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Organizational Creativity in Multinational Companies: Knowledge Collecting, ICT Use and Top Management Support

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Abstract

Grounding on the interactionist perspective proposed by Woodman, Sawyer, and Griffin (1993), this paper conceives organizational creativity as a complex concept whose investigation requires the understanding of the process, the product, the person, and the situation. Accordingly, this work attempts to enrich the understanding of how organizational creativity can be fostered by offering a framework which combines (inter-)individual-level learning (collecting knowledge from others), information sharing (through ICT infrastructures), and contextual factors (perceived top management support).

The empirical analysis draws on a sample of 362 employees from five Multinational Corporations? subsidiaries and shows that individuals? orientation toward learning from others, the extent to which they use ICT for fostering information sharing within the firm, and a strong top management support significantly enhance organizational creativity. However, a heavy ICT use may weaken the relationship between learning from others and organizational creativity. Based on these results, the paper contributes to the literature on organizational creativity by confirming the importance of providing a holistic view of the phenomenon, consistently with its inherent complexity. In so doing, it suggests organizations and their managers to simultaneously pay attention to individual- and situational-factors when planning

how to foster their firms? creativity, as both of them are found to play a critical role on firms? success and competitiveness.

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Keywords: Organizational creativity, ICT use, Knowledge collecting, Top Management support

Introduction

After its first initial burst early in the 90s, the issue of organizational creativity is gaining a new momentum in many areas of social sciences. Even within the broad field of management, this issue has been addressed from different perspectives along several levels of analysis aiming at drawing new conceptual models and finding evidence concerning antecedents, enablers, and moderating factors.

According to the interactionist perspective drawn by Woodman, Sawyer, and Griffin (1993), creativity can be seen as 'the creation of a valuable, useful new product, service, idea, procedure, or process by individuals working together in a complex social system' (p. 23). In so doing, Woodman and colleagues argue that in order to understand organizational creativity, it is essential to look at several different aspects, such as the creative process, the creative product, the creative person, and the creative situation, as all of them interact with each other in determining creativity.

Following this, a plethora of studies has been developed. Being the individual creativity the 'seed of all innovation' (Amabile et al., 1996, p. 1155), and acquiring managerial significance when applied to practical artifacts like product, procedures, and processes (West, 2001), scholars have investigated the effect of personal characteristics on organizational creativity (e.g. Amabile, 1988; Amabile et al., 1996; Woodman et al., 1993; Oldham & Cummings, 1996), also in unconventional settings, such as leisure time activities (e.g. Davis, Hoisl, & Davis, 2014). Other studies have widened the field by analyzing some characteristics of the organizational context, such as job complexity, supportive and controlling supervision (e.g. Oldham & Cummings, 1996), specific organizational creativity mechanisms (e.g. Bharadawaj & Menon, 2000), organizational and technology factors (Lin, 2007). Another specific distinction has been for the concentration or the dispersion of the loci in which

organizational creativity might take place, whether in localized or dispersed teams (Prasad & Akhilesh, 2002; Reis & Curzi, 2010; Reis, 2014).

Grounding on the interactionist perspective of Woodman et al. (1993), this paper presents an original contribution to the field of groups and intra-organizational mechanisms by combining the joint effect of interpersonal dynamics with the internal circulation of ideas and knowledge. In fact, as prior research suggests, the effect of interpersonal relationships on organizational creativity studied by Kurtzberg and Amabile (2001) can be complemented by the literature on knowledge sharing and creation. In order to do that, we start from the importance of individuals getting knowledge and learning from others for fostering creativity. In this regard, the process of knowledge collecting meant as 'consulting colleagues in order to get them to share their intellectual capital' (Van den Hooff & de Leeuw Van Weenen, 2004) has been considered as a commitment to organizational innovation and creativity (e.g. Van den Hooff & De Ridder, 2004; Lin, 2007; Lilleoere & Holme Hansen, 2011). Later, we integrate our argument by considering two contextual elements likely to affect organizational creativity, namely, top management support (Connelly & Kelloway, 2003; Tan & Zhao, 2003; MacNeil, 2004; Lu, Leung, & Koch, 2006) and the use of Information and Communication Technology (Zack, 1999; Yeh, Lai & Ho, 2006; Huysman & Wulf, 2006) which have been proven to support knowledge sharing and organizational innovation (Lin, 2007). Hence, recent research has stressed seeking knowledge and help from others as a routine strongly shaped by the work context in which this behavior is performed (Grodal, Nelson, & Siino, 2015).

Despite the abundance of studies on the subject of organizational creativity, only few considered it as a dependent variable and tried to understand its antecedents. Further, while the relationship between knowledge sharing and organizational creativity seems more solid for extant literature, the role of ICT use and top management support yet calls for some further investigation. In line with the model of Woodman et al. (1993), we conceive organizational

creativity as a function of the creative results of individuals interacting and exposed to contextual influences (i.e. top management support and ICT). Accordingly, this paper tries to address the following research question: "What is the relationship between knowledge collecting, ICT use and top-management support in determining organizational creativity?". For this purpose, we empirically analyze survey data of 362 employees operating in five Multinational Corporations' (MNCs) subsidiaries located in Italy. The need to focus on MNCs' subsidiaries is consistent with the idea that these companies, by virtue of their peculiar features, generally embed both the technical and the social elements for analyzing knowledge sharing, its effects, and contextual influences (e.g. Gupta & Govindarajan, 2000; Brandes, Dharwadkar, & Wheatley, 2004; Zaidman & Brock, 2009), thus representing a valuable empirical setting to be observed for developing this study. Our data show that while knowledge collecting, ICT use, and top management support are strongly and positively associated with organizational creativity, surprisingly a high ICT use negatively moderates the relationship between knowledge collecting and our dependent variable.

Based on this, this work attempts to contribute to the literature about group and organization management by providing evidence on how some organization-level factors (ICT, top management support) might contribute to organizational creativity. In the same vein, the paper shows that firms should carefully plan their ICT investments as they may even hamper the positive linkage between increased knowledge flows and organizational creativity.

