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# ALWAYS ON DUTY? THE POSITIVE AND NEGATIVE EFFECTS OF USING MOBILE SOCIAL NETWORKING TOOLS FOR WORK

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## Abstract

*The high penetration rate of mobile internet access makes the social networking tools ubiquitous. Through social networking tools, people now can easily contact others for social purpose as well as for work purpose. As a result, mobile social networking tools are now blurring the boundary between work and family domains and creating a new work-life relationship. Using social networking tools for work provides a lot of benefits as well as some negative effects. In the paper, we develop two empirical studies to examine both the positive effects and negative effects of using social networking tools for work. Our finding indicates that using social networking tools increases group effectiveness, which results in improvement of group identity. Nevertheless, using social networking tools for work also blurs the boundary of work-life, which may raise the work load and work-home conflict. We concluded that both academics and practice should pay attention to and minimize the negative impact of increased work overload and work-home conflict induced by using social networking tools for work. Our research results also provide suggestion for future research.*

*Keywords: Mobile Device, Mobile Commerce, Social Networking Sites, Instant Messaging, Work-Family Role Blurring, Work Stress, Work-Home Conflict*

# 1 INTRODUCTION

Using mobile devices in work environments had increased work productivity and organizational flexibility (Gebauer & Shaw, 2004). With mobile devices, office workers can now receive job assignments and messages about tasks when they physically outside their office (Yun, Kettinger, & Lee, 2012). However, using mobile device and personal communication tools for work is a double-edged sword, which brings not only benefits but also some negative effects. Orlikowski (2007) revealed that workers may feel work overload owing to the continued checking and sending of emails. Yun et al. (2012) advocated that workers may gain convenience as well as stress and work-to-life conflict from using mobile devices for work.

The advantage of using mobile social networking for work purposes is obvious. With the spreading coverage mobile devices and mobile Internet access, people now stay online via their mobile device. The use of social networking tools is becoming more and more prevalent, and has become routine for most people. People now can communicate with others instantly and closely with mobile social networking tools.

There are a variety of social networking tools, such as social network sites, online chat rooms, instant messaging, etc. These social networking tools are not only for social life. Instead, an increasing number of workers use social networking tools for work purposes (Berkowsky, 2013). People can communicate with other workers by social networking tools anytime and anywhere, even if they are off work or physically outside their offices.

Mobile social network tools are useful in improving work performance. People who carry a mobile device with social networking tools can deal with duties and connect with other workers at home, when commuting, and while traveling. With the help of mobile social networking tools, work can be addressed and processed quickly, even when some workers are not physically in the office. With social networking tools, the face-to-face meeting is no longer needed to coordinate tasks. The social networking tools allow synchronous as well as asynchronous communication. The co-existence of asynchronous and synchronous communication models provides convenience and flexibility for task communication. These social networking tools may benefit teamwork in the workplace because of the convenience of communication among team members. The intensive communication among team members may help to form group identity.

Nevertheless, the use of social networking tools blurs the role boundary of work and life. With social networking tools, employees can be contracted anytime, including on leave, on vocation, during weekend and off-work hours. As a result, the on-leave workers may continually receive messages or requests from their supervisors, subordinates, colleagues, and others workers. The off-work workers have to struggle with responding the messages from office or not. If they choose to respond to the messages, they may need to spend personal time to deal with it. With the concern of furthering career development, some off-work workers may choose to respond to inquiries, responses or even orders when they are off work. However, they may feel work stress since they feel as if they are always on duty. They may also feel work overload and work-family conflict because they have to respond to work matters and even have to work when they are not in the office. Their social lives and family lives may be interrupted by work communication, which is enabled by mobile social networking tools.

In this study, we aim to explore the positive and negative effects of using social networking tools for work. We will attempt to answer following two questions:

- Will using mobile social networking tools for work improve group effectiveness and group identity?
- Will using mobile social networking tools for work lead to the perception of work overload and work-family conflict?

To answer the research questions, we developed two empirical surveys to explore workers' attitudes on the use of social network technologies for work. This article is organized as follows: Following the introduction, we further describe the literature regarding the positive effects (benefits) and negative effects (shortcomings) of using social networking technologies for work purposes. The discussed positive effects include improvement in group efficiency and group identity. Increasing perceptions of work pressure and work-family conflict are negative effects that workers experience by using social networking technologies for work. Then, we propose our research hypotheses, followed by research methods and data analysis of two empirical surveys. We conclude this paper with the contributions and recommendations for both research and practice.

## **2 LITERATURE REVIEW**

### **2.1 Social Networking Tools**

#### *2.1.1 The popularity of social networking tools*

Due to the popularity of Internet connectivity and mobile devices, people now can use a variety of social networking tools, such as social networking sites, instant messaging applications, online chat rooms, and some other online communication tools, to connect with others. Social network sites, such as Facebook, Google+ and Weibo (in China), can be used to maintain social relationships and make new friends. The instant messaging applications such as Facebook messenger, LINE, QQ (in China), Skype, and WeChat (in China) are designed to contact others through an exchange of text (Davison, Ou, Martinsons, Zhao, & Du, 2014). The communication model of instant messaging can be either synchronous or asynchronous. In a synchronous communication model, people instantly respond to others. In an asynchronous communication model, people leave messages and wait for others' responses. It is more flexible than phone communication, which is for synchronous communication only. It is also much timely than email communication, which is for asynchronous communication only. The instant messaging can be either one-on-one communication or group communication. When used for group communication, the instant messenger acts as a chat room for synchronous conferencing.

