i>Constructs</i>	<i>Items</i>	<i>Factor loading</i>	<i>Standard error</i>	<i>CR</i>	<i>AVE</i>
Work-to-leisure conflict	WLC1~WLC18	0.68~0.75	0.54~0.44	0.95	0.51
Leisure-to-work conflict	LWC1~LWC12	0.66~0.74	0.45~0.56	0.92	0.50
Work-to-leisure facilitation	WLF1~WLF14	0.87~0.90	0.19~0.24	0.98	0.79
Leisure-to-work facilitation	LWF1~LWF14	0.91~0.93	0.14~0.17	0.99	0.85
Job demand	JD1~JD12	0.90~0.93	0.14~0.19	0.98	0.84
Job resource	JR1~JR21	0.89~0.98	0.04~0.21	0.99	0.87

4.3 Reliability

Given that the study adopted five-point Likert scales for the items and each item was measured according to the corresponding construct, theoretically, the items should have been correlated with one another. Internal consistency was used to assess the reliability of the questionnaire. Fornell and Larcker (1981) suggested assessing internal consistency using a composition reliability test. The results showed that the CR values of the constructs were between 0.93 and 0.98 (greater than the threshold of 0.6), indicating that the constructs had internal consistency and the scales had construct reliability.

4.4 Construct validity

Referring to the recommendations of Bagozzi and Yi (1988) and Fornell and Larcker (1981), this study used factor loadings and AVE as the criteria for assessing the convergent validity of the scales. The observed factor loadings of the constructs were between 0.66 and 0.98 (> 0.5) and the AVE values were between 0.73 and 0.85 (> 0.50). Therefore, the scales used in this study have convergent validity. Moreover, referring to the recommendations of Fornell and Larcker (1981), this study compared the square root of AVE with the correlation coefficients of each construct to assess the discriminant validity of the scales. If the square root of the AVE of a given construct was greater than its correlation coefficient with other constructs, then that construct was considered to have discriminant validity. The results in Table 3 show that the square root of the AVE values ranged between 0.76 and 0.84 and was greater than the correlation coefficients of the corresponding construct and other constructs. These findings confirmed that the scales had satisfactory discriminant validity. Therefore, the questionnaire developed in this study has satisfactory validity and reliability.

Table 3 Descriptive statistics and the square roots of AVE

	<i>WLC</i>	<i>LWC</i>	<i>WLF</i>	<i>LWF</i>	<i>JD</i>	<i>JR</i>
Work-to-leisure conflict (WLC)	0.72					
Leisure-to-work conflict (LWC)	-0.16*	0.70				
Work-to-leisure facilitation (WLF)	-0.24*	-0.12*	0.89			
Leisure-to-work facilitation (LWF)	-0.44*	-0.33*	0.16*	0.92		
Job demand (JD)	0.14*	0.06	-0.13*	-0.03	0.92	
Job resource (JR)	-0.26*	0.24*	0.40*	0.44*	-0.10*	0.93
Mean	4.73	3.33	2.85	3.33	4.68	3.15
SD	0.42	0.44	0.73	0.93	1.22	1.13

4.5 Structured model

Next, the theoretical framework was tested. First, the direct impact of job characteristics on work-leisure interaction was analysed; the results are shown in Figure 2. Job demand was found to have a positive correlation with work-to-leisure conflict ($\beta = 0.22, t = 2.48$), indicating that higher job demands led to greater work-to-leisure conflict. However, no significant correlations were found between job demands and leisure-to-work conflict ($\beta = 0.06, t = 0.64$). The correlation between job demand and work-to-leisure facilitation was found to be negative ($\beta = -0.19, t = -2.35$), suggesting that higher job demands led to lower work-to-leisure facilitation. However, job demand was found to have no significant correlation with leisure-to-work facilitation ($\beta = -0.05, t = -0.69$). Next, the impact of job resources on work-leisure interactions was analysed. The results showed significant negative correlations between job resources and work-to-leisure conflict ($\beta = -0.32, t = -3.59$) and leisure-to-work conflict ($\beta = -0.36, t = -3.99$), indicating that increased job resources were conducive to the reduction of both work-to-leisure and leisure-to-work conflicts. The analysis results in terms of the impact of job resources on work-leisure facilitation showed that job resources were positively correlated with both work-to leisure facilitation ($\beta = 0.53, t = 6.70$) and leisure-to-work facilitation ($\beta = 0.63,$

$t = 8.38$), suggesting that increased job resources led to greater work-to-leisure and leisure-to-work facilitation. In sum, the results of hypotheses test were summarised in Table 4.

