

The Effect of Perceived IS Support for Creativity on Job Satisfaction: The Role of *Effective IS Use* in Virtual Workplaces

Research in Progress

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Abstract

Organizations increasingly utilize various IT to reduce boundaries, secure users' explicit and tacit knowledge, facilitate information sharing and connect human capital regardless of their geographically dispersed locations and cross-level unit structures. The core competency of information technology/systems (IT/IS) use is essential to maintain the effective functioning of virtual workplaces. While IS research has examined creativity in virtual workplaces, it has given little attention to how the relationship between creativity and job satisfaction may be altered as a consequence of its effective use in virtual workplaces. The roles of effective IS use in virtual workplace contexts have not been explicitly modeled to understand how and why effective IS use and creativity influence job satisfaction. This study examines the effect of creativity concepts by using perceived IS support for creativity as a proxy via effective IS use and compares such effect in two different work settings. Our model provides a basis for identifying the effect of perceived IS support for creativity on IS-related concepts and for understanding how it plays out in virtual workplace contexts in terms of employee creativity.

Keywords: Creativity, effective IS use, job satisfaction, virtual workplace

Introduction

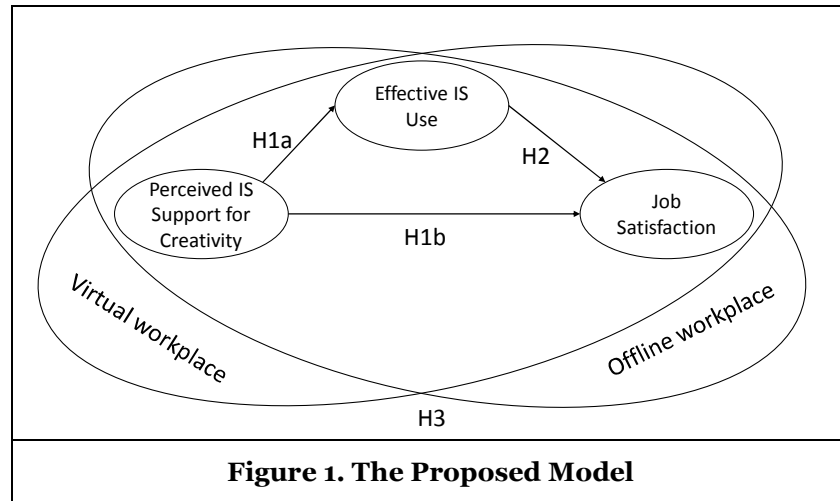
Organizations have increasingly utilized various IT to reduce boundaries, secure users' explicit and tacit knowledge, facilitate information sharing and connect human capital regardless of their geographically dispersed locations and cross-level unit structures. Thus, extending the traditional form of a team structure, work teams in contemporary business settings have evolved to where/such that users increasingly collaborate with physically dispersed team members. This location-independent

collaboration has become an important strategic priority for organizations (e.g., Dew and Hearn 2009). It is worth noting that the introduction and implementation of various communication tools and technologies in workplaces enable organizations and teams to not only mitigate the barriers of time and space but also to add flexibility and resilience to overcome physical distance and separation (Kahai 2012; Purvanova and Bono 2009). As a result, these so-called virtual teams have become more attractive and popular. Members in virtual teams work independently and interdependently in different time zones, geographic locations and/or cross-functional situations. Virtual teams exhibit high levels of efficiency and task-oriented features while simultaneously enhancing the flexibility of time and space, labor forces and other resources compared to traditional face-to-face teams. The core competency of information technology/systems (IT/IS) use is essential for virtual teams to function effectively (Kahai 2012). On the other hand, since virtual teams are not physically located at the same place and time, their communication relies heavily on IT/IS and electronic means with minimal face-to-face interactions. IT/IS dependency may trigger users to become less productive due to a lack of opportunity to display their performance and creative behaviors. Thus, integrating knowledge and various perspectives of human capital into problem-solving processes is crucial for organizations to generate creative solutions to various business problems (e.g., McDonough et al. 2001; Townsend et al. 1998). This successful integration of resources can depend upon how effectively users utilize their IT/IS under given circumstances. Such efforts can enhance creativity and innovation, which will eventually become a competitive edge (Amabile 1988; Magadley and Birdi 2009). Given IT-mediated communication as well as the presence of distance among team members, it is essential to identify the creative performance of and expectations for effective IS use that nicely cope with the distance-related nature of virtual workplaces.