The social networking tools are designed to connect others conveniently and are available in computers as well as mobile devices, such as smartphones and tablet computers. Some social networking services, such as Facebook, integrate a variety of social networking tools as one application. Since the high penetration rate of social networking tools, people can now use it to contact others easily.

#### *2.1.2 Using social networking tools for work purpose*

Social networking tools can be used for horizontal and vertical communication in organizations (Davison et al., 2014). DiMicco et al. (2008) argued three motivations for using social networking websites in the workplace: caring (personal social connection with colleagues), climbing (personal career advancement), and campaigning (finding support for work). Social network websites can help workers to present their caring to colleagues, which contributes to maintaining personal social connections. By commenting on the profiles of senior managers and senior workers, people connect with upper management by social network sites. The connection with upper management can benefit employees' personal career advancement. Besides, workers can use social network sites to ask colleagues to support their projects or works.

The advantages of instant messengers include real-time communication, parallel messengers, understanding others' presence, and silent turn-taking in conversations (Rennecker, Dennis, & Hansen, 2006). It serves as an alternative communicative media for email and teleconferencing (Davison et al., 2014). More and more people using social networking tools to communicate with colleagues (Pazos, Chung, & Micari, 2012). DiMicco et al. (2008) argued that workers tended to use social networking

tools (such as instant messengers) to communicate with their immediate colleagues. Cameron and Webster (2005) advocated that employees use social networking tools as an additional method to reach others, increase collaboration despite distance, and decrease communication costs. Social networking tools have changed the channels through which people complete their jobs and communication.

## **2.2 Group effectiveness and social networking tools**

The ubiquitous characteristic of mobile devices and social networking tools help people to contact others easily. The mobile devices are often used to organize and coordinate activities with multiple people (Grob, Kuhn, Wattenhofer, & Wirz, 2009). Social networking tools provide an easy, accessible way to interact with other people (Pempek, Yermolayeva, & Calvert, 2009). However, the impact of social networking tools on work effectiveness is controversial. Some people argued that using social networking at the workplace wastes employees' time on personal matters or non-work-related presenteeism (D'Abate & Eddy, 2007), which will cause loss of work effectiveness (Shepherd, 2011). Nevertheless, many others believe that using social networking tools in work may lead to job performance improvement by connecting other workers instantly (Bennett, Owers, Pitt, & Tucker, 2010; Bernoff & Li, 2008; Leidner, Koch, & Gonzalez, 2010). Ali-Hassan, Nevo, Kim, and Perelgut (2011) argued that using social networking tools in the workplace can enhance employees' social capital, which will enhance job performance. Moqbel, Nevo, and Kock (2013) advocated that the use of social networking tools had a significant positive effect on job performance. They also suggested that social networking tools may balance their work-life realms, which is helpful in improving organization performance.

Social networking tools can enhance communication quality by stimulating instant reaction (Ou, Davison, Zhong, & Liang, 2010), enhancing active control (Nardi, Whittaker, & Bradner, 2000), two-way communication, and synchronicity (Nardi et al., 2000). After exploring the benefits and hindrances of using social networking tools, North (2010) advocated using it in the workplace. We also expect a positive impact on group effectiveness from social networking tools usage, since social networking tools can enhance group communication quality and allow employees to contact each other easily. Group coordination and collaboration effectiveness can be promoted with the use of social networking tools. Based on the above discussion, we propose the following hypothesis:

H1: The use of social networking tools in a work group will improve group effectiveness. The more frequency of using social networking tools in work, the more group effectiveness.

## **2.3 Group identity and social networking tools**

Group communication is often performed by members of a community existing in real life, such as sport team members, co-workers, classmates or family. Most social networking tools support chat room function, which can facilitate work group interaction and offer support for group collaboration. Using mobile devices, people now can reach other group members all the time. As a result, the differences between face-to-face and distance communication patterns are diminishing (Grob et al., 2009). Leidner et al. (2010) advocated the benefits of using social networking tools in the workplace, including a stronger sense of cultural belonging, higher morale, and a more exciting work environment. The intensive group interaction and group collaboration will promote group identity.

Social identity theory (Tajfel & Turner, 1979) has proposed that individuals will categorize themselves. People defined themselves by belonging to their group, and they would describe characteristics that are typical of the group itself. Social identity is the part of a person's self-concept derived from perceived membership in a group (Turner & Oakes, 1986). Adopting online social networking tools in the workplace helps employees to make strong contacts with their colleagues, which would foster the development of group identity. Based on the above discussion, we propose the following hypothesis:

H2: The use of social networking tools in a work group will raise group identity. The more frequency of using social networking tools in work, the more group identity.

