Information Technology Use in Chinese Firms and Work-Family Conflict: The Moderating Role of Guanxi

Yanan Ma, Ph.D.
College of Economics and Management, South China Agricultural University
Wushan Road 483, Tianhe District, Guangzhou, 510642, Guangdong, P.R.China.
0086-13316242768
mayanan@scau.edu.cn

Ofir Turel, Ph.D.  (corresponding author)
College of Business and Economics, California State University, Fullerton,
Brain and Creativity Institute, Department of Psychology, University of Southern California
800 N. State College Blvd., Fullerton, CA, USA 92834
+1 (657) 278-5613
oturel@fullerton.edu; ot_739@usc.edu

Highlights

- Guanxi is an important value in Chinese society and workplaces.
- Little is known about how guanxi interacts with modern digitization to influence work-family conflict
- IT use for work increase work-family conflict
- Peer guanxi reduces it
- Supervisor-subordinate guanxi augments the effect of IT use for work on work-family conflict
- There are gender differences in guanxi effects; they are more pronounced in men

Abstract
Modern Chinese firms are characterized by high digitization, as well as by traditional guanxi. It is unclear how these modern and old characteristics operate in tandem to influence employee outcomes. We make first strides toward bridging this gap by leveraging theories of interpersonal relationships (social exchange, leader-member exchange and interpersonal trust theories) to suggest that two types of guanxi, supervisor-subordinate guanxi and peer guanxi, can influence the translation of IT use for work into work-family conflict. Data from 485 employees in Chinese firms support most of our hypotheses, and show that: (1) IT use for work increases work-family conflict, (2) Peer guanxi reduces it, (3) supervisor-subordinate guanxi augments the effect of IT use for work on work-family conflict, and (4) there are gender differences in guanxi effects (for women, the effect of IT use for work on work-family conflict is consistent at different levels of supervisor-subordinate guanxi; for men this effect is augmented in high supervisor-subordinate guanxi conditions). Ultimately, the findings extend and provide a unique integration of old and new traditions in Chinese firms. The IT literature is extended by showing how guanxi can influence the translation of IT use for work into negative outcomes in the family domain. The guanxi literature is extended by showing how guanxi, which is largely perceived as positive, can have negative outcomes in form of strengthening the effect of IT use for work on work family conflict.

**Keywords:** Information technology use for work, China, Guanxi, Relationships, Work-Family Conflict.

1. Introduction
Many jobs in modern China require the use of information technologies (IT); accordingly many organizations digitize their work processes (Chen et al., 2013b; Martinsons et al., 2017; Zhou et al., 2017). The resultant information technology (IT) use for work (i.e., the use of any technology, personal or provided by the employer, for accessing work-related system and monitoring and dealing with work-related issues) can have many benefits for organizations (Kshetri, 2016; Wang et al., 2015; Xu et al., 2016; Zeng et al., 2015). Nevertheless, it can also drive negative consequences (i.e., have “dark sides”) for employees, and indirectly for organizations (Tarafdar et al., 2015). Here, we focus on the possibility that IT use for work in Chinese firms drives work family conflict (WFC), defined as inter-role conflict based on irreconcilable demands from the work and family domains (Byron, 2005). This is expected given that IT use for work facilitates the acceleration and accentuation of work processes, and brings them to the personal life domain of employees. IT use for work can contribute to stress creation in the work environment (Turel and Gaudioso, 2018); and this work stress can spillover to the home environment and translate into conflicts with one's family (Frone et al., 1992). Moreover, IT use for work can facilitate the bringing of work to the home environment, often at the expense of family time (Turel et al., 2011).

Extending this view, we note that it is unclear (1) what can attenuate the IT use for work $\rightarrow$ WFC association, especially in the Chinese context, and (2) how managers in China can alleviate the possible negative effects of IT use for work on WFC. These are important questions to address, because they can help improving the wellbeing of employees, and indirectly contribute to improvements in firm performance (Tarafdar et al., 2015). These questions are especially important in China, where excessive IT use for work, overwork, and work-family conflict have
led to a myriad of negative consequences, including high and increasing divorce rates (China, 2016), and reduced productivity (Ju et al., 2016).