Theoretical Framework

Although organizational creativity, team innovation, and organizational innovation are terms often used to address similar phenomena, it is possible to draw some distinctions among

these concepts (Hurt, Joseph, & Cook, 1977; Gurteen, 1998; Hu & Randel, 2014). Since organizational creativity refers to 'creation of a valuable, useful' application (Woodman et al. 1993), or artifact (West, 2001), the concept funnels creativity towards something characterized by novelty and/or originality, and therefore not just referred to mere representations of original ideas, but rather to the organizational action and progress (Vicari & Troilo, 2000). Following Woodman et al. (1993), innovation is a defining feature of organizational creativity; further, 'organizational creativity does not coincide with innovation since it can also be achieved through incremental changes and not necessarily attributable to the discovery and adoption of new approaches and rules' (Borghini, 2005, p. 19).

Despite the works conducted by Amabile (1988) and her research team (e.g. Amabile et al, 1996) address the subject of creativity 'in context', such literature proposes an interpretative framework focusing on individual creativity. Further, as underlined by Phelan and Young (2003), creativity, at the individual or at a group level, is not independent from the specific environment in which it takes place. Organizational creativity can therefore be investigated at three levels of analysis (Drazin, Glynn, & Kazanjian, 1999): 1) intrasubjective level (individual); intersubjective level (group); collective level (organization).

This paper acknowledges the existence and the intertwinement of these three levels by presenting an analysis conducted at the intrasubjective level in 'complex social settings' (e.g. Woodman et al., 1993). In fact, we focus on the interpersonal dynamics of knowledge management and the way they affect organizational creativity, both directly and via the effect of other moderators operating at the organizational level. Such an approach recalls the ones used in related studies (e.g. Glynn, 1996; Koh, 2000; Brockmann & Anthony, 2002; Lee & Choi, 2003; Tyran & Gibson, 2008; Hu & Randel, 2014). Intersubjective or group creativity is commonly analyzed as the result of individual creative effort related to group composition or characteristics (e.g. formalization, norms, cohesion).

Consistently with the interactionist model proposed by Woodman et al. (1993), organizational creativity is here seen as a function of the creative results of interacting individuals (exchanging knowledge at an intersubjective level) exposed to contextual influences (such as, top management support and ICT). Hence, as the authors suggest, '… the creative output (new products, services, ideas, procedures, and processes) for the entire system stems from the complex mosaic of individual, group, and organizational characteristics and behaviours occurring within the salient situational influences (both creativity constraining and enhancing) at each level of social organization' (p. 298).

Despite the amount of distinguished research on the subject of organizational creativity, there is still little knowledge about the conditions that are likely to influence it (Oldham & Cummings, 1996; Drazin, Glynn, & Kazanjian, 1999; Borghini, 2005). In particular, building on the evidence found by Calantone, Cavusgil and Zhao (2002) between learning orientation and firm innovation capability, this paper focuses on individuals' behaviors of getting knowledge from colleagues, using ICT, perceiving the support from their top management while attempting to understand how this can contribute to foster organizational creativity. While the relationship between knowledge collecting and organizational creativity seems to be unanimously confirmed by extant literature, the effects of ICT use and top management support on their association are still controversial. Accordingly, the research model depicted in Figure 1 shows that ICT use and top management support are studied as having both a direct effect on organizational creativity and a moderator role on the effects of knowledge collecting on organizational creativity (e.g. Haas & Hansen, 2005).

INSERT FIGURE 1 ABOUT HERE

Knowledge Collecting

Sharing knowledge at an intraorganizational level is critical to accomplish any innovation (Hu & Randel, 2014). In general terms, knowledge contributes to the generation of creative thoughts and eventually to the generation of innovation (Nigthtingale, 1998; Coombs & Hull, 1998) and flows amongst different levels of creativity (Nonaka, 1991; Vicari & Troilo, 2000). Understanding the relationship between knowledge sharing and organizational creativity is particularly important as interpersonal dynamics (such as teams, task forces, internal communities) are often the ultimate mechanisms essential to achieve innovation (Brown & Duguid, 1991; West, 2002; Tyran & Gibson, 2008; Chi, Huang, & Lin, 2009; Lin, 2010; Chiaburu, Lorinkova, & Van Dyne, 2013).

Current research widely shows that knowledge sharing among individuals belonging to the same organization stimulates mutual learning and it eventually encourages innovation (Brown & Duguid, 1991; Kogut & Zander, 1992; Eisenhardt & Tabrizi, 1995; Bruns, 2012; Hu & Randel, 2014). The necessary presence of a 'complex social setting' embedded in the definition of organizational creativity adopted in this paper (Woodman et al., 1993) requires the consideration of those concepts of knowledge sharing as a social process involving individuals that play the roles of 'sources' and/or 'receivers' (Quigley, Tesluk, Locke, & Bartol, 2007; Van den Hooff & de Leeuw Van Weenen, 2004; Van den Hooff & de Ridder, 2004), or 'sellers' and 'buyers' (Reid, 2003). Consistently with a multilevel perspective (Drazin, Glynn, & Kazanjian, 1999; Cole, Schaninger, & Harris, 2002; Quigley et al, 2007), knowledge sharing represents a relational act involving two or more individuals, independently from their formal affiliation to specific or formalized groups. Within this social process of knowledge sharing, two different processes take place (Van den Hooff & de Leeuw Van Weenen, 2004; Van den Hooff & de Ridder, 2004; Lin, 2007): knowledge donating and knowledge collecting. The first represents the employees' willingness to communicate with

others and voluntarily transfer their (pieces of) intellectual capital. The second is instead the process of asking colleagues to share their knowledge and, in turn, to learn from them. The consideration of such knowledge sharing processes is also consistent with the organizational learning as a process of distributed cognition (Salomon, 1993), according to which individuals appear to think in conjunction or partnership with others under the effect of their social, technical and cultural contexts, switching from the 'person-solo' to the 'person-plus' approach to learning (p. xiii).

One point is important to remark here: the complementarity of knowledge donating and knowledge collecting does not imply equality in nature and symmetry. As Van den Hooff and de Ridder (2004) pointed out, 'such processes have a different nature, and can be expected to be influenced by different factors' (p. 118). In particular, knowledge donating refers to a voluntary behavior that employees take on their own initiative, and therefore would require the investigation of the motivational triggers at the individual (intrasubjective) level (e.g. Kudisch, Fortunato, & Smith, 2006; Gagné, 2009; Bal, Chiaburu, & Diaz, 2011). The investigation of knowledge collecting can instead be conducted by the actual observation of interaction among individuals (or its declaration of intention), through personal contact and trust (Brockmann & Anthony, 2002; Randel & Ranft, 2007; Post, 2012), yet preserving the intersubjective level of analysis.