Figure 2 The result of structured model

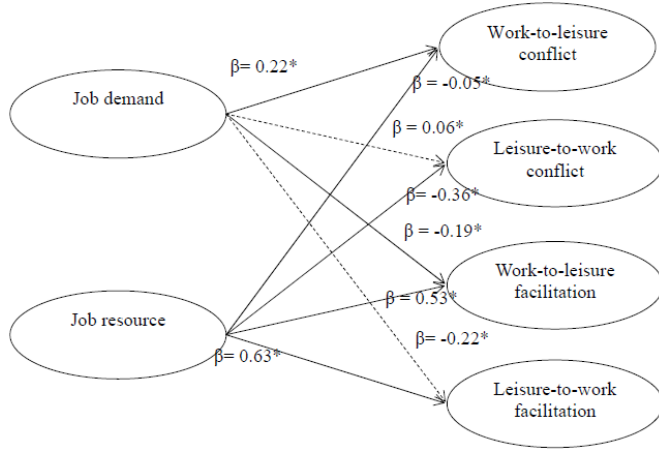


Table 4 The result of hypotheses test

Hypotheses	Result
H1: There is a significantly positive correlation between job demand and work-leisure conflict.	Support
H1a: There is a significantly positive correlation between job demand and work-to-leisure conflict.	Support
H1b: There is a significantly positive correlation between job and leisure-to-work conflict.	Not support
H2: There is a significantly negative correlation between job resources and work-leisure conflict.	Support
H2a: There is a significantly negative correlation between job resources and work-to-leisure conflicts.	Support
H2b: There is a significantly negative correlation between job resources and leisure-to-work conflicts.	Support
H3: There is a significantly negative correlation between job demand and work-leisure facilitation.	Support
H3a: There is a significantly negative correlation between job demand and work-to-leisure facilitation.	Support
H3b: There is a significantly negative correlation between job demand and leisure-to-work facilitation.	Not support
H4: There is a significantly positive correlation between job resources and work-leisure facilitation.	Support
H4a: There is a significantly positive correlation between job resources and work-to-leisure facilitation.	Support
H4b: There is a significantly positive correlation between job resources and leisure-to-work facilitation.	Support

5 Discussion

The purpose of this study was to explore the relationship between work environment characteristics and work-leisure interaction. The current study makes three crucial contributions:

- 1 this is the first study that integrates work-leisure conflict and work-leisure facilitation into the concept of work-leisure interaction
- 2 based on Geurts et al.'s (2005) perspective, this study integrates the JD-R model and work-leisure interaction and provides insight into how work environment characteristics create both positive and negative impacts on work-leisure interaction
- 3 to the best of our knowledge, this is the first study to examine the impact of job demands and job resources on work-to-leisure facilitation and leisure-to-work facilitation.

According to the results of Tsaur et al. (2012), work-leisure conflicts can be divided into work-to-leisure and leisure-to-work conflicts. Based on Kirchmeyer's (1992) study on the positive spillover effect of non-work life on work life, this study further proposes differentiating between work-to-leisure and leisure-to-work facilitation. Next, the relationship between work and leisure was examined from the perspectives of conflict and facilitation. This study transcended the limitations of past research on work-leisure relations and proposed that, in addition to conflict, work and leisure may be mutually beneficial. The results were consistent with those of Geurts et al. (2005) on the interactions between work and non-work roles. Geurts et al. (2005) confirmed the existence of positive and negative spillovers between work and family life. This study extends the perspective of Geurts et al. (2005) and expands the theory of the spillover effect on the interaction between work and leisure. The JD-R model (Bakker et al., 2003; Bakker and Geurts, 2004) was introduced to explain the effects of work environment characteristics on the interaction between work and leisure. Several psychologists have used the concept of resources to explain how individuals combat stress. According to them, resources are physical objects, personal characteristics, situations, and energies, which people value and are used to fulfil a specific purpose. People, events, and objects that can create specific resources are also resources (Hobfoll, 1989, 2002). Leisure-related research supports the claim that participating in leisure activities is conducive to relieving stress. Iwasaki and Mannell (2000) found that autonomy in leisure is shaped by self-determined personality traits and social support networks, through which individuals engage in activities that help them cope with stress. Other scholars (Iso-Ahola and Park, 1996; Iwasaki, 2003, De Bloom et al., 2018) also confirmed that leisure is a stress reliever. Therefore, leisure can be regarded as a resource that facilitates work. Considering that the work environment often presents challenges, individuals are required to use their internal and external resources to cope with them (Cheng et al., 2018). Excessive workload and overly long working times hinder individuals' participation in leisure activities, resulting in work-leisure conflicts (Son and Chen, 2018). Thus, work-leisure conflict can be stressful (Bakker and Geurts, 2004; Seiger and Wiese, 2009). Organisations can provide relevant resources through job design, such as company benefits and social support, to help employees maintain a balance between work and non-work life (Liang, 2018). Based on the resource perspective of stress

theories, this study used the JD-R model to interpret the impact of job characteristics on work-leisure conflict and facilitation.