To address these questions we observe that a unique feature of Chinese firms is guanxi. In this paper we treat guanxi as a state of social relationships that involves affective attachment between the entities, personal-life inclusion, and deference to requests from others (Chen et al., 2009). It is highly embedded in work practices in China (Farh et al., 1998). While guanxi (or at least similar forms of interpersonal work-related relationships) exists in many cultures, it is a necessity in Chinese work environments, because it serves as a self-governance relational alternative to more structured and developed legal systems that define work relationships and obligations in most Western societies (Xin and Pearce, 1996).

Building on social interaction theories, we posit that guanxi can come in two forms: peer guanxi, which captures guanxi between an employee and his or her peers, and supervisor-subordinate guanxi, which captures guanxi between an employee and his or her supervisor. Drawing from these theories we hypothesize that peer guanxi can buffer and reduce the IT use for work→WFC effect, but that supervisor-subordinate guanxi can increase it. We hence demonstrate that while guanxi is a largely positive phenomenon, it can have "dark sides" related to IT use for work in Chinese firms. To test this theory, we conducted a survey of 485 employees in China and analyzed the data with structural equation modeling (SEM) techniques. The findings support most of our assertions and provide important insights for theory and practice.

2. Background
2.1. Guangxi

Guanxi reflects rich and complex Chinese traditions of building work relationships based on models of family relationships. It is a state that reflects the strength of psychological connections between relational entities (e.g., employees, peers, keens, supervisors); these connections involve respect, admiration, loyalty and reciprocity values (Xin and Pearce, 1996). As opposed to other relational concepts in the workplace, such as leader-membership exchange, and social interactions (Chen and Huang, 2007; Wang and Yu, 2017) it extends work-relationships beyond the work environment, and encapsulates non-work social exchange acts (Chen et al., 2013a). It is a very important aspect of work relationships in China, because in the absence of strong work-employee relationship regulations, it serves as an informal substitute that allows work environments to function (Xin and Pearce, 1996).

Guanxi can be measured on a continuum for each relationship a person has (Chen et al., 2017; Chong et al., 2018; Davison et al., 2018; Lin et al., 2018; Zhang and Hartley, 2018). Given that guanxi reflects a state of relationships between employees, their peers and supervisors, explaining the formation and effects of guanxi often draw from relationship building and management theories, such as social exchange, leader-member exchange and interpersonal trust (Chen et al., 2013a). We follow this line of work in this study and use the same theories to explain guanxi effects on digitization outcomes.

We specifically conceptualize and measure two types of guanxi. The first captures guanxi between an employee and his or her peers (peer guanxi, PGX). It is defined as a state of psychological connection that spans life domains and mixes affective and instrumental ties,
that manifests in respect, trust, mutual interests, and reciprocity between an employee and his or her peers (Chen and Peng, 2008). Good relationships that are based on guanxi values among coworkers translate into helping, caring and supporting; peer guanxi therefore enhances collaboration and coordination and ultimately organizational productivity (Chen et al., 2013a).

The second type is supervisor-subordinate guanxi (SSGX) and is defined as a state of psychological connection between an employee and his or her supervisor that spans life domains and mixes affective and instrumental ties, and which manifests in respect, affect, loyalty and deference. Supervisor-subordinate guanxi allows subordinates to get valuable information and resource, but also allows supervisors to demand more from their employees, and blur the line between work and family domains (Chen et al., 2013a). Both types of guanxi have been shown to be important in Chinese work settings (Chen et al., 2013a; Warren et al., 2004) as they can increase satisfaction and commitment (Cheung et al., 2009), and reduce turnover (Tsui and Farh, 1997).

Studies on IT and guanxi have focused on how IT employees develop guanxi with peers and supervisors (Huang and Aaltio, 2008), how IT affords communication that facilitate guanxi formation (Kraemer et al., 2008; Ou and Davison, 2016), and how the gender of the employee compared to the gender of peers and supervisors affect guanxi formation (Huang and Aaltio, 2008). Guanxi can also influence technology acceptance (Chen et al., 2017), information exchange (Davison et al., 2018), and engagement in social commerce (Lin et al., 2018). At the organizational level, it has been shown that IT systems and guanxi increase innovative capability (Zhang and Hartley, 2018). Nevertheless, the possibility that guanxi attenuates the effect of IT use for work on WFC by imposing and/or buffering demands on employees, has
not been explored, even though, as indicated in the introduction section, this possibility can have important theoretical and practical implications. As such, in the next section we theorize on this important research gap.