Group identification induced a sense of unity in the group (Van Knippenberg, 2000). The psychological oneness with the group induces group members to take on the group's perspectives, goals and interests as their own (Dutton, Dukerich, & Harquail, 1994). Thus, group identity is relative to the motivation that people have to perform the group tasks, and is positively related to group performance at work (Van Knippenberg, 2000). When employees experience group identity with the work group they belong to, they are motivated to complete their duties proactively.

The strong group identity is a key for group effectiveness, which fosters teamwork through unifying group members into a socially identifiable whole. A strong group identity can prevent group members from becoming distracted by their own goals and instead keep them focused on the group's goals first (Ellemers, De Gilder, & Haslam, 2004). Van Dick, Van Knippenberg, Hägele, Guillaume, and Brodbeck (2008) showed a direct relationship between group identification and performance.

Based on the above discussion, social identity is relative to work performance and effectiveness (Ellemers et al., 2004; Van Dick et al., 2008). The use of social networking tools will raise individuals' sense of group identity, which will enhance their work performance. Thus, we propose the following hypothesis:

H3: Group identity will increase group effectiveness. The higher the group identity perception for workers, the higher the group effectiveness.

## **2.4 Work overload and social networking tools**

The omnipresence of work messages delivered by social networking tools may result in the blur of boundary of work and personal life. Social networking tools can keep users online to communicate their colleagues. The online availability indicates that people are open to contact and interrupt anywhere and anytime (Garrett & Danziger, 2007). This is a normal scenario for employees who use social networking tools in work. Previous research by Yun et al. (2012) revealed that using mobile phone to work resulted in a sense of conflict between work and life. The mobile social networking tools may worsen the work-life conflict.

Employees' social lives will be occupied by their jobs if they continually receive work messages through social networking tools during non-working hours. Employees may perceive work overload from their off-work time being interrupted by work matters via social networking tools. Thus, we argue that employees will perceive work overload when they use social networking tools for work, as the following hypothesis.

H4: The use of social networking tools in a work group will lead to work overload perception. The more frequently the social networking tools are used in work, the heavier their workload is perceived.

## **2.5 Work-family conflict and social networking tools**

### *2.5.1 Social networking tools and communicative ecology for work*

The appeal of social networking technologies changes the ways we communicate with others. The concept of communicative ecology can be used to describe the change in social communication brought by social networking technologies (Davison et al., 2014). The idea of communicative ecology refers to "the context in which communication processes occur" (Foth & Hearn, 2007), which was originally argued by McLuhan (1962). As Foth and Hearn (2007) argued, there are three layers in communicative ecology: technological, social, and discursive layers. The technological layer includes the communication media and technologies used for interaction. Social networking tools are new communication media in the technological layer. The social layer describes the people and the social structures that connect them. Social relationships of family members, relatives, friends, and workers are the social structures in the social layer. Using social networking technologies in work brings

colleagues, supervisors, subordinates and business intercourse into the social layer of communicative ecology. The discursive layer contains the content of communication. Social networking tools can be used for task assignment, coordination, and communication in the organization.

Social networking tools change all the technological, social and discursive layers of the communicative ecology. It also provides an alternative media for communication, which changes the technological layer in communicative ecology. The use of social networking technologies allows workers to communicate with other workers, which amends the social layer of communicative ecology for social communication.

### *2.5.2 Boundary between social and work communication of social networking tools*

With social networking tools, the boundary is blurred between work communication in the organization and interpersonal communication for social relationships. When we are off work, we can still keep a connection with our colleagues. The people we connect with are no longer limited to our family members, relatives, and friends when we are off work. With social networking technology, the content we communicate with others is diversifying. The communication content can be text, voice, video, shared files, and digital content. This content can be delivery synchronously or asynchronously.

The blur of boundary between work roles and family roles induced by using social networking tools may cause work-family conflict. Work-family conflict (also called work-home conflict, and work-to-life conflict) is a conflict of roles that originates from the incompatibility of behavior required for two roles in work and in family (Greenhaus & Beutell, 1985). It is an important potential side effect to the use social networking tools in work. According to boundary theory, people divide their perceived reality into a series of roles, such as work role and family role (Nippert-Eng, 1996). When individuals occupy multiple roles simultaneously, the boundary between roles is blurred and permeable (Ahuja, Chudoba, Kacmar, McKnight, & George, 2007; Anderson, Coffey, & Byerly, 2002; Carlson & Kacmar, 2000; Kreiner, 2006; Martins, Eddleston, & Veiga, 2002).

Work-family balance can result not only in improved individual performance, but also reduced absenteeism, job stress, and turnover rate (Lazar, Osoian, & Ratiu, 2010). This, in turn, eventually results in enhanced organization performance. The work-family conflict can be explained by the role boundary theory. It is confusing and difficult to distinguish one's work from one's family roles in a setting where these roles are seen as highly integrated. When people have to do their jobs at home, it is difficult to separate the home role and work role. With mobile devices, supervisors, co-workers, subordinates, and others can easily reach employees during their off-work time. Employees are expected to break from their family life to respond to work matters that arise from social networking tools. People may need several minutes or several hours to respond to the request. No matter how easy or complex the task is, it interrupts the person's family life. People may face work-family conflict when mobile devices blur the boundaries between work and family life.

