



# Improving the agility of employees through enterprise social media: The mediating role of psychological conditions



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## ABSTRACT

Enterprise social media (ESM) is an emerging platform that can help employees handle uncertainties. This study examines whether and how ESM usage is positively associated with agility performance (i.e., proactivity, adaptability, and resilience). Drawing on Kahn's framework, this study investigates the mediating effects of psychological conditions (i.e., psychological meaningfulness, psychological availability, and psychological safety). Through data collected from 167 employees who adopted ESM in the workplace, the current research validates most of the proposed hypotheses on mediating effects. It specifically validates the following claims: (1) psychological availability mediates the relationships between ESM usage and the three dimensions of agility performance; (2) psychological meaningfulness mediates the link between ESM usage and proactivity; and (3) the associations of ESM usage with proactivity and adaptability are significantly mediated by psychological safety. This study contributes to extant ESM literature through incorporating Kahn's framework in investigating the role of ESM and suggesting that managers enhance employees' psychological conditions in order to realize the value of ESM.

## 1. Introduction

Enterprise social media (ESM) is an increasingly implemented digital platform for internal communication and social interaction within an enterprise (Kane, 2015; Leonardi, Huysman, & Steinfield, 2013). For example, *Slack* is an extensively used ESM application with various social functions, such as instant messaging, open conversation, enterprise wiki, and microblogging. In 2016, it raised \$200 million in its fourth round of venture capital funding at a post-money valuation of \$3.8 billion and boasted 2.7 million daily active users (Primack, 2016). The achievement of ESM is ascribed to distinctive characteristics that set it apart from other information and communication technologies. For example, ESM users can observe other employees' conversations and distinguish their social connections, facilitating the identification and transfer of specialized knowledge (Leonardi et al., 2013). On the basis of these features, scholars report various benefits of ESM, including the improvement of information sharing, team coordination, and collective intelligence (Gibbs, Rozaidi, & Eisenberg, 2013; Kane, 2015; Kaplan & Haenlein, 2010; Ruhi & Al-Mohsen, 2015).

With such benefits, ESM can shed light on the findings of agility performance research, which focuses on an employee's ability to react and adapt to changes promptly and appropriately (Alavi & Wahab, 2013; Alavi, Wahab, Muhamad, & Shirani, 2014; Sherehiy,

Karwowski, & Layer, 2007). However, existing arguments regarding the link between ESM usage and agility performance are insufficient and controversial (Alavi et al., 2014; Kuegler, Smolnik, & Kane, 2015; Kwahk & Park, 2016; Leftheriotis & Giannakos, 2014). On one hand, ESM is considered conducive to responding to unexpected changes because it helps employees learn from colleagues about relevant knowledge (Leonardi et al., 2013; Turban, Bolloju, & Liang, 2011). On the other hand, some scholars assert that ESM reduces employee's effectiveness in sensing and reacting to market changes, as ESM could result in the abuse of Internet resources (Turban et al., 2011), an increase in absentmindedness (Turel & Serenko, 2012), and the apparent trend of groupthink (Leonardi et al., 2013). The polarity in these arguments indicates a need for further investigation into the underlying mechanisms by which ESM usage is associated with agility performance (Turban et al., 2011).

This lack of consensus regarding the relationship between ESM usage and agility performance has resulted in an increased focus on employees' psychological conditions. By using ESM, employees tend to feel their work is more meaningful, as they observe others' achievement and career growth resulting from their effort (Treem & Leonardi, 2012). With high psychological meaningfulness, employees tend to spend time and effort developing their capacity to handle unpredictable situations (Cheng & Lu, 2012). ESM also motivates employees to consider their

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readiness for market changes in terms of physical, emotional, and cognitive resources (Kügler, Dittes, Smolnik, & Richter, 2015; Leonardi, 2015; Treem & Leonardi, 2012). Agility performance is improved when employees are confident about the availability of resources that can enable them to create good responses (Higgins, 1997). ESM creates an atmosphere in which employees feel psychologically safe and willing to interact with colleagues without shyness or low self-esteem (Boyd & Ellison, 2007). Maintaining interactive relationships with colleagues enables employees to adapt to new situations (Ou & Davison, 2011). Therefore, the psychological conditions (i.e., psychological meaningfulness, psychological availability, and psychological safety) of employees serve as the mediating mechanisms in the relationship between ESM usage and agility performance.

The current study aims to investigate the relationship among ESM usage, psychological conditions, and agility performance through a survey conducted among employees in China. It contributes to extant ESM literature in three aspects. First, it examines the mixed findings on the value creation of ESM by considering intermediate variables in order to address firms' concerns over adopting ESM, as such a consideration allows them to determine if ESM serves as a facilitator or inhibitor of agility (Burrus, 2010; Turban et al., 2011). Second, this study contributes to research on agility performance by addressing the role of ESM. Although the value of employees' agility performance is widely acknowledged, efforts toward improving it are limited (Alavi & Wahab, 2013). Exploring the enabling role of ESM usage offers new insights into agility performance because ESM helps employees acquire requisite information and develop interactive social networks (Leonardi, 2014). Third, this research extends Kahn's framework of psychological conditions by applying it to ESM research. This study also provides an interesting perspective on how psychological conditions vary in accordance with different levels of ESM usage, and examines the mediating role of psychological conditions in the link between ESM usage and agility performance (Brzozowski, 2009).

The following section of the paper begins by providing a review of relevant literature. Subsequently, nine mediating hypotheses are presented. Section 3 elaborates on our research method, including the data collection process, sample demographic information, and operationalization of constructs. Section 4 presents the results of the data analysis. Section 5 discusses the results, presents theoretical and practical implications of the findings, and specifies the study's limitations. Section 6 makes a conclusion of this study.

## 2. Theoretical background and hypotheses development

### 2.1. Enterprise social media

Within an enterprise, ESM—such as blogs, social networking sites, wikis, and microblogs—refers to a new class of internet-based applications based on the ideology and technology of Enterprise 2.0 (Kaplan & Haenlein, 2010). According to McAfee (2006), Enterprise 2.0 focuses on the strategic integration of Web 2.0 technologies (i.e., platforms on which content and applications are continuously modified by all users) into an organization's intranet, extranet, and business processes, thereby allowing intensive knowledge-based collaborations. Empirical studies have validated the positive effect of Enterprise 2.0 technologies on knowledge management in organizations (Kane, Sinclair, Robinson-Combre, & Berge, 2010; Zheng, Li, & Zheng, 2010). Scholars have also investigated the sociological and technological factors affecting the use of Enterprise 2.0 technologies (Ruhi & Al-Mohsen, 2015). Although ESM pertains to Enterprise 2.0 technologies, it has its own distinct features. For instance, ESM is defined as “web-based platforms that allow workers to communicate or broadcast messages, indicate or reveal particular coworkers as communication partners, post, edit, and sort text and files linked to themselves or others, and view the messages, connections, text, and files communicated, posted, edited and sorted by others” (Leonardi et al., 2013, p.2). This

technology is popular in workplaces because it facilitates participation, conversation openness, co-creation, and socialization among employees (Panahi, Watson, & Partridge, 2012). An increasing number of firms have adopted ESM to improve employee performance because, as a socialization platform, ESM facilitates employee interaction, the development of mutual trust, and the establishment of virtual communities (Kim, Jeong, & Lee, 2010; Ou & Davison, 2011; Treem & Leonardi, 2012). Scholars have reported an enhancement of knowledge flow and work-related learning among employees after ESM adoption by firms (Cao, Vogel, Guo, Liu, & Gu, 2012; Puijtenbroek, Poell, Kroon, & Timmerman, 2014; Ravenscroft, Schmidt, Cook, & Bradley, 2012). Furthermore, ESM promotes knowledge share among workers (Fulk & Yuan, 2013; Gibbs et al., 2013) and increases awareness of peer behavior (Fulk & Yuan, 2013; Treem & Leonardi, 2012). Trust and friendship among employees has also been shown to positively correlate with an organization's uptake and usage of social media (Huang & Yen, 2003; Ou & Davison, 2011).

