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Knowledge management, social media and employee creativity

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ABSTRACT

The study investigates the relation between social media use and employee creativity by adopting a knowledge management (KM) approach in order to consider the influence of social networks and interactions on individuals' creativity. The literature review debates how the use of social media empowers people to engage in conversational and collaborative KM, which in turn enriches people's cognitive and creative processes. Data collected from Greek tourism professionals confirmed that employees' creativity is positively related to their participation in social networks and their use of social media for: searching, storing and reading information (internal cognitive processes); and sharing, discussing and co-creating information (external cognitive processes). The study contributes to the field by providing a theoretical underpinning and practical evidence showing how social networks (i.e. a meso level) can influence employees' creativity. Hence, the findings highlight the need to shift focus from identifying and managing creative individuals (micro level) and/or organisational contexts (macro level) to creating and managing creative social networks (meso level).

1. Introduction

Nowadays, knowledge, innovation and creativity are widely recognised as the most crucial competitive factors that can substantially support and foster an enterprise's adaptation, survival and outstanding performance (Bohn, 1994; Boisot, 1998; Mertins et al., 2000; O'Dell and Grayson, 1998; Palacios and Garrigos, 2006). Actually, there is a reciprocal relation between these three concepts, as the capacity of an organisation to sustain its ability to generate ideas and innovate is predicated on its capacity to learn, expand its knowledge base, and its people sharing their knowledge (Teece, 2007). Thus, in dynamic markets whereby competition and risk intensifies and the product/service life cycles become shorter and shorter, the root to sustainable competitive advantage can only be found in continuous organisational learning, knowledge management (KM) and creativity (Nonaka and Takeuchi, 1995; Gottfridsson, 2012; Sundbo, 2012). Specifically in the growing and highly competitive service sector whereby service innovation can get easily copied, the ability of KM to lead to sustainable performance is even more critical. This is because by being mainly tacit (intangible) and embedded in organisational structures and cultures, knowledge cannot be easily copied and substituted and so, it enables firms to create business value in a unique, inimitable and non-transferable way.

The literature also makes a clear distinction between innovation and creativity. Innovation is often defined as the implementation of ideas, whereas creativity is related to the production of ideas (Amabile et al., 1996; Shalley et al., 2004). Moreover, studies investigating the antecedents of innovation (e.g. Prajogo and Ahmed, 2006) have concluded that 'creativity is a necessary factor enabling innovation' (Carayannis and Gonzalez, 2003, p. 587; Amabile, 2000) and that there is a positive relation between creativity and organisational innovation (Jiang et al., 2012). In this vein, creativity becomes the critical priority factor that firms have to enhance, as it helps them to respond to the rapidly changing environment and provides them with the stimulus for internal flexibility and revitalisation. Indeed, research shows that creativity is both a survival and competitive competency that can greatly increase the firms' performance (Lopez-Cabrales et al., 2009; Shin et al., 2012; Williams et al., 2011). This is because creative employee behaviour can positively influence both the personal and the team creativity performance and so, the firm's innovative performance (Hirst et al., 2009; Shin and Zhou, 2007; Slåtten and Mehmetoglu, 2011).

However, despite the great importance and inter-relations between KM, innovation and creativity, research has paid too much attention to the first two concepts, and overlooked the role of KM on creativity. Indeed, numerous studies reveal the impact of KM on the firm's innovation performance in the manufacturing (e.g. Revilla et al., 2009; Zhang et al., 2009; Cantner et al., 2009)

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and the high technology sectors (e.g. Van Riel et al., 2004), while very few studies have examined this relation in the service sector and specifically, in tourism (Sigala and Chalkiti, 2007; Hu et al., 2009). Tourism research has also primarily focused on studying the relation between KM and firm performance (e.g. Yiu and Law, 2014; Cooper, 2006; Hjalager, 2002; Yang and Wan, 2004). Thus, there is no research investigating the relation between KM and creativity, although creativity is the critical pre-requisite of innovation and firm performance. This gap is also surprising, because: employees' creativity heavily depends on their accessibility and availability of the right information at the right time and place (Hemsley and Mason, 2012; Hemphälä and Magnusson, 2012); and several authors (e.g. Farr and Ford, 1990; Basadur, 2004; Amabile, 2000; Brown and Duguid, 1998) have advocated that the people's KM activities significantly influence their creativity generation process. In addition, the following technological advances and research gaps also urge the need to conduct research examining the relation between KM and employee creativity.