Given its potential to contribute to individual and organizational learning and its direct linkage to the interpersonal dynamics, this work focuses on knowledge collecting as a sub-dimension of intra-organizational knowledge sharing activities (Lin, 2007). Grounding on extant research, knowledge collecting entails a specific request for information (i.e. knowledge) from colleagues and underlies the willingness to learn which has been proved to contribute to organizational creativity (Calantone, Casvugil, & Zhao, 2002; Lin, 2007). Indeed, seeking relevant knowledge from colleagues catalyzes at the same time, both an individual

learning orientation (Dixon, 1992) and crucial process of knowledge sharing (Moorman & Miner, 1998; Gibney, Zagenczyk, & Masters, 2009; Grodal et al., 2015).

While the relationship between knowledge creation processes and organizational creativity has been verified by several studies, and tested in different settings (e.g. Amabile, 1988; Amabile et al., 1996; Glynn, 1996; Gurteen, 1998; Koh, 2000; Lee & Choi, 2003; Calantone, Cavusgil, & Zhao, 2002), a specific analysis on knowledge collecting as part of the social, learning context has not been verified yet. Thus, we propose the following:

Hypothesis 1: Knowledge collecting has a positive effect on organizational creativity.

ICT Use

Since the mid-90s, the fields of innovation and knowledge management have been mainly investigated though the lens of instruments and tools that organizations might use as enablers for knowledge transfer and storage (e.g. Swan, Newell, Scarbrough, & Hislop, 1999; Hansen, 1999; Yeh, Lai, & Ho, 2006; Zack, 2009). Among all technical tools, Information and Communication Technology (ICT) has gathered the major attention for its potential to support knowledge sharing activities and processes. Being information a constituent of knowledge, solutions of ICT have been traditionally considered as sources of firms' competitive advantage, also for their contribution to the storage of knowledge (Porter & Millar, 1985; Nonaka, 1991) through the usage of Intranets, groupwares, repository systems, and collective memories (Alavi & Leidner, 2001; Avgerou, Ciborra & Land, 2004; Davenport & Prusak,1998).

According to Orlikowski and Gash (1994), ICT tools can be defined as 'technological frames', since they embed assumptions, expectations, and knowledge that organizational members have regarding technology in their shared (social) contexts. Again, such perspective is consistent with the 'complex social settings' proposed by Woodman and colleagues (1993) and considers technologies as social artifacts having material forms and functions (Orlikowski

& Gash, 1994; Avgerou, Ciborra & Land, 2004; Huysman & Wulf, 2006; Zaidman & Brocks, 2009).

In this fashion, ICT is able to contribute to organizational creativity via two main mechanisms: 1) the storage of explicit knowledge and the consequent accessibility and availability (De Long & Fahey, 2000); 2) a higher level of efficiency in the buyer/seller processes of knowledge transfer (Boland Jr, Tenkasi, & Te'eni, 1994). As organizational creativity is intrinsically grounded on information, it is reasonable to expect that more information sharing will lead to higher knowledge creation and transfer, thus fostering creativity at the corporate level (Sundgren et al., 2005). Similarly, Woodman et al. (1993) suggest that organizations whose members make use of ICT for free exchange of information, are likely to be more creative, in that, conversely, constraints to open information sharing may have negative effects on creative performance. Hence, by making use of computer-based communication networks, groupware, management systems, and so on, today employees can get a host a new stimuli, divergent views, challenging inputs, which can seed their creative performance.

Following the literature, the perception regarding the role of ICT infrastructures as facilitators of knowledge sharing can be identified as 'ICT efficacy', while the actual usage of them by employees can be labeled as 'ICT use' (e.g. Van den Hooff & de Leeuw Van Weenen, 2004; Van den Hooff & de Ridder, 2004; Lin, 2007). Moreover, relatively to ICT use, Hwang, Kettinger and Mun (2013) show how the personal information management motivation is relevant to knowledge collecting.

Considering both the direct impact of ICT on organizational creativity and the effect on knowledge collecting, we propose the following:

Hypothesis 2: ICT use has a positive effect on organizational creativity.

Hypothesis 3: ICT use positively moderates the effect of knowledge collecting on organizational creativity.

Top Management Support

Top management support falls under the wider category of organizational support, which has been found to be positively related to knowledge sharing (Lu, Leung, & Kock, 2006). Among the various forms of support, the one exerted by the top management seems to be the most important influence on organizational knowledge, as a means for providing the resources necessary to create new knowledge (Connelly & Kelloway, 2013). The visibility of such support in terms of organizational artifacts is also crucial for the creation of a proper knowledge sharing climate (MacNeil, 2004), which, in turn, could nurture organizational creativity (Oldham & Cummings, 1996; Lu, Leung & Kock, 2006; Carmeli, 2008; Carmeli & Halevi, 2009).

Consistently with the interactionist model of Woodman et al. (1993), top management support is a critical contextual factor likely to influence firm-level creativity. In particular, like other crucial organizational outcomes, creativity stems not only from the individuals' willingness to give a contribution to it, but also from the work environment that they perceive around them (Amabile et al., 2004). Research suggests that, among all forces that impinge on employees' behaviors and actions, top management support is one of the most powerful.

Moreover, to some extent, top management support can be seen as one of the components of the Perceived Organizational Support (POS). Scholars have shown that POS does not necessarily guarantee a positive effect on knowledge sharing (e.g. Swift & Virick, 2013). In fact, research finds that broader exchange relationships have differentiated effects on employee behaviors and attitudes (Brandes, Dharwadkar, & Wheatley, 2004; Ng & Sorensen, 2008) suggesting the relationship between the different sources of support and knowledge

sharing providers may vary. In particular, although the employees local exchange relationships (i.e. those with supervisors) have a greater influence than the one with top management (e.g. Brandes, Dharwadkar & Wheatley, 2004), top management support has been found to increase the 'expectancy value of technical information' (Tan & Zhao, 2003), which would stimulate knowledge collecting.