Work-family conflict is exacerbated by the use of mobile devices and social networking tools. It is an important issue to reduce the work-family conflict caused by the use of social networking tools. A recent news report said that France is considering a labor regulation on the "right to disconnect" from work emails at home (Jess, 2016). However, the regulation is just a proposed idea rather than a social consensus. The regulation itself may be an obstacle to work effectiveness.

Based on the above discussion, we argue that the use of social networking tools in a work group will increase work-family conflict, as seen in the following hypothesis.

H7: The use of social networking tools for work group may blur the boundary of work role and home role, which may increase work-family conflict. The more frequently the social networking tools are used for work, the more blur the the work role and home role and the more work-home conflict is perceived.

## **3 STUDY1**

### **3.1 Participants and Procedure**

This study adopted an online questionnaire survey to test the proposed hypotheses. The questionnaire consists of four parts: The first part of the survey investigated the frequency of using online social networking tools to communicate with work partners both during the working hours and in off-work periods. Then, participants were asked to indicate their social identity to the department or working group to which they belonged. Afterward, respondents were asked to answer whether using online social networking tools resulted in better effectiveness for their department or working group. Finally, they were asked to respond to questions about work-home conflict, and work overload. This study recruited participants from an online bulletin board system PTT (telnet://ptt.cc). The measurement scale for online social networking communication was developed by the study. The measure items were "In my office hours (or after getting off work), I use Facebook or LINE to communicate about official business (or social conversation) with my department colleague." The measurement scale for group identity was adopted from Brown, Condor, Mathews, Wade, and Williams (1986). The measurement scale for group effectiveness was adopted from Jung and Sosik (2002). The measurement scales for work-home conflict and work overload were adopted from Ayyagari, Grover, and Purvis (2011). These items were selected based on the factor loading in the pre-test stages of the current study. Items with higher factor loadings were retained. All scales were measured by five-point Likert scale, with responses ranging from 1 (strongly disagree) to 5 (strongly agree).

### **3.2 Descriptive Statistics**

A total of 484 participants voluntarily joined the survey. After eliminating data with incomplete responses, 442 respondents were accepted for data analysis. The participants consisted of 190 males (42.9%) and 252 females (57.1%). In terms of age, 38% of participants were below 25 years old, 33% were 26 to 30 years old, 22% were 31 to 40 years old, 6% were 41 to 50 years old, and only 1% was over 51 years old. Of all the respondents, 24% of them had less than 1 year of work experience, 36% had 1 to 3 years, 13% had 4 to 5 years, 12% had 6 to 10 years, and 16% had more than 10 years of work experience. In addition, 72 (17%) participants had the experience of being a supervisor, while the remaining 370 (83%) did not.

### **3.3 Reliability and Validity**

All the values of Cronbach's alpha, Composite Reliability (CR), and Average Variance Extracted (AVE) scores exceeded 0.70, which is within the acceptable range. Discriminant validity was checked by comparing the correlation between two constructs and the square root of the average. Besides, all correlations among constructs are less than the square root of AVE, indicating discriminant validity among constructs is acceptable.

### **3.4 SEM analysis**

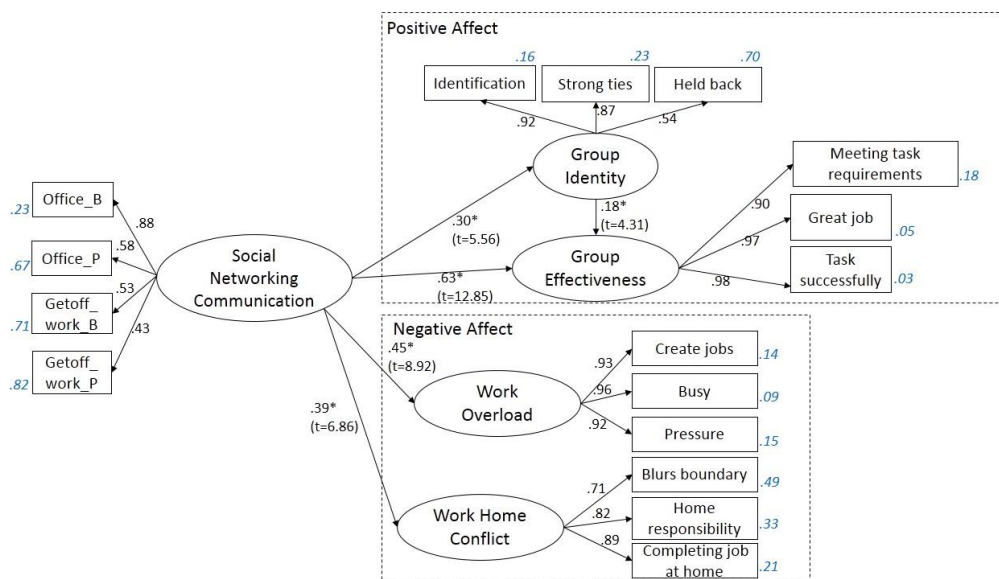
The current study used LISREL8.80 software to perform Structural Equation Modeling (SEM) analysis for the relationships among social networking communication, group effectiveness, group identity, work overload, and work-family conflict. SEM is a confirmatory data analysis, which allows researchers to use SEM to test research models and hypotheses. We used SEM to reveal whether using social networking tools for work purposes would bring positive and/or negative effects to respondents.