3. Hypotheses

While IT use for work can be beneficial for organizations, it can also have "dark sides" as it can lead to excessive use beyond working hours, preoccupation with work issues during family time, and affording spillover effects of bad mood and negative work issues to the family domain (Turel and Serenko, 2010; Turel et al., 2011). Hence, the basic premise we advance in this study is that IT use for work can, to some extent, be one driver of WFC. The logic is that some work-IT may be used anytime and anywhere; and in the absence of policies stating otherwise, can compel employees to be more connected and responsive to work issues, at the expense of family demands (Tarafdar et al., 2015). For example, employees on vacation still often have access to organizational systems; this access coupled with expectations to be responsive to work issues all the time, can serve to increase WFC (Turel et al., 2011).

This is consistent with social cognitive theory, according to which behaviors in the work environment (IT use for work) can influence the family environment (WFC) (Turel et al., 2011). Similarly, the stress induced by technology use during work time can spillover to the family domain. Since stress can have physiological manifestations, the stress IT use causes does not fully disappear once a person leaves work (Jones and Fletcher, 1993). Hence, if IT use for work serves as a stressor for some employees (see for example, Tarafdar et al., 2015), and consistent with the transaction model of stress and coping and stress spillover theories, it can transfer stress to the family domain (Grunberg et al., 1998). This spilled-over stress can also increase
WFC (Brough and O'Driscoll, 2005). Taken together, technology use for work produces varying degrees of stress among employees (Gaudioso et al., 2017; Turel and Gaudioso, 2018), and this stress can spillover to the family domain and serve as a basis for WFC (Netemeyer et al., 2005). Integrating this notion with the idea that the use of work technology in the home environment can consume family time and produce WFC (Turel et al., 2011), we posit that:

**H1:** The level of IT use for work increases work-family conflict.

We next rely on social exchange and leader-member exchange theories as applied to guanxi (Chen et al., 2013a) to suggest that the two types of guanxi in the workplace (PGX and SSGX), can have unique influences on WFC, as well as on the strength of the effect of IT use for work on WFC. Focusing on peer guanxi, it promotes harmony, reciprocity, conflict reduction, increased cooperation and information sharing among peers (Gu et al., 2008; Li, 2007; Luo and Cheng, 2015). It can hence serves as a distressing relational factor that accounts for the social support people receive at work and the extent they could count on peers to help them in work tasks, as well as with life issues (Gao and Hafsi, 2015). With high peer guanxi, the work demands that one takes home with him or her will likely be reduced; more work may be covered by peers. Moreover, given the psychological and work support from workplace peers, work will likely appear as less stressing for people with high peer guanxi. In such situations, the stress spillover to the family domain will be reduced. Ultimately, under these circumstances, there will be lower work demands (Lim and Teo, 1999) and fewer stressors that are brought by employees from the work environment to the family domain. Hence:

**H2:** Peer guanxi reduces work-family conflict.
We also expect that the effect of the level of IT use for work on work-family conflict will be diminished when peer guanxi is high. This will happen because under high peer guanxi conditions, employees can turn to peers for help with IT use issues or IT mediated work demands, in which case their workload may likely be reduced. This will happen because peers would be more prone than otherwise to help with IT-mediated and IT-related work tasks. Consequently, when peer guanxi is high, even when IT use for work is high, it may be perceived as less demanding, may consume less after-work time, and may focus on social-relational work aspects (e.g., exchanging family pictures), rather than on stressful job tasks, compared to when peer guanxi is low. Therefore:

**H3:** Peer guanxi weakens the effect of the extent of IT use for work on work-family conflict.

We next argue that supervisor-subordinate guanxi can have effects that are opposite to those related to peer guanxi. Specifically, supervisor-subordinate guanxi manifests in strong blind commitment of subordinates to supervisors, as well as heavy reciprocity of work norms, mostly with higher priority of work tasks over family matters (Yeh, 2015; Zhu and Li, 2016). When supervisor-subordinate guanxi is high, an employee will perform a work task out of respect and admiration to his or her supervisor, and not because his or her job role dictates that this is part of his or her job. Under such circumstances, we expect that employees would experience (or merely perceive) increased after-hours IT-mediated job demands and/or expectations. These increased demands and expectations can conflict with family demands and by so doing, increase WFC. Hence:

**H4:** Supervisor-subordinate guanxi increases work-family conflict.
Blindly following leaders, as manifested from strong supervisor-subordinate guanxi, can influence the strength of IT use for work effect on WFC, because IT can facilitate this behavior beyond working hours. For instance, under high supervisor-subordinate guanxi conditions, employees are more likely to use IT for work purposes to address supervisor and work demands after working hours, and put lower emphasis on family demands. High supervisor-subordinate guanxi also promotes reciprocal obligation; in the case of IT use for work it can mean for example, responding late at night to messages sent by a supervisor (Gu et al., 2008). Therefore, when supervisor-subordinate guanxi is high, one can expect that the use of IT for work will produce stronger conflicts with the demands from the family domain. This may happen either through bringing more IT-mediated work home or through stronger spillover of stress from the work to the home environment. Simply put, IT use for work may be more detrimental to the home environment demands, under high supervisor-subordinate guanxi conditions. Hence:

**H5:** Supervisor-subordinate guanxi strengthens the effect of the extent of IT use for work on work-family conflict.

4. Methods

4.1. Procedure and Sample

Surveys were employed for data collection. Scales were adapted from English to Chinese using a forward-backward translation protocol and a focus group (n=10 bi-lingual professors) in order to ensure equivalency across languages. We pilot-tested these scales with n=50 Chinese employees. Sufficient validity and reliability (alpha, average variance extracted, composite reliability and ladings >0.7; cross-loadings <0.3) were demonstrated. Next, self-reported data
were collected from employees of five Chinese organizations in Shanghai, Guangzhou, and Xiamen, in the e-commerce, pharmaceutical, electronics manufacturing, finance and education sectors. The survey was sent to senior managers (CEOs or VPs) with whom one of the researchers was acquainted. These managers were asked to send the survey to their employees (a total of 1,225). Survey completion was voluntary in all organizations. No compensation for survey completion was provided. The survey was Internet-based in the first three organizations, and paper-based in the last two; these approaches were determined based on the preferences of the managers in these organizations.

Out of the 1,225 invitees, 485 provided usable responses (39.6% response rate). Respondents included 280 (57.7%) women. The average age was 37.1 (SD=6.28). Almost half of the respondents (48.9%) were single children (this is a relevant control variable in the Chinese context, because single children can have high family demands given their need to cater to their older parents). Respondents’ level of education varied: 12.9% with high school degree, 57.1% with bachelor’s degree, and 40% with a graduate degree. Average work experience was 11.5 years (SD=3.24).

4.2. Measures

All measures were based on valid and reliable scales (see Table 1) and were captured with seven-point Likert-type scales. IT use for work was measured with four items based on an IT use measure (Turel and Bechara, 2016). Instead of focusing on general use, we asked participants to report their use of technologies for performing work-related tasks. Level of peer guanxi was captured with nine items based on the peer guanxi quality scale by Chen and Peng
(2008). Level of supervisor-subordinate guanxi was measured with the Leader-Member Guanxi (LMG) scale (Chen et al., 2013a). This scale builds on the relational-Confucian tradition and extends the traditional leader-member perspective to account also for non-work, affective and guanxi-specific aspects of supervisor-subordinate relationships: affect, loyalty, deference and professional respect. Affect captures the positive feelings a subordinate has toward the supervisor. Loyalty captures the extent to which subordinates feel that the supervisor stands by them and their actions. Deference captures perceptions regarding the amount and quality of work a subordinates puts toward goals implied by their supervisors; and respect captures the admiration a subordinate holds toward the supervisor and his or her achievements. Lastly, work family conflict was measured with five item scale by Netemeyer et al. (1996). Items and their reliability indices are presented in Table 1.