Thus, being top management support a strong determinant of employees' behaviors, it might be expected to influence the impact that individuals' learning effort has on organizational creativity. In this paper we adopt the view of prior research suggesting that social conditions influencing employees' behaviors are likely to affect creativity (see Oldham & Cummings, 1996; Tierney, Farmer, & Graen, 1999).

Therefore, by considering both the effect of top management support both on organizational creativity and on knowledge collecting, we hypothesize that:

Hypothesis 4: Top management support has a positive effect on organizational creativity.

Hypothesis 5: Top management positively moderates the effect of knowledge collecting on organizational creativity.

Method

Empirical Setting

Data used for this research come from a research project conducted over the years 2011-2012. The population included manufacturing MNCs' subsidiaries located in the Italian region of Tuscany and operating in various industrial sectors, but all characterized by a constant focus

on innovation. According to the Chamber of Commerce database[1], the relevant population operating in Tuscany was composed of a total number of 33 subsidiaries. The need to analyze this specific set of firms is consistent with the importance of understanding the distinctive features characterizing these companies, which play a crucial role in the region's competitiveness. At the same time, Tuscany mirrors the Italian distribution of industrial activities (IRPET, 2014), so it can be considered as a reliable source for a larger representativeness. Starting from the aforementioned population of 33 subsidiaries, five of them accepted to participate in this study (15.15%).

Following the purpose of this paper to investigate organizational creativity within MNCs' subsidiaries, several reasons make the empirical setting particularly valuable. First, knowledge transfer activities are at the core of MNCs business (Kostova, 1999), because their ability to internally share knowledge is fundamental for maintaining their competitive advantage. Second, given that knowledge transfer can be affected by country-level variables (Szulanski, 1996; Zaidman & Brock, 2009), this paper focuses on MNCs' subsidiaries operating in a single country (i.e. Italy), thus holding factors such as cultural distance, host country risk, and FDI openness (Hébert, Very, & Beamish, 2005) constant and, therefore, excluding the influence of such factors on our results. Third, knowledge sharing processes and organizational creativity might be highly specific to subsidiaries, in such a way that individuals working within certain subsidiaries are expected to collaborate on specific issues rather than others, as well as to have in common cultural aspects, to share the same language, similar ideas, and so on (Marschan-Piekkari, Welch, & Welch, 1999). This implies that adopting a more traditional subsidiary-headquarter perspective or a subsidiary-subsidiary one may overlook the important yet less studied aspect of within-subsidiary knowledge flows phenomenon.

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[1] The Italian Chamber of Commerce represents all Italian companies and is aimed to link institutions, organisations, and associations, thereby providing services as well as development strategies likely to promote the growth of the national economy.

Data Collection

Preliminary to the run of the survey, a draft questionnaire was pilot tested by 53 managers working for three different companies. The acquired feedbacks were treasured and the first draft of the questionnaire was subsequently revised and tested again with 45 managers. For each of the five MNCs' subsidiaries, a meeting with the Human Resource Director was arranged, in order to illustrate the purpose and the relevance of the study. The meetings were also the occasions for identifying the employees to be involved in the survey. In particular, considering the research setting and questions, the survey was addressed to those employees who were considered 'nodes of knowledge', having a crucial role in affecting the strategic flows of information. More specifically, the sample included employees who could be considered potential critical contributors to the organizational creativity as a consequence of possessing critical knowledge related to clients, suppliers, R&D, markets or specific technical issues. Thus, the study was targeting those workers that Cohen and Levinthal (1990) identify as gatekeepers, standing at the interface of either the firm or the external environment or between organizational subunits, playing a significant role for the absorptive capacity (ability to learn) of the firm. Such workers are crucial in the 'spiral of knowledge creation' proposed by Nonaka (1991), given their ability to 'translate' tacit and explicit knowledge into a form that can be easily acquired or better understood by anyone in the firm, therefore supporting organizational creativity and knowledge sharing.

This version of the study reports on the following evidence (year 2014): out of the 757 invitations sent out for participation in the survey, 393 questionnaires were filled in (51.92% response rate).

Measures

Self-reported measures were used to operationalize all variables (Spector, 1994), which in turn, derive from scales adopted in previous studies and measured using a seven-point Likert type scale ranging from 1 = 'Strongly disagree' to 7 = 'Strongly agree'.

Dependent variable: Organizational creativity. A six-item scale was used to measure organizational creativity (α=.91). The scale was drawn from Lee and Choi (2003) and Calantone, Cavusgil and Zhao (2002), as they selected the previous measure proposed by Hurt, Joseph and Cook (1977). Following the pilot questionnaire test, we resorted a combination of the established scales and items in order to measure the extent to which the firm constantly looks for new ways of doing and experiments new ideas and solution. Given that one of the fundamental problems in studying organizational creativity is to measure it, we complement prior contributions which capture organizational creativity with a measure of creative climate (see Amabile et al., 1996; Ekvall & Ryhammar, 1999), by adopting a scale which is much more focused on the outcome of organizational creativity itself.

Independent variable: Knowledge collecting. Van den Hooff and de Leuuw Van Weenen (2004) provided the scale to measure knowledge collecting (two-item scale). The respondents were asked to give their opinion about their orientation toward their tendency to ask their colleagues for knowledge and the subsequent colleagues' willingness to transmit what they know (e.g. "Colleagues share their knowledge with me when I ask them to") (α=.96).

Moderating variables. For measuring ICT use two items were isolated over a scale of 9 items on technological factors based on Van den Hooff and de Leuuw Van Weenen (2004) and Lin (2007) (α=.76). The four-item scale of Top management support was adapted from Tan and Zhao (2003) (α=.92).

Control variables. Firm 1-5 identify the companies observed. In order to reduce the variance caused by factors that are likely to affect employees' contribution to organizational

creativity, we controlled for gender (dummy variable, 0=Male, 1=Female), years of education, seniority (years of work experience within the company), and managerial role (dummy variable, 0=No, 1=Yes). Given that the literature widely highlights the role played by autonomy in strengthening creativity (Liu et al., 2011), we also controlled for employees' autonomy in their job (two-item scale taken from Hackman & Oldham, 1974).