It is surprising, however, that little is known about creativity-related factors (i.e., employees' *perception of IT/IS support for their creativity*) that may enhance their effective IS use. Understanding the way employees perceive that IS supports their creativity is important to job performance and satisfaction. Although there have been some theoretical attempts to identify cognitive processes related to creativity (Amabile and Mueller 2008; Drazin et al. 1999; Drazin et al. 2008), delving into the relationship between perceived IS support with an angle of creativity and job satisfaction is critical since creativity is known as one of the consequences of individual performance (Alge et al. 2006). It is equally important to note that the role of effective IS use in virtual workplace contexts has not been explicitly modeled to understand how and why creativity and effective IS use are related to and influence job satisfaction. While IS research has examined creativity in virtual teams (e.g., Martins and Shalley 2011), it has given little consideration to how the relationship between creativity and job satisfaction may be altered as a consequence of effective IS use in virtual workplaces. This gap leads to a further examination of whether users' belief of IS support for creativity affects effective IS use by examining it in different contexts (i.e., virtual workplaces vs. offline workplaces).

Specifically, the primary research questions are as follows: (1) Does perceived IS support for creativity affect virtual workers' job satisfaction? (2) What is the role of *IS use* in this relationship? (3) Given the effects of different work environments, which circumstances lead to better job satisfaction? In responding to the second question, in particular, we focus on the potential mediating effect of *effective IS use* on the relationship. These research questions point toward an overall goal of the current study, which is to examine the psychological process of the relationship between users' perception of IS support for creativity and users' effective IS use. Specifically, this study examines the effect of creativity concepts by using *perceived IS support for creativity* via *effective IS use* by comparing two different work settings (i.e., virtual work vs. offline work). Accordingly, we propose a model of effective IS use that focuses on two key issues presented in Figure 1. The first focal issue is the factors associated with *effective IS use* and *perceived IS support for creativity*. The second issue is the relationship between *effective IS use* and employees' *job satisfaction*. Our model provides a basis for identifying the effect of creative perception on IS-related concepts and for understanding how it plays out in a virtual workplace context in terms of job satisfaction.

Theory and Hypotheses Development



Perceived IS support for Creativity

Our theoretical ground is based on the notion that *habitual IS use* may affect creativity (Glăveanu 2012). In other words, *habitual IS use* may lead employees to perceive that IS can support and increase their creativity. In non-volitional contexts, employees are required to repeatedly use their IS to conduct their job regardless of their preference, because repeated IS use is almost always embedded within larger, frequently practiced, higher-level routines or task sequences (Polites and Karahanna 2013). This indicates that characteristics of the systems (e.g., IS qualities, perceived usefulness, IS satisfaction, or even ease of use) are not likely to affect employees' choice of IS use. As a result, this repeated IS use is likely to become 'habit' (Limayem et al. 2007; Ortiz de Guinea and Markus 2009), since employees initially carry out their behaviors consciously and intentionally "overlearn" as a consequence of being frequently repeated over time (Deci 1980), especially in non-volitional contexts.

Thus, repeated IS use increases familiarity with the information systems, and employees are likely to perceive IS as a way to enhance their creativity. For example, habits are commonly understood as "learned sequences of acts that become automatic responses to particular situations, which may be functional in obtaining certain goals or end states" (Verplanken et al. 1997, p. 540). The argument underlying this relationship with habit is based on expertise. According to Ericsson's (1999; 2003) theory of expertise, an improvement in performance is a result of constantly raising the difficulty of the exercise and thus engaging in activities that require incremental development. Dalton (2004) suggested that creativity is not just a reaction to the interruption of previously successful routines but can be the result of conscious attempts at improving habitual actions. Users habitually respond to problems in fresh and novel ways, rather than allowing themselves to respond mindlessly and automatically (Sternberg 2012). Thus, "habit can become an actual foundation for creative action" (Dalton 2004, p. 609). Therefore, based on the logic above, this study predicts that *habitual IS use* is a substantial factor of perceived IS support for creativity and effective IS use.