Table 1: Measures, descriptive statistics and reliability*

<table>
<thead>
<tr>
<th>Construct and Source</th>
<th>Descriptive Statistics &amp; Reliability</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT use for work</td>
<td></td>
<td>Please reflect on the last 3 months at your organization and the way you used work information technologies (e.g., computers, smartphones, email, software applications, etc.) during this period. How do you consider the extent of your information technology use for work purposes (at the office, home or elsewhere)? (1= very low, 7= very high). 1. In terms of time 2. In terms of how often you use these technologies 3. In terms of the variety of features you use in these information technologies 4. In terms of the overall intensity of use of these information technologies</td>
</tr>
<tr>
<td>(Turel and Bechara, 2016)</td>
<td></td>
<td>1. In terms of time 2. In terms of how often you use these technologies 3. In terms of the variety of features you use in these information technologies 4. In terms of the overall intensity of use of these information technologies</td>
</tr>
<tr>
<td>Peer guanxi</td>
<td></td>
<td>Please indicate your level of agreement with each of the following statements regarding your peers in your work unit/ department (1= strongly disagree, 7= strongly agree). 1. We understand each other. 2. We support each other at work. 3. We keep the other party’s interest in mind at work.</td>
</tr>
<tr>
<td>(Chen and Peng, 2008)</td>
<td></td>
<td>1. We understand each other. 2. We support each other at work. 3. We keep the other party’s interest in mind at work.</td>
</tr>
</tbody>
</table>
4. We respect each other’s point of view at work
5. We can fully communicate about the problems at work.
6. We have similar personalities.
7. We have similar interests and hobbies.
8. We trust each other.
9. We always take other’s interest in consideration.

Supervisor-
subordinate
guanxi
(Liden and
Maslyn,
1998)

<table>
<thead>
<tr>
<th>Scale</th>
<th>Second-order α</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affect</td>
<td>0.858</td>
<td>4.74</td>
<td>1.04</td>
</tr>
<tr>
<td>Loyalty</td>
<td>0.937</td>
<td>4.85</td>
<td>1.32</td>
</tr>
<tr>
<td>Contribution</td>
<td>0.732</td>
<td>4.58</td>
<td>1.09</td>
</tr>
<tr>
<td>Respect</td>
<td>0.941</td>
<td>5.03</td>
<td>1.27</td>
</tr>
</tbody>
</table>

Please indicate your level of agreement with each of the following statements regarding your work unit/department (1= strongly disagree, 7= strongly agree).

Affect
1. I like my supervisor very much as a person.
2. My supervisor is the kind of person one would like to have as a friend.
3. My supervisor is a lot of fun to work with

Loyalty
1. My supervisor defends my work actions to a superior, even without complete knowledge of the issue in question.
2. My supervisor would come to my defense if I were "attacked" by others.
3. My supervisor would defend me to others in the organization if I made an honest mistake

Deference
1. I do work for my supervisor that goes beyond what is specified in my job description.
2. I am willing to apply extra efforts, beyond those normally required, to further the interests of my work group.

Professional Respect
1. I am impressed with my supervisor's knowledge of his/her job
2. I respect my supervisor's knowledge of and competence on the job
3. I admire my supervisor's professional skills.

Work-family conflict
(Netemeyer et al., 1996)

<table>
<thead>
<tr>
<th>Scale</th>
<th>α</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work-family conflict</td>
<td>0.940</td>
<td>3.64</td>
<td>1.28</td>
</tr>
</tbody>
</table>

Please indicate your level of agreement with each of the following statements regarding your work (1= strongly disagree, 7= strongly agree).

1. The demands of my work interfere with my home family life
2. The amount of time my job takes up makes it difficult to fulfill family responsibilities
3. Things I want to do at home do not get done because of the demands my job puts on me
4. My job produces strain that makes it difficult to make changes to my plans for family activities
5. Due to work-related duties, I have to make changes to my plans for family activities.