The social media have dramatically changed the firms' knowledge ecosystem enabling them to expand and efficiently conduct KM activities beyond their organisational borders as well as in continuous and informal ways (e.g. through social networks) (Sigala, 2012). Indeed, the social media enable people: to aggregate, share, store and synthesise knowledge from various sources for creating new meta-knowledge; to identify and join social networks in order to stay informed professionally and participate in collective knowledge generation processes by sharing experiences, criticising theories and findings within various communities of practices; and to manage their own meaning making and KM processes. In addition, the technology performs many of the cognitive operations previously performed by people (e.g. information storage, retrieval and interconnections), which in turn liberates cognitive resources to be devoted on performing higher order KM activities. Nevertheless, although research has paid a lot of attention on studying how the social media transform and enrich the KM abilities and practices of the firms (e.g. Hemsley and Mason, 2012; Sigala and Chalkiti, 2014), none study has examined yet the relation between the use of social media for KM purposes and employees' creativity. The latter is critically important, as the firms need to justify the time and efforts that their employees invest on social media.

Moreover, research in employee creativity has also primarily focused on studying the impact of personal/intra-individual factors (e.g. personality, cognitive style, motivation) and of organisational and contextual factors (e.g. organisational culture, leadership style, organisational design, size, etc.) on creativity (e.g. Shalley et al., 2004; Pirola-Merlo and Mann, 2004). However, by adopting a people- and/or organisational-focus, research in creativity has missed out the fact that the individuals' creativity performance is driven by the relations and networks in which they are embedded (Aubke, 2013). This omission is critical, since it is becoming recognised that creativity is not an individual process, but rather a social and communication process, whereby networks and interactions can significantly influence the emergence of ideas (Hemphälä and Magnusson, 2012). Indeed, recent studies have emphasised the need to start studying the creativity generation processes by looking beyond the factors influencing the individual cognitive processes and by focusing on the factors influencing the accessibility to diverse knowledge in the work environment such as, the employees' social structures (Perry-Smith, 2006; Hemphälä and Magnusson, 2012) and their collaborative networking ties (Hargadon and Bechky, 2006; Baer, 2010; Aubke, 2013).

Despite these challenges and research needs in the technology, KM and creativity fields, there is yet no research exploring the role that social media can play on employees' creativity. Moreover, as technology advances have transformed the employees' learning and knowledge transfer processes into autonomous, informal, open, networked and always happening processes, the need to investigate the relation between employees' creativity and their accessibility to social networks and information has become very urgent. Although recent research has explored the impact of social ties and relations on employees' creativity (e.g. Perry-Smith and Shalley, 2003; Hemphälä and Magnusson, 2012; Cattani and Ferriani, 2008), these studies have adopted an intra-organisational focus by examining only the social interactions taking place within a firm and/or an innovation team. Moreover, these studies concentrated on creative output rather than the antecedents to creativity, and so, they have failed to provide an understanding on how networks can influence the creative performance. Consequently, as the social media expand the staff interaction, networks, knowledge exchanges and KM practices beyond the organisational spatial and contextual borders, it has become imperative to consider the creativity role of inter-employee interactions taking place within social networks by studying the relation of creativity and social media through the lens of KM.