In theorizing and exploring the view that *perceived IS support for creativity* (hereafter PSC) encourages employees to perform creative behaviors, we expect that employees' tendency to seek new ways to enhance their creative behaviors will in part be determined by their beliefs about their organizational work environments. Building individual behavior in this situation is supported by the theory of reasoned action. Under a particular situation, if an individual believes that something is useful, then he/she would have an attitude toward it and eventually act under his/her belief (Fishbein and Ajzen 1975). This theory has been widely applied to the IS area (e.g., TAM) to explain the issue of why users intend to use. Prior research has shown that IS helps improve employee performance by providing a perception of IS as an important factor (Davis et al. 1989; Igarria et al. 1995). Eventually, perceived IS usefulness ends up encouraging users intent to use or use of their systems.

Consistent with the theoretical articulation above, we expect that employees' perception that IS supports their creativity will encourage using IS effectively. To hypothesize the relationship, we define *PSC* as the extent to which an employee perceives that IS stimulates, helps and motivates him/her to exhibit creativity. However, the concept of *PSC* is different from *perceived IS usefulness* in two ways. First, unlike *IS perceived usefulness*, which refers to "the degree to which the stakeholder believes that using a particular system has enhanced his or her job performance, or his or her group's or organization's performance" (Seddon 1997, p. 246), *PSC* focuses on users' belief about how their particular information systems are supportive of improving their creativity and further creative behaviors to execute tasks. Second, *PSC* increases due to repeated use of systems while *perceived IS usefulness* draws on the systems' use intention. For example, from the perspective of *perceived IS usefulness*, once a user perceives their system as useful for their work, they would intend to use it. This guarantees their intention to use, but it does not guarantee their intention for effective use. Thus, in order for a user to intend to use effectively, critical aspects are necessary/needed for them to recognize their system as supportive for their work.

In this study, we propose that users' perception of IS support for their creativity will make them use it more effectively, which in turn will be critical to increase their creative behaviors [i.e., the extent to which employees generate novel and useful ideas regarding procedures and processes at work (Oldham and Cummings 1996; Shalley 1991)]. Users with *PSC* are more likely to use IS effectively. Since users' perception that the system is supportive of their creativity results from their previous experience, whether or not they use the systems effectively would be relied on *PSC*. By incorporating IS to address problems that occur in the face of their tasks, they will accumulate *PSC*, leading to more effective use of their systems. Therefore,

Hypothesis 1a: *Perceived IS support for creativity is positively associated with effective IS use.*

We posit that *PSC* increases job satisfaction for two reasons. First, users may attempt to be creative when they perceive that creativity is valued and supported by an organization (Scott & Bruce 1994). At the same time, engaging in behaviors such as creativity can be costly for an organization member (Zhou and George 2001). Thus, when users perceive positive support/outcomes, the potential risk associated with creativity is minimized and the perception that creative ideas are effective should be high (Zhou and George 2001). Second, before engaging in creative behavior, *PSC* can give employees confidence to act. In fact, employees resist engaging in creative behaviors when they perceive creative attempts might be unsuccessful due to risks associated with new ways (Ford 1996). Thus, employees only try to do so when they perceive that creativity has the potential to be effective (Hirschman 1970). If employees perceive that IS is sufficiently useful to support their creative activities, they are more likely to find effective ways to incorporate the systems into the job. In this way, the systems would be satisfactory since employee input is meaningful and influential (Amabile and Gryskiewicz 1987; Scott and Bruce 1994; Siegel and Kaemmerer 1978).

We expect that in this case, *PSC* could act as a facilitator for users to enact creative behaviors. Past research showed that job environment (i.e., IS support) is an important factor in creativity and increased job satisfaction (See, Shalley et al. 2000; Valentine et al. 2011). For example, when creative requirements of the job were complemented by the work environment, users had higher job satisfaction (Shalley et al. 2000). Runco (1995) found that having a creative personality and working in a climate associated with creative performance made an important contribution to artists' job satisfaction. When users perceive that they work around IS that is supportive of their creative work, they have high job satisfaction. Gallivan (2003) also found linkages between the subjects' creative styles and their job satisfaction, and innovators had a higher level of job satisfaction than adapters among software developers. In view of this research, we propose that *PSC* is likely to result in increased job satisfaction.

Hypothesis 1b: *Perceived IS support for creativity is positively associated with job satisfaction.*

Effective IS Use

Information systems use' is defined as the user's behavior of using the system (Seddon 1997). Since it was suggested by DeLone and McLean, the concept of *IS use* has been widely accepted in IS research as a principal criterion for assessing organizational performance resulting from the usage of information systems (Rai et al. 2002). Although a variety of conceptualizations have been offered among IS

researchers, the core concept of information systems success is an indicator of the degree of organizational performance that is triggered by the usage of information systems (Hamilton and Chervany 1981; Raymond 1985). In order to capture system success, IS researchers have used *IS use* (DeLone and McLean 1992; Rai et al. 2002; Seddon 1997). According to Seddon, *IS use* can be measured in various ways such as hands-on hours, hours spent analyzing reports, frequency of use or use/non-use.