Yet, in addition to the affordances of ESM, some scholars have challenged its effectiveness by analyzing its negative effects. For example, Hoover (2007) considered ESM a waste of time and money because at times it fails to align its functions to workplace needs. Turban et al. (2011) similarly claimed that extensive engagement with social networking may lead to the misuse and abuse of Internet resources. ESM has also been linked to groupthink, in which conflicting perspectives are ignored (Leonardi et al., 2013). Therefore, whether or not ESM benefits employee performance remains unclear.

ESM usage refers to employees' use of ESM as a communication and socialization tool in the workplace. Employees use ESM to exchange ideas and knowledge, share documents, and expand their social networks. It has four affordances: visibility, editability, persistence, and association, all of which are effectuated by employees' use of this tool (Treem & Leonardi, 2012). Specifically, ESM enhances the visibility of employees' behavior, knowledge, preferences, and communication network connections to others in the organization. The information provided by ESM serves as meta-knowledge to help other employees gain access to specialized knowledge by revealing who knows what in an organization (Leonardi, 2014). For example, an enterprise social network service (SNS) lists the interests and hobbies of employees, thereby facilitating the development of a social network among colleagues. In addition, the enterprise SNS uses a social tagging tool to keep record of who bookmarks material on specific knowledge, thereby helping employees identify owners of specialized knowledge and skills in their organization. Therefore, the SNS renders employees' knowledge visible to their colleagues.

Editability refers to the function through which employees can craft and re-craft a communicative act before others view and modify the content. For example, users of an enterprise wiki can correct the errors in their posts so viewers can obtain accurate and cutting-edge information. As a result, the information is constantly updated and improved when it is transferred to the target audience, to whom the information is important (Razmerita, Kirchner, & Nabeth, 2014).

Persistence is demonstrated when communication remains accessible in the same form it was originally conveyed. For example, an enterprise SNS records each interaction conducted by organizational members and, as a result, task responsibility becomes traceable, and disputes can be avoided. In this way, ESM sustains and increases knowledge by recording each communication and accumulating valuable information (Treem & Leonardi, 2012).

Association in ESM refers to the established connection between entities, such as employees and content. For example, an enterprise SNS can offer employees the opportunity to find individuals with similar interests or identify potential mentors, particularly when they do not know others personally. ESM can create social ties among employees and manifest the relationship between employees and information, thereby supporting social connections and access to relevant information (Kügler et al., 2015; Kwahk & Park, 2016; Razmerita et al., 2014).

## 2.2. Agility performance

Agility is one of the foremost abilities that employees must possess (Alavi & Wahab, 2013; Breu, Hemingway, Strathern, & Bridger, 2002; Sherehiy et al., 2007). It refers to the ability of an employee to react and adapt to changes promptly and appropriately and take advantage of changes to benefit his/her firm (Alavi et al., 2014). Employees with high agility performance are comfortable with changes, new ideas, and novel technologies via commitment to continuous learning and assimilating (Plonka, 1997).

Agility performance has three dimensions: proactivity, adaptability, and resilience (Sherehiy, 2008). *Proactivity* refers to employee initiative in terms of conducting activities that positively affect the changing environment; *adaptability* involves changing or modifying oneself or one's behavior to better fit in the new environment; and *resilience* describes the ability to function efficiently under stress (Alavi et al., 2014; Liu, Li, Cai, & Huang, 2015). These three dimensions require employees to challenge themselves to extend their abilities by continuously assimilating, learning, and exploring (Alavi et al., 2014; Eshlaghy, Mashayekhi, Rajabzadeh, & Razavian, 2010; Sumukadas & Sawhney, 2004; Vinodh & Prasanna, 2011).

Scholars have recently investigated the determinants of agility performance from various perspectives (Table 1). These studies commonly emphasize employees' inherent motivations for attaining agility. Specifically, Alavi et al. (2014) considered the role of a flexible organizational structure in stimulating employees to learn and increase agility. Sumukadas and Sawhney (2004) highlighted the ways different psychological incentives encourage employees to observe their external environments and seek opportunities proactively. Sherehiy and Karwowski (2014) discussed autonomy and collaboration as strategies that encourage employees to be agile. Hosein and Yousefi (2012) revealed the significant role of psychological factors in improving agility performance, such as self-awareness, self-control, and self-motivation. The agility performance of employees who are psychologically motivated have been proved enhanced; thus, investigating the role of employees' psychological conditions is significant in this stream of research.

## 2.3. Kahn's framework of psychological conditions

Psychological conditions refer to psychological experiences of the rational and unconscious elements of work contexts. These conditions reflect the interactions of employees and their situations in an organizational environment (Kahn, 1990). In his seminal study, Kahn's (1990) framework presents three specific psychological conditions: psychological meaningfulness, psychological availability, and psychological safety. *Psychological meaningfulness* refers to the perceived value of a work goal or purpose according to an individual's own ideals or standards (May, Gilson, & Harter, 2004). It encourages employees to

become more involved in their work (Kahn, 1990; Li & Tan, 2013). *Psychological availability* is defined as the perception of having physical, emotional, or intellectual resources to perform one's tasks at work (Kahn, 1990). It reflects an employee's perceptual readiness and effectiveness at completing tasks (Kahn, 1990). Employees with psychological availability have confidence and a clear mind when they engage in a particular task at work (Danner-Vlaardingerbroek, Kluwer, Van Steenbergen, & Van Der Lippe, 2013). *Psychological safety* refers to the feeling of being able to show and employ oneself without fear of the detrimental effects on one's self-image, status, or career (Kahn, 1990). This safety allows employees to feel and embrace their colleagues' support, as well as eliminate their own negative concerns; as such, employees are motivated to sustain positive behaviors, such as openness and self-expression (Kahn, 1990; Zhang, Fang, Wei, & Chen, 2010). Existing studies demonstrated that different psychological conditions lead to various attitudes and behavioral patterns (Edmondson, 1999; May et al., 2004).

Kahn's framework of psychological conditions has been widely applied in existing scholarship as a mediating mechanism. For example, May et al. (2004) explored the determinants and mediating effects of the three psychological conditions (i.e., meaningfulness, safety, and availability) on employees engagement. Zhang, Chen, and Guo (2009) explained the relationship of tasks and conflicts as well as knowledge sharing by considering psychological conditions as intermediate variables. Furthermore, Li and Tan (2013) focused on the link between trust and performance among supervisors by exploring the mediating effects of psychological conditions.

Similarly, Kahn's framework has yielded new insights on the relationship between ESM usage and agility performance. Psychological conditions are indispensable in the process of understanding the internal dynamics that drive employees to complete tasks and achieve proactivity, adaptability, and resilience in agility performance. ESM operates as a platform that improves the frequency and efficiency of interaction, thereby affecting employees' psychological conditions (Leonardi et al., 2013; Treem & Leonardi, 2012). To achieve agility, employees must be self-motivated and highly involved in their work (Deci & Ryan, 2000; Sumukadas & Sawhney, 2004). Thus, in addition to considering ESM's unique features, Kahn's framework can serve as an interpretive model through which to explore the role of psychological conditions in the relationship between ESM usage and agility performance. Fig. 1 depicts the research model of this study.

## 2.4. Mediating effect of psychological meaningfulness

*Psychological meaningfulness* refers to the feeling one receives in experiencing a return on investment of oneself in a currency of physical, cognitive, or emotional energy (Kahn, 1990). Work is perceived to be meaningful when it is considered worthwhile, valuable, or conducive to professional or personal growth (Brown & Leigh, 1996; Kahn, 1990).