The tourism sector is not excluded from such trends, as information is the lifeblood of tourism and the social media foster a paradigm shift in the tourism industry (Sigala et al., 2012). Actually, KM is recognised as a competitive and survival necessity for the tourism firms (Cooper, 2006; Hallin and Marnburg, 2008; Chalkiti and Sigala, 2008) that can significantly contribute to their performance (e.g. Yang and Wan, 2004). However, previous studies investigating KM in tourism (see review by Yiu and Law, 2014) have placed an increased importance on intra-firm KM, overlooking the need to also engage in knowledge creation and exchanges with stakeholders beyond the firm's borders (Bouncken, 2002; Zehrer, 2012). This is controversial since inter-firm knowledge sharing is highly important in tourism due to the complexity and the vulnerable nature of the tourism product. Tourism is an amalgam of many services from different suppliers, which in turn entails collaboration and increased interdependencies amongst the tourism firms and the destination stakeholders (Cooper, 2006). Tourism is also a dynamically changing and highly vulnerable industry that is continuously influenced by numerous environmental factors. To understand, keep abreast, foresee and respond to such changes, tourism firms need to continually collect, share and process a huge amount of information, so that, they can increase their creativity and continuously innovate. To addresses these challenges, the social media can currently empower the tourism firms to cultivate, expand and enhance their knowledge sharing practices with their customers, suppliers, various partners and other stakeholders. However, although tourism research has focused on investigating the business benefits of exploiting the social media for Customer Relationship Management, new service development, KM, e-commerce and marketing, there is no research examining the role that social media can play on tourism firms' innovation capabilities and specifically, on their employees' creativity.

Hence, given the importance of KM and social media on the creativity generation processes, specifically for tourism firms, the aims of this paper are twofold: to elaborate and provide a theoretical underpinning explaining the role of social media on KM; and to investigate the relation between the exploitation of social media for KM purposes and employee creativity. To achieve that, after analysing the KM processes, a literature review debates the transformative role of social media on KM by showing how the social media migrate the KM implementation from a technology-centric to a people-centric approach that supports conversational and collaborative KM processes. Then, a KM perspective is adopted for operationalising employee creativity and then, explaining how the social media enabled KM processes can enhance employee creativity. To investigate the latter relation, the study also conducted a national survey measuring the creativity and the use of social media for KM purposes by Greek tourism professionals. The

findings reveal interesting information about the level of social media exploitation for KM purposes in the Greek tourism industry as well as the relation of the former with employees' creativity. By adopting a KM approach, the paper contributes to the creativity literature, as it provides a theoretical underpinning and evidence explaining how the social networks can enhance the employees' creativity through the support of collaborative and conversational KM processes. The study also contributes to the creativity literature, as it adds one more level influencing creativity: i.e. apart from a micro level (intra-individual factors) and a macro level (organisational and environmental factors) (Pirola-Merlo and Mann, 2004), a meso level (referring to inter-individual relations in social networks) is also related to employee creativity. In this vein, the findings reveal and suggest several inter-individual factors that need to be further studied for explaining employee creativity. Finally, the paper concludes by providing several implications for advancing future research and addressing the industry's challenges related to social media exploitation and employees' creativity.