However, despite the importance of the concept itself in IS research, there have been controversial issues around using 'IS use'. First, given the context where IS is heavily employed in contemporary organizations, *IS use* might not properly represent 'information systems successes' because IS use is mandatory for employees. As a result, IS use as a proxy for IS success could be a misleading measure of IS success (Robey 1979; Welke and Konsynski 1980). Indeed, prior research has indicated that when use of a system is mandatory, *IS use* might not be able to capture IS success (Barki and Huff 1985; Gelderman 1998; Seddon 1997; Yuthas and Young 1998). In addition, Seddon (1997) argued for removing 'IS use' in a causal model, since it is required in most organizations. DeLone and McLean, however, mentioned variability in the quality and intensity of IS use, which is likely to have a significant impact on the realization of the system benefits. For this reason, a great deal of research still uses the concept 'IS/IT use' as the proxy for IS success (Rai et al. 2002; Sabherwal et al. 2006).

Another issue on 'IS use' is the nature of 'IS/IT use' in various contexts. As mentioned above, systems are used mandatorily, voluntarily or even non-volitionally. Thus, IS use becomes a matter of conceptualizing *how well to use IS for tasks*. As DeLone et al. (2003) suggested, considering the nature, extent, quality, and appropriateness of "the system use could be addressed by determining whether the full functionality of a system is being used for the intended purposes" (2003, p. 16). Consistent with DeLone et al., Burton-Jones and Straub (2006) suggested/proposed that system usage should be conceptualized and applied to research based on its structure and function. In conceptualizing 'IS use', they suggested different measures/types to utilize in particular contexts based on the elements of usage (i.e., user, systems and/or task) and functions that are closely related to other measures in a nomological network. For instance, of six different richness of measure types, assessing the 'presence of use' is a 'very lean' measure type, while 'rich' measure types including two elements (i.e., IS and task) could measure the "extent to which the system is used to carry out the task" (See, Burton-Jones and Straub 2006, p. 233). To reasonably determine how well this works with users, both IS use and how effectively they use IS would be important regardless of the mandatory feature of IS in organizations.

Recently, Burton-Jones and Grange (2013) suggested an 'effective IS use' concept and introduced related terms studied in different ways. As Orlikowski (2000, p. 425) notes, "Technology *per se* can't increase or decrease the productivity of workers' performance, only the use of it can." Based on the review of this literature, we define *effective IS use* as "using a system in a way that helps attain the goals for using the system." The concept, 'effective IS use', focuses on consequences of IS use (i.e., successful/unsuccessful or effective/ineffective). It simply indicates the presence of use to the extent that it helps carry out the task (Burton-Jones and Straub 2006). On the other hand, *effective IS use* looks for the extent to which users successfully employ the system to carry out their job because system usage should be linked to user performance (Burton-Jones and Grange 2013). In fact, given the complexity of modern IS such as ERP, simply having to learn to use the new technology itself can be frustrating (Boudreau and Robey 2005). For example, according to Morris et al. (2010), ERP system users perceive ERP systems as stripping out the significance and variety of an employee's work that was inherent in their job. In other words, they suggested that employees feel that their jobs are somehow less important because some tasks or even entire jobs are subsumed by IS to a large degree. However, when they are familiar with the system and know how to effectively use it to leverage their job, this system would be significant to their job satisfaction.

There are two reasons users try to use their systems when they believe that the system will be helpful. First, as past literature suggested, *IS use* or *intention to use*, which is a surrogate of *IS use*, are triggered by various factors (Davis et al. 1989; Viswanath et al. 2003; Wu and Lederer 2009). For example, TAM says that *perceived usefulness* and *attitude toward IS use* let users use their information systems (Davis et al. 1989). Further studies, especially Bhattacharjee (2001), showed that *continuous use* of existing systems is based on IS satisfaction and perceived usefulness. Second, in terms of job satisfaction, since *effective IS use* is based on the willingness to repeatedly use existing systems, job satisfaction is increased

by enhancing their belief that systems are helpful as supplemental tools and reducing the feeling that the systems are not a substitute for their actual work or subsume their jobs.