**Table 1**  
Overview of studies on the determinants of agility performance.

Study	Purpose	Determinants
Alavi et al. (2014)	To develop and empirically test a theoretical model of the influence of two organizational characteristics, namely, organizational learning and organizational structure on workforce agility	Organizational learning; Organizational structure
Hosein et al. (2012)	To investigate the relationship between emotional intelligence and agility of the workforce to determine how the indicators of emotional intelligence facilitate agility at the individual level	Self-awareness; Self-control; Self-motivation; Empathy; Social skill
Sherehiy and Karwowski (2014)	To explore the effect of agile strategies on work organization and employee performance	Agility strategy; Work organization
Sumukadas et al. (2004)	To examine a range of practices by applying an employee involvement lens To develop a unique conceptualization of how these practices interact to promote workforce agility	Supportive employee involvement practices: Information sharing; Training; Salary/Skill-based pay; Improvement incentives; Nonmonetary incentives; Team-based production incentives
Hopp and Van Oyen (2004)	To assessing and classify manufacturing and service operations in terms of their suitability for use of cross-trained (flexible) workers	Cross-training skill pattern; Worker coordination; Team structure

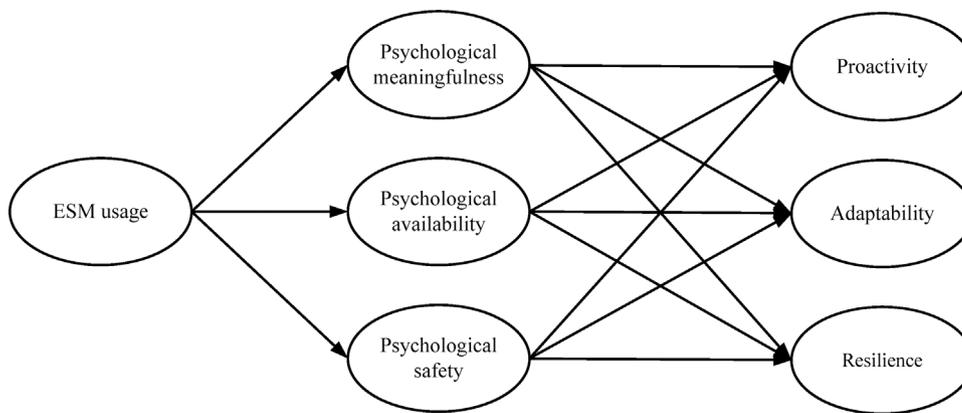


Fig. 1. Conceptual model.

Note: \* shows significance at the 0.05 level, and \*\* shows significance at the 0.01 level.

Meaningfulness is highly dependent on how employees place value on their work in accordance with their own ideals and standards (Renn & Vandenberg, 1995).

We propose that ESM has the potential to enhance employees' psychological meaningfulness. Specifically, ESM's affordance of association enables employees to develop social connections and emotional ties within an enterprise. Using ESM, employees can connect with others who hold similar mindsets through social network maps and recommendation systems (Leonardi et al., 2013). These connections facilitate informal communities that can improve psychological meaningfulness by enhancing employees' affective commitments to one another (Treem & Leonardi, 2012). In addition, the editability of ESM motivates employees to feel a sense of psychologically meaningfulness through professional experience (Kahn, 1990). As mentioned, ESM enables employees to spend considerable time and effort crafting a communicative act before making it available for others to view, which allows for purposeful knowledge sharing, clear personal expression, and the development of high-quality information (Treem & Leonardi, 2012). The persistence of ESM further ensures a constant access to knowledge. Employees can learn from their colleagues and effectively perceive the significance of their work, thereby anticipating promising career growth (Brown & Leigh, 1996; Kahn, 1990). When employees perceive working for an organization to be worthwhile, a strong sense of psychological meaningfulness ensues (Geldenhuis, Laba, & Venter, 2014).

The relationship between psychological meaningfulness and an employee's agility performance is generally hypothesized as positive. Scholars claim that employees are primarily motivated to seek meaning in their work (Geldenhuis et al., 2014). Moreover, psychological meaningfulness offers a strong, sustainable, intrinsic motivation to engage employees in tasks and work roles (May et al., 2004). In this sense, employees are willing to untangle the difficulties of a volatile environment and are motivated to spend time and effort developing their capacities to deal with unpredictable situations (Cheng & Lu, 2012). Accordingly, we propose the following hypotheses:

**H1a.** Psychological meaningfulness mediates the relationship between ESM usage and proactivity.

**H1b.** Psychological meaningfulness mediates the relationship between ESM usage and adaptability.

**H1c.** Psychological meaningfulness mediates the relationship between ESM usage and resilience.

## 2.5. The mediating effect of psychological availability

*Psychological availability* refers to an employee's belief that they have physical, emotional, or cognitive resources with which to work (May et al., 2004). This psychological condition captures the extent to which employees perceive themselves capable of coping with the

physical, emotional, and cognitive demands of their work (Kahn, 1990). Physical demand is the most basic demand; it requires strength, stamina, and flexibility in completing tasks. Emotional demand impinges on an employee's spiritual status and mood while performing activities. Cognitive demand refers to the knowledge and skills learned by employees to perform complex tasks.

We propose that utilizing ESM may enhance psychological availability by promoting physical, emotional, and cognitive readiness. The affordance of association enables employees to build connections easily and communicate regardless of distance; that is, ESM allows employees to save time and energy to meet people, thereby reducing physical effort (Grudin, 2006; Kügler et al., 2015). Moreover, this affordance supports informal communities and contributes to positive emotions in workplaces (Treem & Leonardi, 2012). ESM also serves as a "leaky pipe" due to its affordance of visibility, which displays others' behavior and knowledge to employees (Leonardi et al., 2013). Employees can accumulate cognitive resources by accessing knowledge and identifying the people who possess the specialized knowledge and skills they need (Leonardi, 2015). ESM can improve the physical, emotional, and cognitive resources of employees; thus, the relationship between ESM usage and psychological availability is positive.

Employees who are confident about their capacities generally perform well when responding to market changes. In perceiving the abundance of resources available to them, they become confident in handling changes in their workplaces (Binyamin & Carmeli, 2010). In such cases, they become ambitious and show willingness to explore and address potential problems that may cause rigidity (Higgins, 1997). Confident employees are more inclined to change their current statuses to adapt to market changes (Griffin & Hesketh, 2003). Furthermore, even when confronted with failure or frustration, employees with high psychological availability can stay calm and devise strategies to deal with difficulties to ensure the successful completion of their tasks (Danner-Vlaardingerbroek et al., 2013; Li & Tan, 2013). In conclusion, we assume ESM usage enhances psychological availability, which promotes agility performance. Therefore, we propose the following hypotheses:

**H2a.** Psychological availability mediates the relationship between ESM usage and proactivity.

**H2b.** Psychological availability mediates the relationship between ESM usage and adaptability.

**H2c.** Psychological availability mediates the relationship between ESM usage and resilience.

## 2.6. Mediating effect of psychological safety

*Psychological safety* refers to the perception that "people are comfortable being themselves" (Edmondson, 1999, p.354) and that they

feel “able to show and employ oneself without fear of negative consequences to self-image, status, or career” (Kahn, 1990, p.708). It describes an individual’s perception of the consequences of interpersonal risks in their work environments (Kark & Carmeli, 2009). In psychologically safe environments, employees feel confident that the interpersonal environment is unthreatening and that they will not be embarrassed or punished for expressing themselves (Zhang et al., 2010).