Results

Descriptive Statistics

Descriptive statistics for all variables are shown in Table 1. As for the distribution of responses among the five companies included in the analysis, it can be seen that 32% of them belong to Firm2, while 27% have been collected from Firm4. Given this uneven distribution of data across different firms, it has been essential to control for it when running the regression analysis (see Table 3 in the following section). With regard to the control variables, overall, the majority of respondents are men, on average participants have almost 17 years of education, have approximately ten years of seniority, most of them have a managerial role within their firm, and on average, they have a high level of autonomy in deciding how to accomplish their job and a certain degree of independence in carrying out their task (Mean=5.38).

The average values collected among participants in relation to their orientation toward collecting knowledge from their colleagues score high (Mean= 5.43) when compared to the other variables included in our model. This suggests that respondents perceive that colleagues tend to help them by sharing their own knowledge with them when they are requested to do it. Slightly lower values, but still high ones, have been recorded for ICT use and top management support, thereby showing that respondents widely use the available ICT infrastructure for communicating with others and sharing information and knowledge (Mean=5.19). Similarly,

the descriptive statistics demonstrate that top management is perceived as giving support for helping their employees share what they know with others, by providing the necessary resources for that (Mean=5.24). Finally, on average, responses show that the sample of participants perceive their organization as an innovative one (Mean=4.92), based on the extent to which it tends to frequently tries new ways of doing things and explores new ideas and solution.

By shifting the focus to each of the five organizations observed (Table 1), it can be noted that, overall, demographic characteristics vary across the companies, in such a way that Firm5's and Firm3's respondents are almost totally men, while, for instance, a more homogeneous distribution among men and women can be found among respondents from Firm4, despite the high standard deviation recorded. As for the educational level, the descriptive statistics show that Firm4 is the one with the highest level of education (Mean=18.14 years) while, conversely, Firm1 is the one with the lowest level (Mean=13.76 years). Moreover, Firm3 shows the highest seniority of its employees (Mean= 13.78 years) while Firm2 records the lowest when compared with all other companies examined (Mean=8.40). However, this may be due to the fact that Firm3 is the oldest among the others, which have approximately the same age. A further interesting note emerges when comparing the proportion of those having managerial role within the firms. The data show that while most part of Firm4's respondents have the responsibility to coordinate other employees (Mean=.84), only a small part of Firm5's participants do. Conversely, the degree of job autonomy seems to be distributed quite homogeneously across the firms observed, in terms of both mean values and standard deviations. Given that demographic characteristics are unevenly distributed across the respondents, this confirms the importance of controlling for them when running the empirical analysis.

Concluding, it might be relevant to note that the extent to which the firm is perceived to be creative is quite different among the five firms, with high perception within Firm2 (Mean=5.60) and below-average perception within Firm3 (Mean=3.94), as well as ICT infrastructures seem to be much more heavily used among Firm2's respondents (Mean=5.93) with respect to Firm5's (Mean=4.52) and Firm1's ones (Mean=4.56).

In Table 2 we provide the correlation matrix for all variables and Cronbach's alpha coefficients. The table shows good scales' internal reliability, which ranges from .76 to .96. Moreover, correlation coefficients show some values above .30, which is traditionally considered to be the threshold over which collinearity among variables may become an issue to be solved.

In order to check the robustness of the data, demographic variables and questionnaire responses between early and late respondents were compared, based on the assumption that late respondents are more nearly like non-respondents than like early respondents (Lin & Schaeffer, 1995). Early respondents are those who filled out the questionnaire at the first message of invitation; late respondents provided their answers at the first or second reminder. As no difference was found between the two groups, we are confident that data do not suffer from problems of nonresponse bias.

INSERT TABLE 1 ABOUT HERE

INSERT TABLE 2 ABOUT HERE

Hypothesis Testing

The results of the multiple regression analysis (Cohen & Cohen 1983; Aiken & West, 1999) run using STATA13 for testing the research model are reported in Table 3. Given that some correlation coefficients went beyond the traditional threshold of .30, it was necessary to detect the presence of multicollinearity among explanatory variables. Starting from this, for each model and each variable the variance inflaction factor (VIF) was calculated. As can be noted, all values are well below the threshold of 5 or 10 considered to be the maximum level acceptable signaling the multicollinearity.

Moreover, because of the high correlation among some variables, in line with extant research (e.g. Hu & Randel, 2014), we tested the discriminant validity of the constructs through the comparison among the square root of average variance extracted (AVE) with all corresponding correlations. The results confirm that the constructs have strong discriminant validity.

In order to test the hypotheses, five different models were designed. In Model 1 only the control variables were entered; Model 2 includes also the main effect of knowledge collecting; Model 3 adds the main effect of ICT use and top management support; in Model 4 the moderating term of ICT use was entered; finally, Model 5 shows the overall model, including also the moderating factor of top management support.

Given that Firm5 is the baseline for interpreting the results, Table 3 demonstrates that, when compared with Firm5, Firm3 shows a strong negative impact on organizational creativity, whose significance remains across all models (see Model 1, β=-.92, p<.001; Model 2, β=-.91, p<.001; Model 3, β=-.92, p<.001; Model 4, β=-.89, p<.001; Model 5, β=-.90, p<.001), despite Firm3 is not the company with the highest number of responses collected. Similarly, also Firm1 negatively influences the dependent variable, in comparison with Firm5. However, the significance is weaker (see Model 1; β=-.55, p<.05) and disappears when moving from Model

1 to Model 2. Conversely, data show that Firm2 has a more positive influence on organization creativity than Firm5 (see Model 1, β=.71, p<.01; Model 2, β=.69, p<.01), even if the statistical significant disappears in Model 3.

Among the control variables, only autonomy in the job shows a significant association with organizational creativity in such a way that the higher the autonomy, the stronger the impact on the overall organizational creativity (see Model 1, β=.31, p<.001; Model 2, β=.21, p<.001; Model 3, β=.14, p<.05; Model 4, β=.15, p<.05; Model 5, β=.15, p<.01).

In turn, employees' gender, level of education, seniority, and managerial role do not play any significant role in affecting the extent to which firms are creative in their ways of doing.

Model 2 shows that the extent to which employees look for relevant and useful knowledge by asking their colleagues for it is positively related to the level of organizational creativity (see Model 2, β=.24, p<.001). In particular, this high significance persists across all models, that is when ICT use, top management support and the moderating terms are included in the analysis (see Model 3, β=.13, p<.01; Model 4, β=.11, p<.05; Model 5, β=.13, p<.01). Hypothesis 1 is thus strongly supported.