Given that *effective IS* use has the potential to improve jobs, thereby changing people's reactions to their work situation, we predict that *effective IS use* will positively influence employees' job satisfaction.

Hypothesis 2: *Effective IS use is positively associated with job satisfaction.*

Virtual workplace

A virtual team or organization is a common form of work structure in contemporary organizations. Advances in information technologies let organizations break down boundaries and connect employees regardless of their geographic location and sub-unit affiliation, allowing employees to combine their knowledge and perspectives to produce creative solutions to various business problems (Martins and Shalley 2011). According to Malhotra and colleagues (2007), virtual teams are defined as "teams whose members are geographically distributed, requiring them to work together through electronic means with minimal face-to-face interaction" (p. 60). Virtual teams have been preferred in many situations due to their well-known advantages, such as efficiency, flexibility, connectivity and task-focused project management, and the advancement of new communication technologies plays a crucial role in alleviating the barriers of time and space. Thus, in virtual workplaces, users are increasingly working virtually with others who are demographically different from themselves (Griffith and Neale 2001; Griffith et al. 2003).

However, despite the strengths that virtual teams offer, the advantages of IS usage may dissipate/lessen due to *familiarity*, an innate characteristic of virtual teams (Malhotra et al. 2007). Virtual teams rely heavily on IS and electronic communication with minimal face-to-face interactions. This may cause users to become less productive because they have a lack of opportunity to display their creative behaviors in a wired world. Thus, it is essential to identify the creative performance of and expectations for effective IS use while coping with the distance-related nature embedded in virtual teams (hereafter, we use *virtual workplace* instead of virtual team).

In virtual workplaces, IS/IT that employees use for their work could be an important job characteristic. It could also be considered a job environment that confines/defines employees' ability. As such, IS/IT characteristics could be one of the major job characteristics "requiring them to work together through electronic means with minimal face-to-face interaction" (Malhotra et al. 2007, p. 60) under the advancement of new communication technologies which play a crucial role in alleviating the barriers of time and space. As such, we believe that *PSC* also encourages employees to acquire job satisfaction from a broader variety of feedback sources. All of these elements suggest the possible role of a supportive climate in the feedback-seeking process (De Stobbeleir et al. 2011).

As mentioned in the literature, employees in virtual workplaces heavily rely on IS to do their job and to create solutions to problems. Researchers have proposed that, in organizations in which creativity is encouraged, employees are stimulated to process information from diverse sources and to build broad networks (West and Richter 2008). While enhancing the frequency of use of information systems, in virtual contexts *PSC* may be less likely to improve employees' effective IS use and job satisfaction than it would be in an offline context. Virtual team members are used to using IS to communicate and initiate new ideas, as well as utilizing online sources and knowledge. Employees in an offline environment use a combination of both offline and online resources, tools, and knowledge sharing.

Even though employees in virtual workplaces need to rely more on IS for their job, the extent to which IS affects their job satisfaction could be different from the result in an offline workplace. Differences in the level of job satisfaction in both contexts could explain why employees in a virtual workplace would be less satisfied with IS use. On the other hand, the employees who use IS as additional tools would be satisfied with an even a little help (Bowling et al. 2005). That is, effective IS use may result in a greater impact for offline employees' job satisfaction than virtual employees' one. We believe that this is because they may have a different adaptation level of IS usage as one of job characteristics. In fact, adaptation-level theory (Helson 1964b) offers one potential explanation for job satisfaction in virtual workplaces.

According to adaptation-level theory (Helson 1964a; Helson 1964b), exposure to earlier stimuli (i.e., IS as a job characteristic) serves as a frame of reference by which later stimuli are judged. This theoretical logic

provides a good explanation for the extent to which job satisfaction increases. Since online workplaces are set up with IS-oriented job characteristics, their job satisfaction expectation likely highly relies on it. This would lead to a certain level of adaptation by framing it as a familiar reference. As an example, someone who has worked with their information system on a daily basis would likely take for granted its help level because they would expect it (i.e. adaptation level). In other words, the person's adaptation level would eventually change (i.e., move downward) as the increased experience of the systems is integrated into the employee's adaptation level.