The results showed that job demand and work-to-leisure conflict were significantly positively correlated, which echoed the findings of previous studies (Wong et al., 2019). Job demands had no significant correlation with leisure-to-work conflict, which was also in line with the findings of past research (Grzywacz and Marks, 2000). The result might be attributable to industrial characteristics and individual value; the research target is the frontline employees of the tourism and leisure industry. Long working hours and working on the weekend exclude people with high leisure orientation (value leisure is more important than work), and half of the respondents are married, with at least one child. Those people who bear high family responsibilities may value their work role over their leisure role. This may weaken the impact of job demands on leisure to-work conflicts. Job resources had a significantly negative correlation with work-to leisure conflict, which is consistent with the findings of Wong and Lin (2007) and Wong et al. (2014). A significantly negative correlation existed between job resources and leisure-to-work conflict, indicating that an increase in job resources led to reduced leisure-to-work conflict.

Job demands had a significantly negative correlation with work-to-leisure facilitation, suggesting that higher job demands led to lower work-to-leisure facilitation. Furthermore, job demands were not significantly correlated with leisure-to-work facilitation, which is consistent with Geurts et al.'s (2005) finding. This indicates that job demands were not an influential factor in leisure-to-work facilitation. This may be because high job demand may shorten an individual's leisure time but does not undermine the leisure quality consensually. Social support and individual motivation are determinants of individual involvement (Iwasaki and Mannell, 2000). There was a significantly positive correlation between work resources and work-to-leisure benefits. More job resources led to greater work-to-leisure facilitation. This finding is in line with that of the original JD-R model (Bakker et al., 2003; Bakker and Geurts, 2004). Moreover, job resources were positively correlated with leisure-to-work facilitation, suggesting that more job resources led to greater leisure-to-work facilitation.

6 Implications

Reasonable job demands motivate employees and encourage them to face challenges at work; however, it is suggested that organisations provide adequate resources to support this process (Karasek, 1979). According to the findings of this study, excessively high job demands not only fail to motivate employees but also increase work-to-leisure conflict and reduce work-to-leisure facilitation. Job stress originates in the continuous consumption of personal resources to meet the requirements of the work environment, with no opportunity to restore the consumed resources. This also explains why job demands lead to increased work-to-leisure conflicts (Hobfoll, 1989). During the job design process, managers should consider whether the requirements of workload and work speed exceed employees' abilities. Although streamlining labour can reduce costs, it could also lead to longer working hours and more responsibilities for the remaining team members, leading in turn to time-based and strain-based work-to-leisure conflict. Excessively long engagement in work affects normal behaviour in leisure activities, resulting in behaviour-based conflict (Tsaour et al., 2012). For employees to be competent

in their jobs, organisations should provide sufficient resources. Furthermore, according to the findings of this study, there was a significantly positive correlation between job resources and work-to-leisure facilitation and leisure-to-work facilitation, indicating that workplace resources are conducive to improving the quality of leisure for employees. Job resources enable employees to complete their tasks at a faster pace so that they have more time to enjoy leisure time and the benefits of leisure activities. Since leisure activities serve to restore individuals' resources (Iwasaki, 2003), engaging in such activities is equivalent to 'charging the battery' of employees. Thus, when they return to the workplace, they are more likely to work efficiently. Accordingly, organisations should provide corresponding support (such as job autonomy, supervisor support, and leisure benefits) to help employees balance work and leisure and improve their ability to work by learning how to manage their work and leisure schedules.

7 Limitations and future research

This study has two limitations. First, the research targets of this study were employees in tourism-and leisure-related industries, so the samples were collected from employees in travel agencies and hotels, which only provide credible explanations in tourism-and leisure-related industries. Applying the findings to employees in other industries (such as high-tech, manufacturing, and other service industries) is risky. The concentration of the samples used in this study may have resulted in insufficient external validity. Therefore, future studies should extend the scope of this research to other industries to establish a more generalised model. Second, because of the cross-sectional design, the dependent variables (four dimensions of work-leisure interaction) and independent variables (job demand and job resources) were surveyed at the same time, and the causal relationship could not be confirmed. A longitudinal study should be conducted to examine the causal relationship between variables.

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