Model 3 shows that when individuals heavily use ICT infrastructures for fostering intra-organizational knowledge exchange activities, this enhances organizational creativity (see Model 3, β=.14, p<.01). This evidence endures also when the moderating factors are added in the regression (see Model 4, β=.13, p<.01; Model 5, β=.12, p<.01), thus clearly supporting Hypothesis 2. Similarly, the extent to which top management provides organizational members with support for sharing what they know with others is found to be strongly and positively associated with organizational-level creativity. Again, this evidence is demonstrated in Model 3 (β=.25, p<.001), Model 4 (β=.26, p<.001), and Model 5 (β=.27, p<.001). This leads to support our Hypothesis 4.

Model 4 surprisingly displays that the relationship between collecting knowledge from others and organizational creativity is weakened when individuals make use of ICT infrastructures for sharing knowledge with others (see Model 4, β=-.06, $p<.05$; Model 5, β=-.07, $p<.05$). Therefore, Hypothesis 3 is not supported by our analysis, as we postulated a positive interaction effect.

Finally, Model 5 shows that the moderating effect of top management support on the relationship between knowledge collecting and organizational creativity is not significant. Therefore, our data do not support Hypothesis 5.

INSERT TABLE 3 ABOUT HERE

Discussion

The findings of our analysis suggest that being part of a firm or another may matter when it comes to investigate organizational creativity. This may not be surprising, as our dependent variable is inherently influenced by several firm-level factors that we aimed at capturing by controlling for the five companies we observed. Hence, as the literature highlights, for instance, firm age (Kotha et al., 2011), firm size (Leal-Rodríguez et al., 2015) and organizational culture (McLean, 2005) may play a critical role in determining the degree of organization-level creativity.

As for the control variables, only autonomy in the job plays a significant role in affecting firm creativity. This confirms prior research demonstrating that organizations which

stimulate their members to independently define how to accomplish their tasks and carry out their job will be more successful in terms of creativity and innovation with respect to organizations that do not (McLean, 2005).

Based on the findings of our empirical analysis, we demonstrate that the extent to which employees are oriented toward learning from others by asking them for information and knowledge significantly increases organizational creativity (Hp 1). This is consistent with current research stating that one of the most relevant characteristics of organizational creativity is its relation to the opportunity of accessing critical knowledge inside the firm (Sundgren et al., 2005). Similarly, our argument starts from the premise that firm innovation is primarily the function of individuals' efforts and behaviors (Bharadwaj & Menon, 2000) and, accordingly, that organizational creativity necessarily requires internal communication and learning. Again, this idea points to the importance of focusing on organizational creativity as a fundamental issue for firms that aim at avoiding stagnation (Kanter, 1998; Van Dijk & Van den Ende, 2002).

Moreover, our data show that ICT can strongly affect organizational-level creativity in such a way that the more employees use it for fostering knowledge sharing participation and, more in general, for enhancing knowledge exchange with colleagues in the firm, the more organizational creativity increases (Hp 2). This evidence substantiates the literature stressing the importance of information sharing for firm creativity. Indeed, ICT enables rapid search, access, and retrieval of information, thus facilitating communication as well as collaboration among employees (Huysman & Wulf, 2006), while, at the same time, supporting the development of new ideas and methods for creative purposes (Lin, 2007).

Additionally, we found that when employees perceive their top management to support them in participating in sharing what they know with others, this strongly and positively affects organizational creativity (Hp 4). In turn, this result is in line with research stressing the importance of an organizational orientation likely to create a climate that encourages

innovation and creativity (e.g. Mumford et al., 2002). That is, beyond the critical role played by individuals' behaviors of learning from others, scholars have stressed the criticality of situational and contextual factors for organizational creativity to be enhanced (Amabile et al., 2004). Following prior studies, there exists a relationship between perceived top management support and individual- and organizational creativity (Madjar et al., 2002), suggesting that the stronger the former, the higher the latter. This is consistent with the idea that supervision that is supportive of employees is expected to enhance creative achievement, while a controlling or limiting supervision is expected to diminish creative performance (Madjar et al., 2002).

Furthermore, contrasting our expectation, the empirical analysis demonstrates that the relationship between individuals' knowledge collecting behaviors and organizational creativity is significantly weakened when ICT use is high (Hp 3). We suggest that this might be due to the following. Creative outcomes usually require the implementation of tacit knowledge (Lam, 2000). By definition, tacit knowledge is more difficult to articulate but also less likely to be imitated and replicated (Nonaka & von Krogh, 2009; Polanyi, 1962), as it is rooted in intuition, implicit rules of thumb, physical proximity, personal experiences, emotion, commitment, and so on. Given that ICT use necessarily implies the use of explicit knowledge (e.g. database, groupware, blog, etc.), it might be that when ICT infrastructures are heavily used for exchanging information within the organization, this stimulates the flow of more codified knowledge, while inhibiting the one regarding less formal one. That is, being tacit knowledge a critical source of firms' competitive advantage, innovation, and creativity, in order for it to be exploited, informal and interpersonal interactions, rather than technology-based relationships, should be stimulated.

Finally, our data do not provide evidence with regard to the interaction effect between knowledge collecting, top management support, and organizational creativity (Hp 5). While we postulated a significant and positive moderating role of top management support on the

relationship between knowledge collecting and organizational creativity, based on our findings we are not able to draw any significant relationship in this regard.

Conclusion

Consistently with the interactionist framework proposed by Woodman et al. (1993), this paper conceptualizes organizational creativity as a function of the creative results of interacting individuals which are exposed to contextual influences. In so doing, it attempts to contribute to extant research by offering a new model likely to capture the complexity of organizational creativity's antecedents. For this purpose, it starts from the importance of looking at employees as individuals who ask their colleagues for information and knowledge for satisfying their need to learn (i.e. knowledge collecting). Moreover, it postulates that increased information sharing through ICT use as well as a perceived organizational support from top management will both increase organizational creativity. In line with the role played by contextual factors on employees' behaviours, this paper also hypothesizes a moderating effect of both ICT use and top management support on the relationship between knowledge collecting and organization creativity.