* α = Cronbach’s alpha, M= Mean, SD= Standard deviation

5. Analysis and Results
Preliminary analyses were performed with SPSS 25. They included examination of reliability (Cronbach alpha), common method variance risk, potential differences between paper and online survey responses and the presumed normality of the dependent variable. The model was then estimated with the structural equation modeling facilities of AMOS 25 using the two-step approach, with the first step (confirmatory factor analysis; CFA) focusing on convergent and discriminant validly assessments, and the second step (structural model) focusing on structural model estimation. Second-order constructs were operationalized as reflective manifestations of the factor scores of the first-order constructs. Interaction terms were operationalized as the products of factor scores of the predictors and moderators. Because the model included a single outcome variable, it was also re-estimated with regression techniques using factor scores of all variables. In all models age and gender were employed as controls.

Two post hoc-analyses were performed in order to shed light on the findings. First, interaction plots were generated with the Interaction package (www.danielsoper.com/Interaction). We focused on +/- 1 standard deviation from the mean as indicators of high and low levels of guanxi, respectively; which is the common practice and default setting of many statistics packages (Tabachnick and Fidell, 2012). Second, the findings pointed to possible broader role of gender (3-way interaction), on which we theorize and which we test post-hoc. This three-way interaction was analyzed and plotted using tools in http://www.jeremydawson.co.uk/slopes.htm, which rely on Dawson and Richter (2006).

5.1. Results

Preliminary assessments demonstrated sufficient convergent validity and reliability (see Table
Multivariate Analysis of Variance indicated that there were no omnibus differences between the paper and online survey responses (Pillai's Trace=0.008, p<0.46); hence, data were analyzed as a whole. A Kolmogorov-Smirnov test showed that WFC follows a pattern that does not significantly differ from the normal distribution (p<0.215); hence, the use of SEM and regression techniques was appropriate. No major common method bias was detected as an exploratory factor analysis yielded the expected four factor structure, explaining 77.6% of the variance out of which the first factor explained only 31% of the variance. Further evidence of convergent and discriminate validity was provided by the CFA model that produced acceptable fit indices \[\chi^2(200) = 527.68, \text{CFI (comparative fit index)} = 0.961, \text{IFI (incremental fit index)} = 0.961, \text{RMSEA (Root Mean Square Error of Approximation)} = 0.059 (95\% \text{Confidence Interval} = 0.053-0.065), \text{SRMR (Standardized Root Mean Square Residual)} = 0.049\]. Furthermore, all loading were over 0.68 and significant at least at the p<0.001 level; no items were dropped. Hence, we proceeded to estimate the structural model. The model produced adequate fit indices \[\chi^2(275)= 701.99, \text{CFI}=0.952, \text{IFI}=0.952, \text{RMSEA}=0.057 (95\% \text{CI}=0.051-0.062), \text{SRMR}=0.048\]. The estimated standardized parameters are given in Figure 1. Regression coefficients are provided in parentheses; they confirm the structural equation model findings. Hypotheses testing results are summarized in Table 2. Considering IT use for work combined with guanxi explained 11.1% of the variance in work family conflict.
Table 2: Summary of Hypotheses Testing Results

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Description</th>
<th>Support?</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>The level of IT use for work increases work-family conflict.</td>
<td>Yes</td>
</tr>
<tr>
<td>H2</td>
<td>Peer guanxi reduces work-family conflict.</td>
<td>Yes</td>
</tr>
<tr>
<td>H3</td>
<td>Peer guanxi weakens the effect of the extent of IT use for work on work-family conflict.</td>
<td>No</td>
</tr>
<tr>
<td>H4</td>
<td>Supervisor-subordinate guanxi increases work-family conflict.</td>
<td>No</td>
</tr>
<tr>
<td>H5</td>
<td>Supervisor-subordinate guanxi strengthens the effect of the extent of IT use for work on work-family conflict.</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Findings regarding control variables were informative too. They point to gender-based differences in work-family conflict. Because men are coded as 1, they reported on average, higher work family conflict compared to women.

5.2. Post-hoc Analysis 1- Supervisor-Subordinate Guanxi Moderation

Interaction plots were generated (see Figure 2), to further shed light on the moderation effect of supervisor-subordinate guanxi. They show that at low levels of supervisor-subordinate
guanxi (-1 SD from the mean) the effect of extent of IT use for work on work family conflict is non-significant. It becomes significant at high levels of guanxi (+1 SD from the mean). Hence, supervisor-subordinate guanxi has a "dark-side "when it comes to IT use for work; it drives employees to use IT in a stressful manner and/or beyond working hours such that work family conflict is increased.