2. Knowledge management (processes) and social media

Although there are numerous approaches to conceptualising KM, there is a consensus that KM is a structured approach for creating, codifying, using, collecting, exchanging, measuring and retaining knowledge for responding to environmental challenges and creating additional value (Zehrer, 2012; Tobin, 1998; Rowley, 2000). To be valuable to a firm, KM should lead to changes in behaviour and to the development of new ideas, processes, practices and policies (Evanschitsky et al., 2007; Grant, 1996). Thus, there is a direct relation between KM and creativity. Knowledge is generally categorised into explicit knowledge (that can be easily encoded, stored and transmitted), and tacit knowledge (that is normally developed from action and experience, and it is shared through highly interactive communication). Knowledge is created through an intertwining of the various forms of knowledge (tacit, explicit, individual and collective) expressed by a knowledge spiral (Nonaka et al., 2000) that reflects an iterative conversion from tacit to explicit knowledge through four modes: namely socialisation, externalisation, combination and internalisation. For example, in order to share knowledge when people socialise, people need to externalise their existing (internal, tacit) knowledge. However, externalisation requires deeper processing and clarification, which means that to share knowledge, people have to exercise mental efforts that can result in individual learning processes (Webb, 1982). In other words, externalisation can lead to individual learning processes, since through the externalisation process people often deepen their knowledge and clarify their understanding. Moreover, inter-individual knowledge exchange in socialisation processes enable people not only to process inner knowledge, but also to access and internalise others' knowledge (Luhmann, 1995). Specifically, by processing, comparing and combining their own existing knowledge with others' knowledge, people can expand and internalise their knowledge by: adding new knowledge; changing existing knowledge to better understand the environment; and/or inferring new knowledge. People can feed back and externalise this new emergent knowledge to their social network for further processing, and it is these continuous interconnections between new and old knowledge, individual and shared knowledge that foster KM. One would have never been able to 'create' or be conscious of his/her (tacit) knowledge, unless if he/she was involved in these iterative processes of socialisation, externalisation, combination and internalisation processes (Johnson, 2001). Thus, it is the interplay between these individual and social cognitive processes that enable one to expand his/her cognitive system as well as KM processes and outcomes.

Although there are various models explaining KM processes most of them comprise the following five generic KM processes (Ponis et al., 2009): the acquisition, generation and creation, codification, storing, sharing, transfer and utilisation of knowledge. Authors also emphasise the equal importance of both knowledge creation (e.g. Davenport and Prusak, 1998) and sharing processes (e.g. Bock and Kim, 2002; Markus, 2001). This is because (as it was previously explained), knowledge creation mobilise and refresh the KM spiral process with additional and updated knowledge, while the accumulated knowledge enhances the absorptive capacity of people that in turn empowers them to better assimilate and produce further knowledge. Moreover, knowledge sharing supports continuous improvement processes by transforming an individual's process improvements into actual learning.

The social media comprise a set of tools enabling people to connect, communicate and collaborate by self-organising social networks and engaging in conversational interactions and social feedback that in turn facilitate trust, collaboration, knowledge sharing and generation within a community (Hemsley and Mason, 2012). Indeed, the social media enable people to enrich their KM at various stages of the knowledge creation-sharing process. For example, a viral information event may be created (e.g. on Youtube), debated and influenced (by blogs), disseminated and spread (by social networks) and stored and acknowledged as a part of history/social capital (e.g. wiki). The social media represents the most successful open information distribution mechanism enabling people to network for sharing, debating, (co)-creating knowledge and learning from each other (Chalkiti and Sigala, 2008; Wagner and Bolloju, 2005). Because of their affordances to enable people to (co-)create, access, (co-)expand and share a repository of social knowledge, the social media accelerate and fortify the interplay and spiral processes between one's social system and his/her cognitive processes, and so, social media can nowadays be considered as a major fuel of knowledge creation and KM processes. Overall, the social media transforms the KM by migrating its implementation from a technology-centric approach (that highlights the information processing and centralised aspects of the technology) to a people-centric approach (that enhances and emphasises the conversational and collaborative-based KM processes).

Analytically, the social media empowers individuals to take an active role in knowledge co-construction by contributing, debating and negotiating content with others through a conversational and collaborative approach that enables information comprehension, feedback, reflection and knowledge generation (Jonassen, 2000). For example, discussion forums, wikis, and weblogs, are conversational technologies enabling knowledge creation and sharing through (Wagner and Bolloju, 2005; Jonassen, 2000): discussions; 'questions and answers' process (discussion forums); collaborative editing (wikis); and/or storytelling (weblogs). Hence, the social media expands the cognitive and knowledge creation abilities of an individual by enabling him/her to process knowledge beyond his/her own inner mental processes and to consider the contextual and social aspects of this knowledge. In other words, the social media fosters the creation of knowledge by nurturing and enriching the inter-play of individual and collective cognitive processes enabled by social interactions taking place internally but also externally to a firm's organisational borders.