The SEM model results are shown in Figure 1. According to Gefen, Straub, and Boudreau (2000), the goodness of fit index (GFI), comparative fit index (CFI), normed fit index (NFI), and non-normed fit index (NNFI) are the best indices if they are above 0.90 and marginally acceptable if above 0.80, and the adjusted goodness of fit index (AGFI) above 0.80. All overall model fit indices of the current SEM model were within the accepted thresholds (GFI = .9, CFI = .96, NFI = .95, NNFI = .95, AGFI = .85).



The ratio between Chi-square and degree of freedom ( $\chi^2 / df$ ) is 4.2, the Root-Mean-Square Error of Approximation (RMSEA) is .086, and the Standardized Root Mean square Residual (SRMR) is .0097, all are within the recommended thresholds.

Figure 1 provides the overview analysis results of our hypotheses. The influence of social networking tools use on group effectiveness indicated that the more frequently social networking tools were used for work purposes the higher group effectiveness was exhibited ( $t=12.85$ ). The use of social networking tools is positively related to group identity ( $t=4.31$ ). Group identity has a positive influence on group effectiveness ( $t=5.56$ ). However, the use of social networking tools will also worsen work overload ( $t=8.92$ ) and work-family conflict ( $t=6.86$ ). Higher frequency of use of social networking tools for work is related to higher work overload and work-family conflict. Based on the SEM results, our hypotheses that the use of social networking tools for work will increase group effectiveness and social identity, and will worsen the perception of work overload and work-family conflict were supported.



Notes: N= 442; Chi-Square= 396.81.01; df= 93; CFI= 0.96; NFI= 0.95; GFI= 0.9; AGFI= 0.85; PGFI= 0.61; NNFI= 0.95; IFI= 0.96; RMSEA= 0.086

Figure 1 SEM Analysis Results

### 3.5 Cluster Analysis

The hypotheses testing results mention above reveals that using social networking tools for work may bring positive and negative impacts. To reveal individual difference among respondents, we adopted cluster analysis to divide respondents into several groups based on their perceptions of the positive and negative effects of using social networking tools for work purposes. The result of the cluster analysis indicated that the subjects can be divided into three clusters, which demonstrated the difference in positive effect and negative impact among participants.

Figure 2 clearly shows the difference among the three groups. The first group consisted of those who have both positive and negative attitudes toward the social networking tools, with a total of 182 subjects (shown in Figure 2 as orange diamonds). The mean attitude for positive effects (group effectiveness and group identity) of social networking tools use is 3.45, while the mean attitude for negative effects (work overload and work-family conflict) is 3.74 for the first group. This group as labelled “Both Positive and Negative Impact” since they hold attitudes of both high positive effect and high negative effect for the use of social networking tools for work purposes. The second group consists of 107 respondents who on average perceived the social networking tools to have a lesser impact on both work and life. The mean attitude for the positive impact of social networking tools use

is 2.7, while the mean for negative effects of social networking tools use is 1.82. They are shown in Figure 2 as green squares and named as “Low Impact.” The third group consists of 153 respondents who perceived positive impacts from the use of social networking tools. They believed the use of social networking tools might increase group identity and efficiency. The mean attitude for the positive impact is 4.04, while the mean attitude for negative impact of social networking tools use is 2.31. They are shown in Figure 2 as red triangles and named as “Positive Impact.”