![Figure 2: Interaction Plot for Supervisor-Subordinate Guanxi](image)

5.3. Post-hoc Analysis 2- Possible 3-way Interaction

The results pointed to gender-based differences in work-family conflict. They consistently showed that men perceive higher work family conflict compared to women. After reviewing gender and stress studies (Lighthall et al., 2012; Mather and Lighthall, 2012), it became apparent that it is possible that men and women respond differently to stressors, presumably also to those associated with IT use for work and supervisor-subordinate guanxi. While women,
on average, try to avoid stressors and reduce negative outcomes, men may see them as challenges and see negative outcomes as symbols of masculinity and achievement (Turel, 2017). Moreover, guanxi can be perceived as controversial to Chinese women, and they try to avoid its influences (Xu and Li, 2015). Hence, it is post-hoc hypothesized that for women, guanxi is less influential compared to men, and consequently, for women, the effect of IT use for work on WFC is similar across different levels of supervisor-subordinate guanxi. In contrast, for men, this effect will likely be pronounced mainly when supervisor-subordinate guanxi is high. Under these conditions the slope will be steeper. This is expected because men are likely to respond to high guanxi-induced work obligations in stronger reciprocation and compliance. This view is also supported by evolutionary psychology, according to which men are more prone to collaboration and reciprocation in social tasks (Balliet, 2010; Balliet et al., 2011).

This three-way interaction was first tested with AMOS 25 by adding the three-way and two-way interaction terms to the existing model. The three-way interaction had a significant effect on work family conflict ($\beta=0.13$, $p<0.05$). The model had acceptable fit [$\chi^2 (296)= 830.17$, CFI=0.942, IFI=0.942, RMSEA=0.060 (95% CI= 0.056-0.065), SRMR=0.053]. Similar three-way interaction effects were observed using regression ($\beta=0.14$, $p<0.05$). Three-way interaction plots are provided in Figure 3. Slope difference tests indicated that slopes 1 and 3 ($p<0.000$), 2 and 3 ($p<0.022$) and 3 and 4 ($p<0.042$) are statistically different. This demonstrated that while for women, the effect of IT use for work on WFC is consistent at different levels of supervisor-subordinate guanxi, for men it is not. This effect for men in high supervisor-subordinate guanxi conditions is augmented. At the same time, it is flat in low
supervisor-subordinate guanxi conditions. All slopes differ from slope 3; while slopes 1, 2 and 4 show positive association between the extent of IT use and work-family conflict, slope 3 (for men under low supervisor-subordinate guanxi conditions) is flat.

![Figure 3: Three-way Interaction Plot*,**](image)

* SSGX= Supervisor-subordinate guanxi

** “Low” and “high” refer to 1 standard deviation below and above the mean, respectively.

6. **Discussion**

6.1. **Major Findings and Implications**

While Guanxi is a staple of Chinese society and workplaces, our findings indicate that it does not always have positive effects in relation to IT use for work, especially for male employees. The findings indicate that peer guanxi is a desirable aspect in relation to IT use for work, as it possibly alleviates employee stress and reduces the need to leverage IT to work from home during family time. Consequently, it contributes to reduction in work family conflict. In
contrast, we show that supervisor-subordinate guanxi accentuates the effect of IT use for work on work family conflict, and that this moderation effect is especially pronounced in male employees. This happens presumably because high supervisor-subordinate guanxi dictates automatic, often IT-mediated dedication beyond the normal working hours, stressful use of IT to perform the job and meet the supervisor’s expectations, and IT-mediated work reciprocation beyond working hours. Such behaviors are often at odds with the family demands of employees, they spillover stress from the work domain to the home domain, and hence promote work-family conflict. Men engage in such behaviors more than women do, because they presumably value supervisor-subordinate guanxi more than women do, process stressors differently, and have different job ambitions (Xu and Li, 2015).