The additional perception that their systems help creative behavior, caused by previous experience, would initially provide extra pleasure for employees in both offline and virtual workplaces. Prior judgments and intentions act as anchors for future judgments and intentions (Stutzer 2003). Thus, higher PSC from the IS experiences may wear off faster at virtual workplaces due to their heavy dependency on IS and reduce the effects of a constant or repeated stimulus of PSC. Consequently, PSC would have a relatively low effect on effective IS use as well as job satisfaction. On the other hand, this exposure of rare stimulus would let offline employees accept relatively unique resources for creativity as they work.

Hypothesis 3a: *The effect of PSC on job satisfaction will be greater for employees in offline organizations than for those in virtual workplaces.*

Hypothesis 3b: *The effect of effective IS use on job satisfaction will be greater for employees in offline organizations than for those in virtual workplaces.*

Proposed research method

Method

We will conduct a field study utilizing a survey method. The subjects must be involved in related IS tasks with access to organizational data. All the work-scales complying with this requirement should be considered. Specific data regarding the subjects' work position and the size of the organization should also be gathered.

Most measurement scales for this study were adapted from the existing measures used in prior studies that were proved reliable and valid.

Effective IS use. Our definition of effective IS use may initially appear similar to the concept of perceived usefulness (or performance expectancy), which is the degree to which a user believes that using the system will help him/her better attain significant rewards (Venkatesh et al. 2003, p. 23). However, the constructs differ in scope because *effective IS use* focuses on rewards that stem from the way a system is used, whereas *perceived usefulness* focuses more broadly on rewards that stem from use, not just the way it is used (e.g., it could include rewards that stem from the context in which an IS is used). We modified perceived usefulness measures from Rai et al. (2002). Sample items included "Relative to others in the company, I am successful in using the company information systems to improve my job performance" and "I am successful in using the company information systems to improve the quality of my decision-making."

Perceived IS support for creativity. Perceived IS support for creativity will be measured using 10 items, which were modified from creative behaviors measured by (Zhou and George 2001).

Job satisfaction. Job satisfaction will be measured using a four-item scale adapted from Janssen (2001). Sample items included "Overall, I am satisfied with my job" and "In general, I like working here."

Control Variables. To control for unknown effects, several variables will be included in the analysis. Three variables (i.e., gender, age and education) will be controlled because some evidence indicates that these demographic factors might be related to some of the contextual and dependent variables included in the study. In fact, prior research has linked gender differences, age, job position and education to perceptions of the work environment and IS (Ahuja and Thatcher 2005; Venkatesh and Morris 2000). Further, the extent of a user's experience in using IS will be identified as a control variable, as previous research raised the possibility of its effect on reactions to a specific Internet-based application (Marakas et al. 1998).

Data Analysis

Partial least squares (PLS), as implemented in SmartPLS version 2.0, will be used for data analysis. The PLS approach allows researchers to assess measurement model parameters and structural path coefficients simultaneously (Barclay et al. 1995). PLS will be used for several reasons: (1) this study was primarily intended for causal-predictive analysis; (2) PLS requires fewer statistical specifications and constraints on the data than the covariance-based strategy of LISREL (e.g., assumptions of normality); and (3) PLS is effective for those early-theory testing situations that characterized this study. Therefore, PLS is an appropriate statistical analysis tool for the current study. It focuses on a prediction-oriented and data-analytic method, seeking to maximize the variances that are explained in the constructs (Barclay et al. 1995).

Conclusion and Contribution

This study responds to the fundamental yet unanswered question of whether PSC, which is a proxy for user creativity and personality in different worksites (i.e., offline and virtual workplaces), impacts IS use, perceived usefulness for creativity and job satisfaction in virtual workplaces. The findings of this study would contribute to extending extant research on virtual systems by empirically investigating the impact of PSC on effective IS use and job satisfaction. By focusing on PSC, the current study addresses the gap in the literature concerning the relationship between IS use and creativity using the elaborated construct in the IS community. In addition, this study sheds light on the importance of IS as a tool, not because of IS itself but because of users' capability to perceive IS as a tool to increase their creative behavior. This study is expected to show evidence that different aspects of *effective IS use* may influence employees' job satisfaction in offline and virtual workplaces.

Overall, the research profiled in this paper would contribute to understanding the relationship between creativity regarding information systems and job satisfaction in terms of effective IS use in two types of workplaces. Our work is expected to provide empirical findings and feasible suggestions for further investigation by identifying the role of effective IS use in the relationship. The results would call attention to how system users' perception of IS support for creativity can become an important vehicle to potentially increase their job satisfaction. We hope that this study serves as encouragement for future research endeavors.

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