This study assumes that using ESM is conducive to psychological safety. Scholars claim that the main barrier to achieving psychological safety stems from the anticipation that self-expression will result in undesirable outcomes (Lyu, 2016; Zhang et al., 2010), including harm arising from opportunism, neglect of an individual’s interests by others, and identity damage during social interactions (Williams, 2007). These potential threats induce employees to feel unsafe and reluctant when expressing their real ideas unless they are assured that the possibility of disagreement is relatively low (Detert & Burris, 2007). The association affordance of ESM facilitates employee interaction via various modes (Kügler et al., 2015; Kuegler et al., 2015; Treem & Leonardi, 2012). An interactive environment comes to be when ESM tools are used to help employees acquaint themselves with their workplaces (Boyd & Ellison, 2007). Moreover, the visibility affordance of ESM cultivates an open climate in terms of information transparency (Treem & Leonardi, 2012). Employees feel psychologically safe in this climate due to mutual trust established among employees (Detert & Burris, 2007; Tynan, 2005). In general, ESM cultivates a trusting atmosphere in which employees feel safe when expressing their true selves and ideas at work.

In the current study, the link between psychological safety and agility performance is regarded as positive. Psychological safety results in self-engagement, which encourages employees to explore and proactively seize emerging opportunities (Kark & Carmeli, 2009). Moreover, with this sense of safety, employees are willing to pursue their career goals and adjust to changing environments without embarrassing or threatening others (Edmondson, 1999; Edmondson, Bohmer, & Pisano, 2001). This sense of safety can also discourage groupthink and promote flexibility by helping employees express their opinions, even under pressure (Detert & Burris, 2007; Edmondson, 1999). Therefore, psychological safety enables employees to seize opportunities, adapt, and think independently, which consequently improves their agility performances. In general, we hypothesize the mediating role of psychological safety as follows:

**H3a.** Psychological safety mediates the relationship between ESM usage and proactivity.

**H3b.** Psychological safety mediates the relationship between ESM usage and adaptability.

**H3c.** Psychological safety mediates the relationship between ESM usage and resilience.

### 3. Methodology

#### 3.1. Sample and data collection

We designed a questionnaire survey to test our hypotheses. A questionnaire survey was adopted instead of laboratory experiments for data collection to capture the essence of a natural work environment. The study was conducted in China because of the increasing popularity of ESM in the country. According to a report of Towers Watson, a leading professional services consulting company, employees in Chinese companies are widely accepting ESM as a digital tool for communication based on its cost effectiveness. Of the respondents in the report by Towers Watson, 49% claimed that they established a sense of belonging through ESM.<sup>1</sup> Additionally, involving employees in China

as respondents also yielded interesting insights and augmented extant ESM studies, the bulk of which have been conducted in Western countries (Gibbs et al., 2013; Leftheriotis & Giannakos, 2014; Treem, Dailey, Pierce, & Leonardi, 2015).

In this study, we collaborated with several companies that have adopted ESM at work. These companies invested in ESM and expected corresponding returns. We explained the purpose of the current research and agreed to send them a report, as well as provide suggestions upon finishing the study. As such, these companies were willing to participate in our research. The ESM adopted by sample firms in the study comprised public and private social media platforms. The public social media platforms Weibo, WeChat, and Renren provide standard and reliable services at a low cost. The private social media platforms such as Yammer, Jingao, and Mingdao, offer customized and advanced services to fulfill the demands of companies for a certain charge. To confirm the usage of ESM in the workplace, we randomly interviewed several employees before distributing questionnaires. Moreover, eligible respondents were from departments that require frequent communication and constant learning, such as R & D, marketing, and administration.

Copies of the questionnaire were sent to 251 eligible respondents. After questionnaires were distributed, follow-up phone calls were made, and reminder e-mails were sent out to encourage participants to respond. Moreover, as we were concerned about the returns on adopting ESM, managers provided substantial support for our research and expected a report. The managers’ collaborative attitudes generally improved response rates. In four weeks, 188 questionnaires were returned. A total of 21 questionnaires were incomplete, and consequently discarded. At the end of the data collection period, 167 valid questionnaires were analyzed, resulting in a response rate of 66.53%. Following Armstrong and Overton (1977), we tested the potential non-response bias by comparing the first and final 25% of respondents on all variables using a chi-square test. The results indicated no significant differences, suggesting that the non-response bias was not a critical issue in this study.

However, it’s important to note that the supportive attitude of managers may have lead to the positive bias toward ESM usage among respondents. We took three initiatives to address this issue. First, we confirmed the research goal with managers, as we wanted them to understand our purpose was to determine whether and how ESM usage creates value in their company, rather than endorse the positive effects of ESM. All managers agreed with this objective and demonstrated similar goals. Second, managers only helped identify eligible respondents. We distributed questionnaires ourselves and were identified as researchers from a university. Third, we included instruction at the beginning of the questionnaire to clarify that the questionnaire was designed to understand how teamwork functions in the workplace. Furthermore, we emphasized the anonymity of the survey. Table 2 presents the demographic information of the sample.

#### 3.2. Measures

All constructs were measured using items adapted from existing literature. As all the respondents were Chinese, we needed to translate the English questionnaire to Chinese. Accordingly, we invited three native Chinese speakers proficient in English but not involved in the study to help us translate the English questionnaire into Chinese. The questionnaire was then translated back into English by three experts unfamiliar with the original English questionnaire. No semantic discrepancies were observed between the translated English version and the original. Thus, the Chinese questionnaire was considered to accurately reflect the meaning of the original English questionnaire in testing the constructs in this study. Furthermore, brief descriptions of the relevant constructs were provided in the questionnaire to ensure that all the respondents understood these constructs. All items were measured using a 5-point Likert scale, which ranged from (1) “strongly

<sup>1</sup> Source: <http://www.hroot.com/contents/6/263152.html>.

**Table 2**  
Sample demographic information.

	Percentage
Gender	
Male	67.66
Female	32.34
Work experience	
< 1 year	8.98
1–2 years	11.98
3–4 years	14.97
5–6 years	22.75
> 6 years	41.32
Age	
21–30 years old	49.70
31–40 years old	44.91
41–50 years old	5.39
Education	
College degree or below	14.37
Bachelor's degree	68.86
Master's degree or higher	16.77
Position	
Team member	72.46
Team leader	27.54

disagree” to (5) “strongly agree.”

The measurement items for psychological conditions—namely, psychological meaningfulness, psychological availability, and psychological safety—were adopted from the scale of May et al. (2004). Respondents rated six items under psychological meaningfulness, five items under psychological availability, and four items under psychological safety. Psychological meaningfulness was assessed via the value of a work goal or purpose in accordance with an individual's ideals and standards. Psychological availability was reflected in an individual's confidence in their ability to handle competing demands and problems, think clearly, display appropriate emotions, and cope with the physical demands of work. Psychological safety was reflected in the feeling of being able to express one's opinions, be oneself, and accept differences and skills at work, as well as the feeling that one's talents are valued and utilized. The dependent variable, agility performance, was reflected in three dimensions: proactivity, adaptability, and resilience (Alavi et al., 2014). *Proactivity* refers to employees' initiative toward conducting activities that result in improvements, identify effective approaches to tasks, manage responsibilities, and determine new ways to acquire and utilize resources at work. *Adaptability* encompasses changing one's behavior, accepting critical feedback, adjusting to new work procedures, using new equipment, and modifying oneself to fit a new environment. *Resilience* describes employees' efficiency when functioning under stress in the face of environmental changes as well as instances of failure in adopting new strategies and solutions. To measure the construct of ESM usage, we adopted a universal method for measuring the usage of IT artifacts (e.g., knowledge management systems and instant messengers) (Ou & Davison, 2011). The items in our research reflect the frequency of using ESM for contact and communication, asking questions, answering questions, sharing files, and work-related socialization. The survey items and related literature are specified in Appendix A. Three control variables—age, work experience, and education level—were considered in the research model. We assumed these variables might be associated with agility performance.