In order to test the hypotheses, we empirically examine a sample of 362 employees' survey data collected from five MNCs' subsidiaries located in Italy and considered to be crucial for both local and national competitiveness. After controlling for the firm as well as for a number of demographic factors, our data show that a greater knowledge collecting orientation is positively associated with organizational creativity, in such a way that the more employees tend to ask others for information and knowledge they need, the more this is likely to foster organization-level creativity. We also provide significant evidence with regard to the positive

role played by the contextual factors considered in this paper (i.e. ICT use and top management support) on organizational creativity. Contrary to our expectation, the analysis demonstrates that the association between employees knowledge collecting and organizational creativity is negatively influenced in case of high ICT use. Finally, we do not found any relationship about the moderating role of top management support on the relationship between knowledge collecting and our dependent variable.

Managerial Implications

In an attempt to enrich the understanding of the antecedents of organizational creativity, this paper offers several suggestions for practitioners open toward establishing a clear path to increase their firms' creativity. Providing employees with autonomy and independence in establishing how to carry out their job can be an important determinant likely to lead to increased creativity. Similarly, contributing to create a work environment where individuals value others' knowledge and try to learn from them by asking them to share what they know, is found to play a critical role in strengthening corporate creativity. This would implicitly requires employees to be aware of their own limits and, accordingly, to stimulate them not to feel threatened by alternative views, while rather motivating them to embrace new ways for personal development and growth.

The empirical evidence we found with regard to ICT use suggests interesting clues for managers. On one side, heavier storage and exchange of formalized and explicit knowledge – typical of ICT tools – per se leads to increased organizational creativity; on the other side, when considered in relation to employees learning from others (i.e. knowledge collecting) it decreases organizational creativity. This result points to the importance for firms of making the right investments in ICT infrastructures, while always remembering that the most critical

source of competitive advantage cannot be stored in a computer. It will rather be embedded in more intangible and invisible supports.

Finally, this paper strongly shows that top management contribution is fundamental for organizational creativity to be enhanced. Thus, when employees feel their superior to support them in providing the resources needed for exchanging opinions with others and fostering personal orientation toward innovation, this will lead to increased organizational creativity. Based on this evidence, manager should thus pay attention to their own role in building a work environment committed to firm-level outcomes and ready for giving a personal contribution to its success.

Limitations and Future Research

This study presents several limitations that could be the basis for future investigation. A structural limit of the study is that the consideration of knowledge sharing processes as described by Van den Hooff and De Ridder (2004) inhibits the distinction between tacit and explicit knowledge and its vehicle of transmission (e.g. Hu & Randel, 2014). Further, differently from other papers, the study considers organizational creativity as the object of analysis without considering its link to the organizational performance. As some other research, the findings here reported could reinforce the consideration of organizational creativity as a mediator of firm performance (e.g. Calantone, Casvugil, & Zhao, 2002; Lee & Choi, 2003). Further, MNCs have been considered as loci for testing the hypotheses under the assumption that they are structurally adequate to provide the social and technical environment for nurturing organizational creativity. Nevertheless, the headquarter/subsidiary exchanges were not considered, neither were the dynamics related to the presence of globally distributed teams (e.g. Reis, 2014). Moreover, other diverse organizational settings (SMEs, NGOs) could present completely different conditions and return different results. In this vein, the localization of the

subsidiaries in Italy limits dramatically the cross-cultural facet of knowledge sharing and its contribution to organizational creativity (e.g. Zaidman & Brock, 2009). Concluding, given that this study does not take into account the role that organizational culture may play in determining organizational creativity and the little current work existing on exploring this relationship (McLean, 2005), future research could complement this paper by expanding the interest in contextual factors and thus devoting more attention to the organizational cultural issues.

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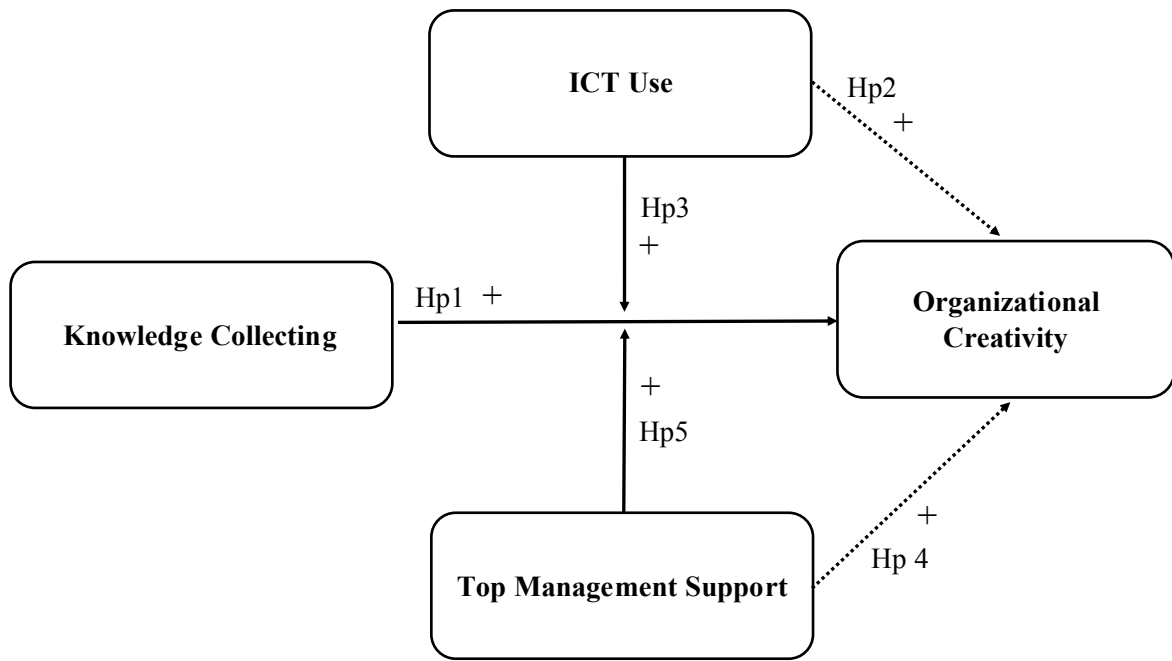
Figure 1