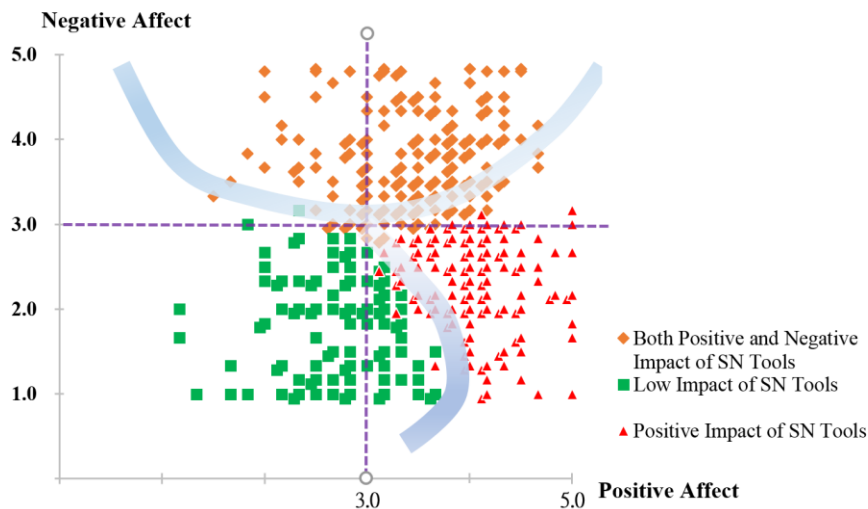


Figure 2 Cluster Analysis Results

Table 1 ANOVA Analysis Results

Variable	Group1: Positive and Negative Impact	Group2: Low impact	Group3: Positive impact	ANOVA	Post hoc test Scheffe
SNS Usage	3.26 (SD=.84)	2.21 (SD=.78)	3.4 (SD=.77)	F=77.808*	3>1>2
Positive Effect	3.45 (SD=0.63)	2.74 (SD=.52)	4.01 (SD=0.43)	F=182.446*	3>1>2
Group Identity	3.44 (SD=.73)	3.31 (SD=.78)	4.13 (SD=.47)	F=56.953*	3>1>2
Group Effectiveness	3.47 (SD=.82)	2.16 (SD=.83)	3.96 (SD=.56)	F=189.352*	3>1>2
Negative Effect	3.75 (SD=0.57)	1.82 (SD=0.58)	2.31 (SD=0.53)	F=470.330*	1>3>2
Work overload	3.94 (SD=.69)	1.86 (SD=.79)	2.92 (SD=.75)	F=310.278*	1>3>2
Work Home Conflict	3.56 (SD=.72)	1.79 (SD=.62)	2.17 (SD=.63)	F=290.622*	1>3>2

\*P<.05;

## 4 STUDY2

The study 1 found that using social networking tools for work had bring not only positive effect, but also negative effect of work overload and work-home conflict. In study 2, we focus on the negative effect as well as the boundary blur between work roles and home roles. We investigated the participants' experience about using social networking tools for work purpose during their working hours and off-work hours to figure out for work the issues of work-family role blurring, work-family conflict and work overload. The research also depicted the communicate ecology of using online social networking tools for work purpose.

### 4.1 Participants and Procedure

The study 2 adopted an online questionnaire survey composed of five parts. In the first part, respondents were asked whether they have another the personal accounts of social networking tools that the proposed of communicate with co-workers such as superiors, colleagues or subordinates. The second part included six items to assess the frequency of communication to superior, colleague, friend and family by using Facebook or LINE. In the third part, we asked participants the frequency of using

social networking tools to connect with others. In the fourth part, respondents were asked questions about work-family role blurring, including the frequency that supervisors, colleagues or subordinates contact them about work-related matters, and the frequency that participants considered they had to work during their off-work hours. Finally, they were asked to respond to questions about work-family conflict, and work overload.

We invited participants from an online bulletin board system PTT (telnet://ptt.cc). In this study, we provide 150 points virtual currency on PTT to encourage users to participate in this survey.

## **4.2 Descriptive Statistics**

In study 2, 318 participants voluntarily joined our online survey. After eliminating data with incomplete responses, 299 respondents were accepted for data analysis. The participants consisted of 164 males (55%) and 135 females (45%). In terms of age, 33% of participants were below 25 years old, 40% were 26 to 30 years old, 18% were 31 to 40 years old, 5% were 41 to 50 years old, and only 2% was over 51 years old.

## **4.3 Reliability and Validity**

In study 2, all the values of Cronbach's alpha, Composite Reliability (CR), and Average Variance Extracted (AVE) scores exceeded 0.70, which is within the acceptable range. Discriminant validity was checked by comparing the correlation between two constructs and the square root of the average. Besides, all correlations among constructs are less than the square root of AVE, indicating discriminant validity among constructs is acceptable.

## **4.4 Communication Ecology of Using Social Networking Tools for Work**

In the study, we investigate the communication ecology of using social networking tools for work purpose as well as for social life.

### *4.4.1 Technology layer*

We founded that 73.6% participants use social networking for work purpose. Among them, 14.1% participants used separate accounts for work and social purpose, while the other 59.5% participant used the same account for work and social purpose. Only 26.4% participants did not use social networking tools for work. It means that using social networking tools for work is common for most participants. The results demonstrated that social networking tools are not only for social purpose but also for work purpose.

### *4.4.2 Social layer*

Social layer refers to the target to contract with by social networking tools. We focus on two communication targets: supervisors and colleagues. Based on the survey results, 46.5% participants did not use social networking tools to contract their supervisors for work purposes. The other 11.4% participants always contract their supervisors by social networking tools during working hours. During the off work hours, 57.9% of the participants did not use Facebook or LINE to communicate with their supervisors, 23.7% seldom use social networking tools to contract their supervisors.

In addition, during the working hours, 26.1% participants did not use social networking tools to contract their colleagues. The other 19.7% seldom used social networking to contract colleagues for work purpose. However, 19.4% participants frequently used and 13% the participants always used social networking tools to communicate with their colleagues for work purposes. During off-work hours, 27.8% participants did not contract with their colleagues by social networking tools, 25.8% person seldom did, 12.4% person usually use, and 9.7% person always social networking tools to communicate with colleagues.