#### 4. Data analysis and results

We selected LISREL as the tool for data analysis. LISREL is based on structural equation modeling and “uses covariance structure analysis and estimates parameters in the model by attempting to reproduce the observed covariance or correlation matrix using maximum likelihood in most cases” (Chau, 1997, p.315). It is suitable for the current research

for three key reasons. First, the proposed model of this research is based on Kahn's theoretical framework, and LISREL has a theory-oriented focus (Jöreskog & Wold, 1982). Second, LISREL contains fit indices for validating measurement models and offers a set of measurement validation tools that other methods do not (Rönkkö & Evermann, 2013). Third, LISREL can accurately estimate path coefficients, a particularly important feature for testing hypotheses in this study (Sheng-Hsun, Wun-Hwa, & Ming-Jyh, 2006). Although the sample size is less than 200, existing studies have justified that the given model can be accurately tested with a small sample (Sideridis, Simos, Papanicolaou, & Fletcher, 2014; Wolf, Harrington, Clark, & Miller, 2013).

##### 4.1. Common method bias

All data in the current study were perceptual and collected from a single source at one point in time. Checking for a possible common method bias was achieved using Harman's one-factor test. The results showed that the test can categorize the items into seven constructs with eigenvalues greater than 1.0, thus accounting for 68.51% of the variance. The first construct did not account for the majority of the variance (12.59%). This analysis indicated that common method bias would not be an issue in our data. The fit of the one-factor model and that of the measurement model were compared using LISREL. The results showed that the fit of the one-factor model ( $\chi^2 = 2750.54$ , d.f. = 652, RMSEA = 0.153, CFI = 0.84, IFI = 0.84, NFI = 0.80, and NNFI = 0.82) was considerably worse ( $p < 0.01$ ) than that of the measurement model ( $\chi^2 = 1056.66$ , d.f. = 541, RMSEA = 0.076, CFI = 0.93, IFI = 0.93, NFI = 0.89, and NNFI = 0.92). These results further indicated that the common method bias was unlikely to occur in our dataset.

##### 4.2. Measurement model

Confirmatory factor analysis (CFA) was employed to assess the validity of the scales. The CFA results indicated that the fit between the measurement model and dataset was satisfactory ( $\chi^2 = 1056.66$ , d.f. = 541, RMSEA = 0.076, CFI = 0.93, IFI = 0.93, NFI = 0.89, and NNFI = 0.92). The loadings of all the items were higher than the suggested benchmark of 0.70. Cronbach's alpha, composite reliability of constructs, and average variance extracted (AVE) were assessed to test convergent validity. As shown in Table 3, the Cronbach's alphas ranged from 0.73 to 0.92 and were considerably higher than the benchmark value of 0.70. The values of composite reliability ranged from 0.83 to 0.94 and were above the benchmark value of 0.70. The AVE scores ranged from 0.51 to 0.71 and were above the benchmark value of 0.50. These results indicated that the convergent validity of the measurement model was satisfactory. Table 4 shows that none of the correlations between the constructs were higher than the square roots of the AVEs; thus, the requirement of discriminant validity was satisfied. As shown in Table 5, all items loaded well onto their corresponding constructs and poorly onto other constructs. These test results suggested good

**Table 3**  
Results of the confirmatory factor analysis.

	Items	Cronbach's alpha	Composite reliability	AVE
ESM usage	6	0.915	0.935	0.705
Psychological meaningfulness	6	0.913	0.932	0.697
Psychological availability	5	0.824	0.880	0.596
Psychological safety	4	0.746	0.840	0.569
Proactivity	5	0.760	0.839	0.512
Adaptability	6	0.815	0.868	0.525
Resilience	4	0.729	0.830	0.552

**Table 4**  
Means, standard deviations, and correlations.

	Mean	SD	1	2	3	4	5	6	7	8	9	10
1.ESMU	3.64	0.99	0.84									
2.PSM	3.67	0.75	0.44	0.83								
3.PSA	4.04	0.54	0.20	0.43	0.77							
4.PSS	3.96	0.61	0.19	0.37	0.70	0.75						
5.PRO	4.20	0.55	0.32	0.46	0.63	0.61	0.72					
6.ADA	3.98	0.56	0.27	0.37	0.62	0.65	0.56	0.72				
7.RES	3.72	0.55	0.22	0.32	0.40	0.31	0.36	0.47	0.74			
8.AGE	NA	NA	-0.20	-0.19	-0.06	0.03	-0.15	0.07	0.09	NA		
9.EXP	NA	NA	-0.27	-0.26	0.01	0.05	-0.11	0.05	0.04	0.68	NA	
10.EDU	NA	NA	0.10	0.16	0.05	0.06	0.27	-0.02	-0.07	-0.36	-0.49	NA

Note: The diagonal elements are the square roots of the AVEs.

discriminant validity. Therefore, the measurement model possessed adequate convergent validity, discriminant validity, and reliability.

As several inter-construct correlations in Table 4 were higher than the benchmark value of 0.60, we conducted an additional test to address the potential issue of multicollinearity. In this test, the variance inflation factor (VIF) and tolerance values for each construct were analyzed. The rule of thumb in checking for the existence of multicollinearity is whether the VIF values are greater than 10, or if the tolerance values are less than 0.10. The results showed that the highest VIF was 2.47, and the lowest tolerance value was 0.41. Consequently, multicollinearity is not a significant problem in our dataset.

### 4.3. Structural model

The structural model satisfactorily fit with the dataset ( $\chi^2 = 1279.19$ , d.f. = 633, RMSEA = 0.078, CFI = 0.92, IFI = 0.92, NFI = 0.87, and NNFI = 0.90). The result is shown in Fig. 2. The structural equation model was initially used to test the mediating hypotheses. Specifically, ESM usage had a positive and significant link with psychological meaningfulness ( $\beta = 0.54$ ,  $p < 0.01$ ), availability ( $\beta = 0.27$ ,  $p < 0.01$ ), and safety ( $\beta = 0.24$ ,  $p < 0.05$ ). Psychological meaningfulness was positively linked with proactivity ( $\beta = 0.19$ ,  $p < 0.05$ ) and resilience ( $\beta = 0.24$ ,  $p < 0.05$ ), but not with adaptability ( $\beta = 0.03$ ,  $p > 0.05$ ). Thus, H1b was rejected at this stage. Psychological availability was positively correlated with all dimensions of agility performance ( $\beta = 0.58$ ,  $p < 0.01$  for proactivity;  $\beta = 0.37$ ,