The research model

Variable	All firms				Firm1		Firm2		Firm3		Firm4		Firm5	
	Mean	S.D.	Min	Max	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
1. Firm1	.12	.31	0	1	-	-	-	-	-	-	-	-	-	-
2. Firm2	.32	.47	0	1	-	-	-	-	-	-	-	-	-	-
3. Firm3	.16	.37	0	1	-	-	-	-	-	-	-	-	-	-
4. Firm4	.27	.44	0	1	-	-	-	-	-	-	-	-	-	-
5. Firm5	.13	.33	0	1	-	-	-	-	-	-	-	-	-	-
6. Gender	.25	.43	0	1	.15	.36	.30	.46	.11	.31	.43	.50	.02	.14
7. Years of education	16.73	2.87	6	20	13.76	2.63	17.09	2.63	16.12	2.95	18.14	2.21	16.18	2.67
8. Seniority	10.61	8.88	0	41	12.78	11.49	8.40	6.55	13.78	9.64	11.05	9.11	9.45	8.65
9. Managerial role	.59	.49	0	1	.44	.50	.50	.50	.64	.48	.84	.36	.36	.48
10. Autonomy	5.38	1.22	1	7	5.06	1.42	5.47	1.06	5.21	1.34	5.51	1.28	5.36	1.10
11. Organizational creativity	4.92	1.33	1	7	4.23	1.10	5.60	1.06	3.94	1.40	5.05	1.11	4.77	1.39
12. Knowledge collecting	5.43	1.32	1	7	4.71	1.50	5.57	1.21	5.42	1.39	5.56	1.29	5.45	1.25
13. ICT use	5.19	1.48	1	7	4.56	1.47	5.93	1.12	4.65	1.52	5.20	1.43	4.52	1.54
14. Top management support	5.24	1.38	1	7	4.82	1.55	5.72	1.10	4.80	1.59	5.33	1.29	4.73	1.35

Table 1

Descriptive statistics of all variables distinguished among all sample of firms and each firm observed

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1.	Firm1	-													
2.	Firm2	-.24***	-												
3.	Firm3	-.15**	-.30***	-											
4.	Firm4	-.21***	-.41***	-.25***	-										
5.	Firm5	-.13**	-.26***	-.16**	-.23***	-									
6.	Gender	-.08	.08	-.14**	.25***	-.20***	-								
7.	Years of education	-.37***	.07	-.07	.30***	-.09	.26***	-							
8.	Seniority	.08	-.18***	.14**	.02	-.04	-.03	-.41***	-						
9.	Managerial role	-.11*	-.14**	.03	.30***	-.18***	-.02	.16**	.14**	-					
10.	Autonomy	-.12*	.05	-.07	.07	-.01	-.04	.04	.06	.11*	.90				
11.	Organizational creativity	-.17***	.35***	-.34***	.09	-.02	.07	.06	-.10	.05	.33***	.91			
12.	Knowledge collecting	-.20***	.09	-.04	.06	.00	.07	.06	-.03	.05	.37***	.36***	.96		
13.	ICT use	-.14**	.36***	-.19***	.04	-.18***	.15**	.07	-.06	-.03	.19***	.43***	.24***	.76	
14.	Top management support	-.09	.26***	-.15**	.06	-.13*	.05	-.07	.06	.11*	.30***	.52***	.40***	.39***	.92

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Cronbach's coefficients are shown in italic on the diagonal.

Table 2

Correlation matrix and Cronbach's Alpha for all variables (n = 362)

	Organizational creativity				
	Model1	**Model2**	**Model3**	**Model4**	**Model5**
Intercept	4.72***	4.73***	4.99***	5.01***	5.00***
	(22.46)	(23.42)	(25.23)	(25.22)	(25.10)
Firm1	-.55*	-.38	-.47	-.44	-.45
	(-2.16)	(-1.51)	(-1.89)	(-1.72)	(-1.74)
	1.79	1.82	1.82	1.83	1.83
Firm2	.71**	.69**	.25	.26	.23
	(2.97)	(2.98)	(1.11)	(1.13)	(1.00)
	2.52	2.52	2.85	2.85	2.88
Firm3	-.92***	-.91***	-.92***	-.89***	-.90***
	(-3.47)	(-3.56)	(-3.79)	(-3.63)	(-3.69)
	1.96	1.96	1.96	1.97	1.98
Firm4	.22	.21	-.02	-.00	-.04
	(.79)	(.79)	(-.09)	(-.02)	(-.16)
	2.78	2.78	2.86	2.86	2.90
Gender	.05	-.01	-.05	-.04	-.02
	(.33)	(-.06)	(-.38)	(-.32)	(-.14)
	1.20	1.21	1.21	1.21	1.23
Years of education	-.04	-.04	-.02	-.02	-.01
	(-1.68)	(-1.40)	(-.66)	(-.72)	(-.67)
	1.64	1.65	1.68	1.68	1.69
Seniority	-.01	-.01	-.01	-.01	-.01
	(-1.39)	(-1.10)	(-1.50)	(-1.33)	(-1.38)
	1.34	1.35	1.35	1.36	1.36
Managerial role	.18	.17	.11	.09	.08
	(1.29)	(1.25)	(.85)	(.69)	(.65)
	1.21	1.21	1.24	1.24	1.24
Autonomy	.31***	.21***	.14*	.15*	.15**
	(5.42)	(3.47)	(2.43)	(2.57)	(2.75)
	1.04	1.21	1.25	1.26	1.26
Knowledge collecting		.24***	.13**	.11*	.13**
		(4.79)	(2.74)	(2.34)	(2.69)
		1.22	1.38	1.42	1.47
ICT use			.14**	.13**	.12**
			(2.99)	(2.80)	(2.75)
			1.36	1.39	1.40
Top management support			.25***	.26***	.27***
			(5.03)	(5.23)	(5.52)
			1.52	1.52	1.58
ICT use*Knowledge collecting				-.06*	-.07*
				(-2.33)	(-2.43)
				1.09	1.21
Top management support*Knowledge collecting					.04
					(1.35)
					1.31
R^2	.31	.36	.45	.46	.46
Mean Vif	1.72	1.69	1.71	1.67	1.67

Firm5 as the baseline.

t statistics in parentheses; Vif values in italics; * $p < .05$, ** $p < .01$, *** $p < .001$

Table 3

Results of the multiple regression analysis on organizational creativity (n=362)