The observed augmented effect of supervisor-subordinate guanxi in men lends support to the evolutionary perspective on collaboration differences between the sexes (Balliet, 2010; Balliet et al., 2011). This perspective suggests that men try to understand and reciprocate other men’s behaviors more than women do, because such reciprocation supported necessary ancestral tasks such as shelter building, defense and hunting, and was necessary for species reproduction and survival (Baker et al., 2016). As such, over time men developed different collaboration approaches compared to women for survival purposes. We show here that this may also apply to guanxi-based relational effects, and that this male tendency can be detrimental; it drives men to experience stronger work family conflict as a result of IT use for work. Future research may further examine this perspective.

Our findings ultimately point to an interesting interaction between old Chinese traditions and modern technologies. They show that guanxi, and specifically supervisor-subordinate guanxi,
can have a “dark side” as it can adversely affect work-family conflict induced by IT use for work. These findings extend recent works on the "dark side" of IT use (Tarafdar et al., 2015) to include guanxi as a factor that can have a dual effect- it reduces WFC but can also augment the translation of IT use for work into WFC. Moreover, our findings add a novel perspective to the role of guanxi in digitized environments; they explain under which conditions IT use for work is more (or less) likely to result in work family conflict.

Overall, the findings extend and provide a unique integration of the IT use for work, dark sides of IT use, and guanxi literatures. The IT use and “dark sides” of IT literatures are extended by showing how guanxi can influence the translation of IT use behaviors into negative outcomes in the family domain (work family conflict). The guanxi literature is extended by showing how guanxi, which is largely perceived as positive, can have negative outcomes in the IT use domain (i.e., strengthening the effect of IT use for work on work family conflict).

6.2. Practical Implications

Work-family conflict is an important metric to target in future intervention studies, because it has been linked to many negative outcomes, such as reduced life quality, reduced job satisfaction, increased divorce rates and increased health problems (Frone et al., 1992). Our findings show that one way to reduce work-family conflict is to reduce IT use for work. Nevertheless, this is unrealistic given the benefits it generates for firms (Wang et al., 2011). Hence, this is not a recommended path. Instead, organizations should consider limiting after hours use of work IT. Organizations may also consider training employees to use IT responsibly such that e of technology is done only when necessary.
Our findings also indicate that peer guanxi can be leveraged for reducing work family conflict. This may be achieved via team building sessions, creating an organizational culture of cooperation, rewarding helping others through pay incentives or awards, and supporting family events that advance relationships between employee families. In contrast, our findings indicate that supervisor-subordinate guanxi is detrimental to the effect of IT use for work on work-family conflict. Nevertheless supervisor-subordinate guanxi is helpful for many other aspects work in China (Gu et al., 2008; Li, 2007; Luo and Cheng, 2015). Hence, the benefits of reducing supervisor-subordinate guanxi should be weighed against the potential drawbacks of such moves (e.g., reducing harmony).

Lastly, it is interesting to consider the observed gender differences. Men suffered the most from high supervisor-subordinate guanxi. Hence, Chinese firms should concentrate on this group, and attempt to either reduce its reliance on supervisor-subordinate guanxi for performing their jobs, or provide them with services to improve their wellbeing and reduce their work-family conflict. The efficacy of all of these approaches, though, requires further research.

6.3. Limitations

First, this study focused on non-random firms in China. Future research may extend the generalizability of our findings and define their boundaries through replication with different samples and in different countries. Second, we focused on technology use as the key antecedent of WFC. Nevertheless, there can be many other predictors of WFC (Adams et al., 1996; Ahuja et al., 2007; Senecal et al., 2001). Future research can extend our model via inclusion of non-
IT-related antecedents of WFC (Byron, 2005).

7. Conclusion

China is a growing economy that heavily invests in workplace digitization. In this study we show one negative aspect of this digitization, namely increased work-family conflict among Chinese employees. We further show that this effect is partially rooted in the Chinese traditions of workplace conduct and behaviors, namely guanxi. Specifically, the findings indicate that while high peer guanxi reduces work-family conflict, high supervisor-subordinate guanxi, provides the context for stressful, reciprocal, after working hours use of IT, which increases work-family conflict. Ultimately, we show that when old traditions (supervisor-subordinate guanxi) meet new work traditions (the use of IT for work), negative outcomes such as work family conflict may emerge. This is especially pronounced in male employees. We provide several suggestions for managers, policy makers and IT developers, and call for future research to further examine the effects of guanxi on how IT is used and affects employees in Chinese firms.
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