**Table 5**  
Item loadings and cross-loadings.

Construct	Items	ESMU	PSM	PSA	PSS	PRO	ADA	RES
ESM usage (ESMU)	ESMU1	0.836**	0.340**	0.229**	.209**	0.347**	0.270**	0.177*
	ESMU2	0.850**	0.345**	0.127	.154*	0.253**	0.245**	0.111
	ESMU3	0.872**	0.349**	0.156*	0.133	0.246**	0.145	0.144
	ESMU4	0.852**	0.435**	0.225**	.206**	0.314**	0.279**	0.278**
	ESMU5	0.826**	0.335**	0.166*	0.149	0.251**	0.204**	0.216**
	ESMU6	0.800**	0.425**	0.102	0.105	0.222**	0.220**	0.158*
Psychological meaningfulness (PSM)	PSM1	0.279**	0.806**	0.354**	0.270**	0.346**	0.324**	0.310**
	PSM2	0.429**	0.859**	0.279**	0.305**	0.354**	0.295**	0.285**
	PSM3	0.339**	0.844**	0.427**	0.327**	0.418**	0.352**	0.294**
	PSM4	0.366**	0.838**	0.319**	0.278**	0.325**	0.268**	0.196*
	PSM5	0.430**	0.862**	0.348**	0.347**	0.448**	0.336**	0.283**
	PSM6	0.372**	0.798**	0.399**	0.325**	0.384**	0.251**	0.283**
Psychological availability (PSA)	PSA1	0.121	0.365**	0.774**	0.569**	0.528**	0.493**	0.310**
	PSA2	0.174*	0.367**	0.831**	0.588**	0.606**	0.546**	0.291**
	PSA3	0.097	0.272**	0.825**	0.612**	0.526**	0.513**	0.309**
	PSA4	0.094	0.208**	0.723**	0.477**	0.356**	0.439**	0.224**
	PSA5	0.283**	0.421**	0.693**	0.438**	0.422**	0.411**	0.418**
Psychological safety (PSS)	PSS1	0.102	0.215**	0.564**	0.786**	0.392**	0.590**	0.232**
	PSS2	0.166*	0.383**	0.532**	0.795**	0.495**	0.547**	0.306**
	PSS3	0.133	0.269**	0.593**	0.704**	0.461**	0.442**	0.164*
	PSS4	0.171*	0.249**	0.412**	0.727**	0.486**	0.371**	0.268**
Proactivity (PRO)	PRO1	0.244**	0.379**	0.407**	0.438**	0.676**	0.280**	0.288**
	PRO2	0.125	0.317**	0.553**	0.459**	0.733**	0.405**	0.324**
	PRO3	0.328**	0.348**	0.389**	0.394**	0.763**	0.341**	0.175*
	PRO4	0.235**	0.316**	0.448**	0.485**	0.744**	0.523**	0.266**
	PRO5	0.225**	0.262**	0.465**	0.396**	0.654**	0.464**	0.229**
Adaptability (ADA)	ADA1	0.178*	0.385**	0.363**	0.473**	0.394**	0.633**	0.271**
	ADA2	0.340**	0.361**	0.460**	0.401**	0.427**	0.668**	0.173*
	ADA3	0.134	0.215**	0.503**	0.569**	0.426**	0.763**	0.376**
	ADA4	0.181*	0.171*	0.438**	0.443**	0.417**	0.764**	0.472**
	ADA5	0.189*	0.253**	0.498**	0.538**	0.472**	0.749**	0.321**
	ADA6	0.150	0.194*	0.444**	0.382**	0.307**	0.755**	0.434**
Resilience (RES)	RES1	0.092	0.189*	0.230**	0.143	0.115	0.274**	0.757**
	RES2	0.233**	0.167*	0.232**	0.174*	0.295**	0.368**	0.810**
	RES3	0.109	0.380**	0.344**	0.282**	.325**	.325**	0.706**
	RES4	0.204**	0.241**	0.391**	0.355**	0.330**	0.434**	0.692**

Note: \* shows significance at the 0.05 level, and \*\* shows significance at the 0.01 level.

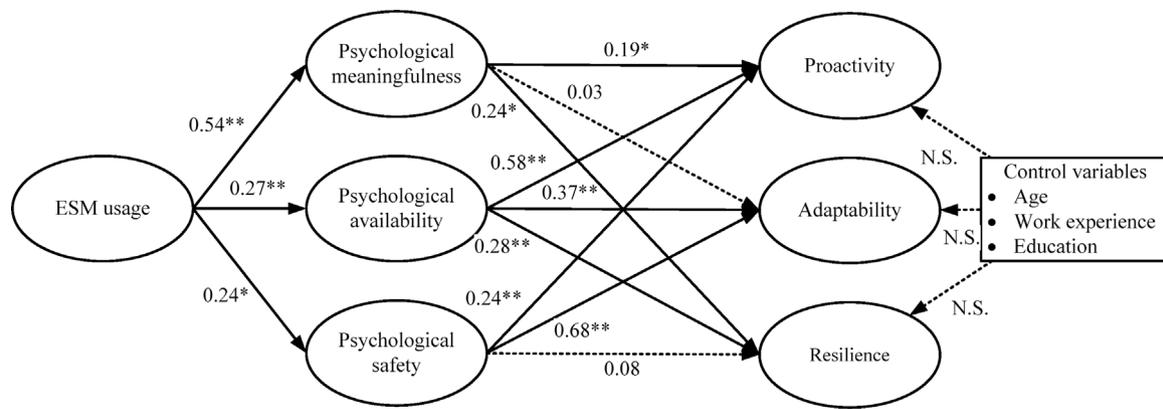


Fig. 2. Results of structural equation model.

$p < 0.01$  for adaptability;  $\beta = 0.28$ ,  $p < 0.01$  for resilience). Psychological safety was positively associated with proactivity ( $\beta = 0.24$ ,  $p < 0.01$ ) and adaptability ( $\beta = 0.68$ ,  $p < 0.01$ ), but not with resilience ( $\beta = 0.08$ ,  $p > 0.05$ ). Consequently, H3c was unsupported. Additionally, the three control variables (age, work experience, and education level) were not significantly related to agility performance.

4.4. Mediating effect tests

We employed two approaches to test the mediating effects of the three psychological conditions. First, we adopted the bootstrap sampling method (bootstrap sample size = 5000) recommended by MacKinnon, Lockwood, and Williams, (2004) to generate the asymmetric confidence intervals (CIs) for indirect relationships. Compared to traditional models like the Sobel test, the bootstrap CI approach generates a relatively accurate estimation because it produces asymmetric CIs for indirect relationships by using the respective distributions of two regression coefficients that comprise a product term (MacKinnon et al., 2004). Table 6 shows the results of the mediating effects. Psychological meaningfulness mediated the relationship between ESM usage and proactivity because the CI (0.01, 0.07) did not include zero. Thus, H1a was supported. By contrast, psychological meaningfulness cannot mediate the relationship between ESM usage and adaptability, nor the relationship between ESM usage and resilience, because the CIs contained zero. Therefore, H1b and H1c were rejected. The mediating effects of psychological availability on proactivity, adaptability, and resilience were supported, with CIs of approximately (0.01, 0.08). Accordingly, H2a, H2b, and H2c were supported. The mediating roles of psychological safety on proactivity and adaptability, as proposed in H3a and H3b, were supported. However, the 95% CI of its mediating effect on ESM usage and resilience link was (-0.02, 0.04), which included zero. As such, H3c was unsupported. In summary, based on results from the bootstrapping mediation test, H1b, H1c, and H3c were unsupported.

Table 6 Results of the bootstrapping method for mediation.

	IV	M	DV	Effect of IV on M (a)	Effect of M on DV (b)	Direct effect (c')	Indirect effect (a*b)	Total effects (c)	95% CI	Result
H1a	ESMU	PSM	PRO	0.335**	0.107*	0.077*	0.036**	0.181**	(0.008, 0.074)	Supported
H1b	ESMU	PSM	ADA	0.335**	0.027	0.067	0.009	0.154**	(-0.029, 0.054)	Unsupported
H1c	ESMU	PSM	RES	0.335**	0.106	0.048	0.036*	0.121**	(-0.006, 0.088)	Unsupported
H2a	ESMU	PSA	PRO	0.111**	0.340**	0.077*	0.038**	0.181**	(0.012, 0.081)	Supported
H2b	ESMU	PSA	ADA	0.111**	0.310**	0.067	0.034**	0.154**	(0.009, 0.080)	Supported
H2c	ESMU	PSA	RES	0.111**	0.295**	0.048	0.033**	0.121**	(0.007, 0.081)	Supported
H3a	ESMU	PSS	PRO	0.115*	0.270**	0.077*	0.031**	0.181**	(0.007, 0.070)	Supported
H3b	ESMU	PSS	ADA	0.115*	0.382**	0.067	0.044*	0.154**	(0.010, 0.092)	Supported
H3c	ESMU	PSS	RES	0.115*	0.039	0.048	0.004	0.121**	(-0.020, 0.036)	Unsupported

Note: \* shows significance at the 0.05 level, and \*\* shows significance at the 0.01 level.