We asked the participants to answer the frequency of communication with supervisors and colleagues. We adopted paired-samples t-test analysis to compare the difference of using social networking tools during work hours and off-work hours. The results demonstrated that the frequency of using social networking tools to communicate with colleagues and supervisors were significant different during both working hours and off-work hours. Participants tend to communicate with colleagues than supervisors.

*Table 3 Communicate to Colleagues and Supervisor*

	Communicate to colleagues	Communicate to supervisors	t-test results
During work hours	2.74, (SD=1.376)	2.20, (SD=1.400)	t=8.212 p<0.001
During off-work hours	2.51, (SD=1.281)	1.73, (SD=1.058)	t=11.304 p<0.001

#### 4.4.3 Discursive layer

Discursive layer refers to the content of communication. The survey results showed that 21.4% the participants did not use social networking tools for work purposes. 28.4% the participants seldom did, 16.7% usually did, and 9.7% always did. 25.8% the participants did not receive work related messages from their supervisors or colleagues during work hours, 34.4% the participants seldom did, 11.7% usually did, and 5.7% always did.

During the off-work hours, 37.1% participants did not use social networking tools to communicate for work purposes, 26.8% the participants seldom did, 13.4% usually did, and 6.4% always did. 32.4% participants never receive work relative messages from supervisors or colleagues, 30.1% the participants seldom did, 13.7% usually did, and 6.4% always did.

## 4.5 Using social networking for work

### 4.5.1 Using social networking for work or not

The t-test analysis results showed the significant difference between used and did not use social networking tools for work purpose. As table 4 showed, participants who used and did not use social networking tools for work purpose had significantly different perception in work-family role blurring, work-family conflict and work overload.

*Table 4 Using social networking for work or not*

	Use SNS for work	Do not SNS for work	t-test
Work-family role blurring	2.56 (SD=1.12)	1.92 (SD=0.91)	t=5.070 p< 0.001
Work-family conflict	2.53 (SD=1.16)	1.75 (SD=0.98)	t=5.762 p< 0.001
Work overload	2.73 (SD=1.25)	2.15 (SD=1.24)	t=3.610 p< 0.001

### 4.5.2 Separate accounts for work and social purpose

Due to privacy concern, some people may have two or more accounts of social networking tools: one for work and one for social life. We test the influence of separate accounts for work and social purpose in the perception of work-family role blurring, work-family conflict, and work overload. The t-test results had demonstrated no significant difference between participants who used separate accounts and ones who used same account for work and social purpose in the perception of work-family role blurring, work-family conflict, and work overload. The results revealed that using separate accounts for work and social purpose did not decrease their work-family role blurring, work-family conflict and work overload. The frequency of using social networking tools to communicate with supervisors, colleagues, friends and family during working hours and during off work hours were also insignificant. Using separate accounts for work and for social purpose did not significantly reduce work-family role blurring, work-family conflict, and work overload perception.

## 4.6 SEM analysis

All overall model fit indices of the current SEM model were within the accepted thresholds (GFI = .91, CFI = .98, NFI = .97, NNFI = .97, AGFI = .86). The ratio between Chi-square and degree of freedom ( $\chi^2 / df$ ) is 3.52, the RMSEA is .0085, and the SRMR is .0046, all are within the recommended thresholds. Figure 3 provides the overview analysis results of our hypotheses. SNS communication is positively related to work-family role blurring ( $t=12.25$ ). Work-family role blurring is positively related to work-family conflict ( $t=14.72$ ). Work-Family role blurring is positively related to work overload ( $t=9.22$ ). Work-family role blurring will increase work-family conflict and work overload were supported.

Table 5 Separate accounts for work and social purpose

Items	Use separate accounts for work and social purpose	Use the same account for work and social purpose	t-test
Work-family role blurring	2.67 (SD=1.25)	2.54 (SD=1.08)	$t=0.716$ $p=0.475$
Work-family conflict	2.73 (SD=1.35)	2.48 (SD=1.11)	$t=1.265$ $p=0.207$
Work overload	2.92 (SD=1.39)	2.69 (SD=1.28)	$t=1.069$ $p=0.266$
During working hours			
Use SNS to contact supervisor	2.64 (SD=1.39)	2.42 (SD=1.45)	$t=0.919$ $p=0.359$
Use SNS to contact colleague	3.24 (SD=1.36)	2.96 (SD=1.30)	$t=1.258$ $p=0.210$
Use SNS to contact friends/family	3.33 (SD=1.41)	3.31 (SD=1.32)	$t=0.082$ $p=0.935$
During off-work hours			
Use SNS to contact supervisor	1.98 (SD=1.16)	1.86 (SD=1.13)	$t=0.599$ $p=0.549$
Use SNS to contact colleague	2.67 (SD=1.34)	2.65 (SD=1.26)	$t=0.068$ $p=0.946$
Use SNS to contact friends/family	4.55 (SD=0.71)	4.30 (SD=0.95)	$t=1.596$ $p=0.112$