We used the method suggested by Baron and Kenny (1986) to test whether the supported mediating effects were full or partial. Three kinds of relationships are significant for a valid mediating effect: (1) the relationship between independent variable and dependent variable, (2) the relationship between independent variable and mediator, and (3) the relationship between mediator and dependent variable controlled by the independent variable. If the relationship between independent variable and dependent variable controlled by mediator is insignificant, the relationship is fully mediated. Otherwise, it is partially mediated. Table 7 shows the results of the Baron and Kenny mediation test, which supported most of the hypotheses except H1b, H1c, and H3c. This result is consistent with that of the bootstrapping mediation test, indicating the robustness of the hypothesis testing. With regard to the type of mediation, the mediating effects hypothesized in H2b, H2c, and H3b were full mediation. The three other mediating effects (H1a, H2a, and H3a) were partial mediation.

5. Discussion, implications, and limitations

5.1. Discussion

The empirical data of the current study support most of the hypothesized mediating effects. Valuable insights can come from further investigating the three unsupported hypotheses and inferring the underlying reasons. First, the relationship between psychological meaningfulness and adaptability is insignificant; that is, the mediating role of psychological meaningfulness in the link between ESM usage and adaptability is unsupported. This unexpected result may be attributed to the characteristics of adaptability. Employees are required to alter their working behavior depending on external changes to achieve adaptability (Pulakos, Arad, Donovan, & Plamondon, 2000; Sherehiy, 2008). The constant change in behavioral mode actually undermines employees' identities in their work. With psychological meaningfulness, employees are confident and satisfied with their jobs and unwilling to

**Table 7**  
Results of the Baron and Kenny method for mediation.

	IV	M	DV	IV- > DV	IV- > M	IV + M- > DV		Mediation
						IV- > DV	M- > DV	
H1a	ESMU	PSM	PRO	0.32**	0.44**	0.14*	0.14*	Partial
H1b	ESMU	PSM	ADA	0.27**	0.44**	0.12	0.04	No
H1c	ESMU	PSM	RES	0.22**	0.44**	0.09	0.14	No
H2a	ESMU	PSA	PRO	0.32**	0.20**	0.14*	0.33**	Partial
H2b	ESMU	PSA	ADA	0.27**	0.20**	0.12	0.30**	Full
H2c	ESMU	PSA	RES	0.22**	0.20**	0.09	0.29**	Full
H3a	ESMU	PSS	PRO	0.32**	0.19*	0.14*	0.30**	Partial
H3b	ESMU	PSS	ADA	0.27**	0.19*	0.12	0.41**	Full
H3c	ESMU	PSS	RES	0.22**	0.19*	0.09	0.04	No

change passively to accommodate the external environment (Cohen-Meitar, Carmeli, & Waldman, 2009).

Second, psychological meaningfulness cannot mediate the relationship between ESM usage and resilience. To achieve resilience, employees are expected to think independently of a clear strategy to deal with unpleasant situations (Sherehiy, 2008; Sumukadas & Sawhney, 2004). However, the meaningfulness gained from using ESM originates in the opinions and comments of other colleagues. In such cases, employees tend to concern themselves with others' thoughts in ways that disempower them from developing their own ideas (Leonardi et al., 2013). Consequently, the psychological meaningfulness gained from ESM usage cannot improve resilience because it constrains independent thinking.

Third, the link between psychological safety and resilience is insignificant; that is, the mediating effect of psychological safety on the relationship between ESM usage and resilience is unsupported. This unanticipated result may be attributed to the requirement of independent thinking to demonstrate resilience (Sumukadas & Sawhney, 2004). A high level of psychological safety is manifested in an atmosphere of harmony, interdependence, and mutual concern. Employees in such situations are expected to consider others' feelings before taking actions (Edmondson, 1999). In stressful, changing situations, employees must decide and perform actions efficiently to attain resilience (Sherehiy & Karwowski, 2014). Thus, psychological safety can hardly be positively related to resilience.

Among the six supported mediating effects, three were found to be full mediation. Specifically, psychological availability fully mediated the relationships between ESM usage and adaptability and between ESM usage and resilience. This result indicates that the development of self-confidence effectively transmits the positive influences of ESM usage on both adaptability and resilience. Psychological safety likewise fully mediates the link between ESM usage and adaptability. This result indicates that employees become adaptable when they feel psychologically safe. With a sense of safety acquired from using ESM, employees can implement changes in accordance with the demand of external environments.

## 5.2. Theoretical implications

The current study makes several contributions to extant literature. First, our research provides new insights into how ESM creates value by investigating the role of the psychological conditions of employees. As an emerging Enterprise 2.0 platform, ESM has attracted the attention of numerous scholars (Kane, 2015; Leonardi et al., 2013; Treem & Leonardi, 2012). However, different opinions still exist in terms of whether ESM is conducive to employee performance (Leonardi et al., 2013; Turban et al., 2011). This research provides insights into the framework of psychological conditions, validating the claim that ESM creates value in employees' agility performances through the influences of psychological conditions (Kahn, 1990). The results of the data analysis provide detailed information about this mediating

mechanism. Specifically, psychological meaningfulness becomes invalid when the outcome variables are adaptability and resilience. The positive effect of ESM usage on resilience cannot be transmitted by psychological safety. Unsupported mediating effects reveal that ESM still has features that are incompatible with agility development (Leonardi et al., 2013; Sumukadas & Sawhney, 2004). These unsupported mediating effects also confirm the necessity of considering the dimensions of psychological conditions and agility performance reported in existing studies (Kahn, 1990; Sherehiy, 2008).

Second, our research advances knowledge on how the agility performances of employees can be improved by examining the role of both ESM and psychological conditions. Despite the well-recognized value of workforce agility, investigations on how to develop agility are limited. As Alavi et al. (2014) claimed, "little empirical research on the agile workforce has been conducted" (p.6273). Our study attempts to address this limitation by exploring the roles of ESM usage and psychological conditions. The results imply that adopting cutting-edge IT artifacts is necessary to improve agility and that psychological conditions should be emphasized when leveraging advanced technologies. Thus, agility performance can be achieved when firms consider both technical and psychological factors.

Third, our research extends the framework of Kahn (1990) to ESM research. Empirical evidence shows that ESM significantly improves employees' psychological conditions in completing tasks and that it consequently enhances agility performance. However, this study shows that some proposed mediating effects are insignificant. Overall, these results highlight the need for caution in applying traditional theoretical frameworks to interpret phenomena in the context of Enterprise 2.0 (Kaplan & Haenlein, 2010; McAfee, 2006).

## 5.3. Managerial implications

In this subsection, practical suggestions are provided to practitioners. In view of the prevalence of ESM, investigating how this new IT tool can be leveraged is important to identifying its value to companies (Kuegler et al., 2015; Kwahk & Park, 2016; Leonardi et al., 2013). The current study aims to encourage managers to focus on employees' psychological conditions when harnessing ESM. As such, our managerial suggestions cover psychological meaningfulness, availability, and safety.

First, we suggest that managers leverage ESM to help employees align their goals with their work experience in order to enhance their capacities for proactivity. For example, managers can motivate employees to set goals for themselves and post them on ESM. The completion of a goal is shown when employees use ESM to remind them that their work is closely related to their goals. In project management, this alignment can also be achieved when managers post everyone's tasks and contributions. Employees perceive fairness and meaningfulness when information is transparent.

Second, managers should pay considerable attention to building employees' confidence in their abilities by adopting ESM. On one hand,

managers could maximize the work-related functions of ESM—such as telecommunication, wikis, and knowledge maps—to enhance the employees’ abilities in handling their work. Companies can hold seminars, trainings, and workshops to teach employees how to leverage ESM in accomplishing tasks at work. On the other hand, some actions could be implemented to improve the perception of employees in terms of their own abilities. For example, ESM could be designed to highlight users’ strengths in certain aspects. Managers could also motivate employees to praise the achievements of their coworkers in order to develop their confidence through the broadcasting function of ESM.

Third, a friendly and comfortable atmosphere should be established when using ESM to improve agility performance. Encouraging employees to use ESM for socialization is equally important. Managers should allow employees to develop their own interest groups through the matching function of ESM. A certain amount of chats and posts that are unrelated to work should also be tolerated because this form of socialization helps employees relax and create a harmonious work environment.

In summary, our findings demonstrate that the current investment in ESM is insufficient to achieving good agility performance. Managers should take appropriate steps to leverage ESM toward improving the psychological conditions and, consequently, the agility performances of their employees.

5.4. Limitations

The limitations of this study must be identified in order to determine possible directions for future research. First, we collected data in China. Although China is an ideal representation of an emerging economy, it has unique characteristics in terms of values, beliefs, and behavior, which may result in biased findings. For example, in Chinese organizations, many tasks are accomplished through close personal relationships, which are relatively instrumental compared with those in Western contexts. Future studies are advised to apply the conceptual framework used in the current study to other countries with different economic, political, and cultural environments to test whether this framework is still applicable. Another sampling issue is that we only considered the jobs in which IT tools are used for frequent communication and constant learning. In fact, for certain job positions (e.g., machinery operator, restaurant waiter/waitress, and housekeeper), ESM is not required, and, as such, its role may be different. Future research can investigate whether and how the role of ESM varies across different types of jobs. Moreover, our sample size is relatively small for structural equation modeling. Although recent studies justified the eligibility of small samples (Sideridis et al., 2014; Wolf et al., 2013) and existing IS literature adopted LISREL to analyze samples of less than 200 (Kim & Malhotra, 2005; Sabherwal, Jeyaraj, & Chowa, 2006; Vickery, Droge, Stank, Goldsby, & Markland, 2004), we still call for larger samples to improve the statistical power of structural equation modeling.

Second, the questionnaire is self-reported, which is inherently

Appendix A. Measurement items

Constructs and measurement	Sources	Loading	Scale
ESM Usage			
1. I often use ESM to contact other people for my work.	Ou and Davison (2011)	0.837	Likert 1–5 Scale
2. I regularly use ESM to communicate with colleagues or customers in my daily work.		0.851	
3. The frequency of usage of ESM to do the following things in my daily work is ask questions.		0.876	
4. The frequency of usage of ESM to do the following things in my daily work is answer questions.		0.853	
5. The frequency of usage of ESM to do the following things in my daily work is share files.		0.825	
6. The frequency of usage of ESM to do the following things in my daily work is work-related socialization.		0.794	

subjective. Although self-reported assessments are reasonable for ESM usage and psychological conditions, these instruments may generate biased results in measuring agility performance (Hopp & Van Oyen, 2004). Scholars are advised to measure performance by using archival data and evaluations from supervisors to minimize possible biases. Although the analysis results did not demonstrate that common method bias was a serious problem in this study, we urge future researchers to utilize objective data or collect data from multiple informants.

Third, the operationalization of ESM usage could be further improved. Although the current measure reflects the frequency of using ESM for different purposes in the workplace, it can be improved by including the different affordances of ESM. Future researchers are advised to operationalize this construct to capture the usage of the different affordances of ESM and to offer detailed insights into the influencing mechanism of ESM. Alternatively, it would be interesting to consider the difference among specific ESM tools. Future studies to this effect are advised to probe into the differences among these types of ESM and figure out their different roles in workplaces.

Fourth, we merely considered psychological conditions as mediators in this study. The weak indirect effect of ESM usage on agility performance also indicates the possibility of other mediators. As such, investigating other potential mediators may provide additional insights into this issue. For example, social connectedness, or pursuit of the development of a personal social network to achieve a feeling of belongingness (Lee & Robbins, 1995), is considered a mediating factor between social software and work performance (Kügler et al., 2015). Aside from investigating other mediating factors, investigating the boundary conditions in the ESM usage–agility performance relationship may be worthwhile and interesting. Scholars may be able to determine when ESM positively or negatively affects agility performance. Additional investigations on this topic are encouraged to provide a thorough understanding of this phenomenon.

6. Conclusions

The current study examines how ESM usage is associated with employees’ agility performances. The mediating role of employees’ psychological conditions (i.e., meaningfulness, availability, and safety) were explored based on the theoretical framework of Kahn (1990). The empirical data supports most hypotheses, showing that employees’ psychological conditions are important in transmitting the value of ESM to agility performance. However, the relationship between ESM usage and employees’ adaptability cannot be mediated by psychological meaningfulness. Indeed, the value of ESM cannot be transferred to employees’ resilience through psychological safety and meaningfulness. This study contributes to extant ESM literature by incorporating Kahn’s framework to discuss the intermediating role of psychological conditions in realizing the value of ESM. Additionally, managers are advised to keep an eye on employees’ psychological conditions to better leverage the benefits provided by ESM toward improving their agility performances.

Psychological meaningfulness			
1. My job activities are personally meaningful to me.	May et al. (2004)	0.803	Likert 1–5
2. The work I do on this job is meaningful to me.		0.862	Scale
3. My job activities are significant to me.		0.845	
4. The work I do is very important to me.		0.838	
5. The work I do on this job is worthwhile.		0.864	
6. I feel that the work I do on the job is valuable.		0.795	
Psychological availability			
1. I am confident in my ability to handle competing demands at work.	May et al. (2004)	0.782	Likert 1–5
2. I am confident in my ability to deal with problems that come up at work.		0.840	Scale
3. I am confident in my ability to think clearly at work.		0.837	
4. I am confident in my ability to display the appropriate emotions at work.		0.712	
5. I am confident that I can handle the physical demands at work.		0.673	
Psychological safety			
1. I'm not afraid to express my opinions at work.	May et al. (2004)	0.802	Likert 1–5
2. I am not afraid to be myself at work.		0.814	Scale
3. I accepted each other's differences.		0.680	
4. Working in this team, my unique skills and talents are valued and utilized.		0.713	
Proactivity			
1. I look for the opportunities to make improvements at work.	Alavi et al. (2014)	0.665	Likert 1–5
2. I am trying to find out more effective ways to perform my job.		0.739	Scale
3. I let time take care of things that I have to do.		0.779	
4. At work, I stick to what I am told or required to do.		0.751	
5. I find new ways to obtain or utilize resources when resources are insufficient to do my job.		0.633	
Adaptability			
1. In my work, I can change my behavior to work more effectively with other people.	Alavi et al. (2014)	0.600	Likert 1–5
2. In my work, I can accept critical feedback.		0.647	Scale
3. In my work, I can adjust to new work procedures.		0.771	
4. Use new equipment at work.		0.779	
5. Keep up-to-date at work.		0.758	
6. I can quickly adapt to switch from one project to another.		0.771	
Resilience			
1. I am able to perform my job efficiently in difficult or stressful situations.	Alavi et al. (2014)	0.771	Likert 1–5
2. I am able to work well when faced with a demanding workload or schedule.		0.831	Scale
3. When a different situation occurs, I react by trying to manage the problem.		0.689	
4. I drop everything and take an alternate course of action to deal with an urgent problem.		0.671	

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