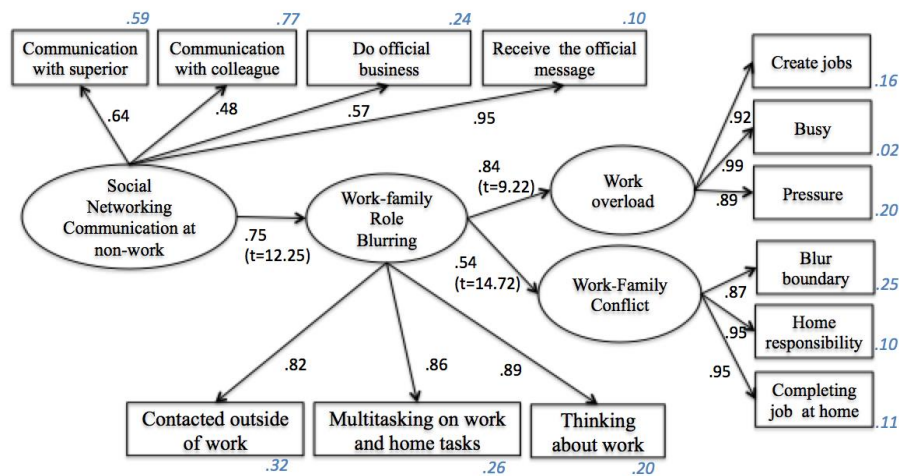


Figure 3 Cluster Analysis Results

## 5 CONCLUSIONS AND DISCUSSION

People typically used social networking tools wherever they needed to contact others such as in the office, home, school, transportation vehicle, or any other place during working hours, while commuting, on leave, during holidays, off-work time, and any other time. In the current study, we try to realize employees' perceived benefits and weaknesses of using social networking tools for work purposes. We reveal that the use of social networking tools positively influences group effectiveness and group identity. However, the negative influences of work overload and work-family conflict accompanied the positive influence. According to our results, by fostering group communication, using social networking tools for work purposes certainly increases group effectiveness. In addition, work group members who use social networking communication can improve their group identity.

Because of group identity, employees may believe that the effectiveness of their working group will improve. Nevertheless, negative outcomes also accompany the positive results. In the current study, we find that using social networking tools in work also led to work overload and change in the balance between work and family. If employees are contacted by others via social networking tools during their off-work time, they may feel as if they are always on duty. Thus, using social networking tools for work purposes may positively link with the negative feeling of work overload and work-family conflict.

The current study also found individual differences in attitudes regarding the use of social networking tools for work purposes. Some of the respondents in the current study reported positive impact of using social networking tools for work. Nevertheless, others reported negative effects of using it for work purposes. Our cluster analysis results show that the respondents can be divided into three groups based on their perceptions of the positive and negative influences of social networking use. Some respondents perceived the positive influence of social networking use, while some others perceived both positive and negative effects of social network use. The remainder believe the influence of social networking tools is trivial.

Compared to previous research, this study adds to our understanding of the positive and negative influences of using social networking tools for work purposes. The current study suggested that social networking tools not only enhance group effectiveness but also raise work stress. The previous study by Ayyagari et al. (2011) advocated the negative as well as the positive effect of using information and communication technologies to get work accomplished. They advocated that information and communication technologies are responsible for increased stress levels in individuals. Work overload and role ambiguity are found to be the two most dominant stressors brought by information and communication technologies. The current study focused on the positive and negative effect of using social networking tools for work purposes. Results of the current study reveal that using social networking tools in work communication will lead to both work effectiveness and work stress. The results of the current study support the results of Ayyagari et al. (2011) that technology may bring stress for workers.

The use of social networking tools in the workplace is omnipresent but controversial. The use of public social networking sites does enable employees to communicate and connect not only with co-workers, but also with family members and friends (Moqbel et al., 2013). From the employers' point of view, social networking tools can promote work performance. Nevertheless, workers may use social networking tools to get in touch with their personal contacts, which wastes their work time on personal matters. From the employees' point of view, social networking tools can help them to coordinate and collaborate with others, which promotes their work effectiveness. However, workers may have to respond to work-related communication when they are not in the office, which blurs the boundary between work and life. Employees may feel work pressure and work-family conflict when they are frequently contacted for business matters in their off time.

The current study focuses on the employees' views on social networking tools. They may resist social networking tools for work communication during off-work time. Nevertheless, employers or managers may hold different viewpoints on this issue. Future research should discuss the difference between attitudes of employers and managers on the use of social networking tools for work communication. Social networking tools can help workers communicate effectively with other workers. However, during working hours, employees can also use social networking tools for personal matters. By blurring the boundaries between life and work realms, social networking site use by employees might cause family and leisure issues to interfere with job responsibilities, thereby resulting in diminished job performance (Allen, Herst, Bruck, & Sutton, 2000; Kossek & Ozeki, 1999). Future research may also focus on the side effects of using social networking tools during working hours.

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