In this vein, the social networks highlight and fuel the existence of a meso level that influences the individual's knowledge processes taking place between internal and external cognitive processes. It is this meso level referring to the inter-personal relations in social networks that enhances one's KM processes and outcomes and enable people to (co-)create knowledge, because social networks empower people to acquire and debate knowledge with others (external collaborative cognitive processes), which they can in turn compare with existing personal knowledge for internalising,

adapting, accommodating or assimilating new knowledge (internal individual cognitive processes). In studying the role of wikis in e-learning processes, Cress and Kimmerle (2008) gave very specific examples on how wikis enable the inter-play between one's wiki's social system and his/her cognitive system. Their findings provided evidence on how wikis create a dual iterative socio-cognitive KM system that supports, fuels and enriches collaborative learning processes and outcomes through spiral processes of externalisation, socialisation, internalisation, assimilation and accommodation. In other words, Cress and Kimmerle's (2008) study confirmed the appropriateness of a systemic approach (referring to the inter-play between one's cognitive system and his/her social system) for explaining how social media support KM via supporting and fortifying interlocks between individual and network cognitive processes.

The importance of a meso level on influencing learning processes and knowledge (co-)creation is also nowadays recognised by: research in e-learning that adopts a Service-Dominant-Logic (SDL) (e.g. Haukkamaa et al., 2010); and/or the connectivism learning theory (Siemens, 2005), which also emphasizes the knowledge (co-)creation through the combination of internal and external cognitive processes and so, it highlights the role of social networks in learning. Connectivism learning theory is explicitly related to the role and exploitation of social media in learning, as the latter empower people to connect and expand their own learning processes/outcomes by interacting and expanding their internal cognitive processes with the cognitive processes taking place within social networks. Hence, connectivism advocates that in our dynamic world whereby knowledge becomes obsolete very fast, what really matters for learning is not what one knows, but which networks he/she has access to. According to SDL, value is not embedded in goods, but it is created through their use ('value-in-use') (Grönroos and Gummerus, 2014). Moreover, the context in which value is derived critically influence the value co-creation processes ('value-in-context'); i.e. 'the context of value creation is as important to the creation of value as the competences of the participating parties', because value co-creation is influenced not only by the interactions amongst the actors but also by the "contextualisation" or formation of the social context that frames the exchanges/integration of resources amongst actors (Chandler and Vargo, 2011, p. 38). The SDL also proposes a multilevel approach for conceptualising context, which is composed of three levels (namely micro, meso, and macro levels) that are also linked with oscillation relations, since each level influences the other. The meso level of context includes dynamic webs of actors, their relationships and their structural positions, who integrate and exchange resources to co-create value for themselves and for others (Vargo and Akaka, 2012). Consequently, research in SDL increasingly measures the composition and the links amongst actors in service-ecosystems for studying the impact of the meso level on value co-creation (Akaka and Chandler, 2011; Vargo and Lusch, 2011). However, recent SDL also advocates that the social context is not only composed by a variety of inter-connected relationships (Chandler and Vargo, 2011), but also by the social norms or "institutions" that guide and/or motivate the actors' interaction (Edvardsson et al., 2011; Vargo and Lusch, 2011; Vargo and Akaka, 2012). In this vein, Edvardsson et al. (2011) proposed the concept of "value in-*social*-context". The applicability and implications of the SDL approach on cognitive processes and knowledge co-creation have been examined and confirmed by Haukkamaa et al. (2010) who studied knowledge co-creation processes in health education. Specifically, their study provided evidence that the learning outcomes and abilities of actors to (co-)create knowledge are affected by: the actor composition of one's learning network, as it influences one's access to different resources and so, opportunities for resource integration; the ties and links amongst the network actors; the intensity and depth of the co-operation and communications between the learning actors; and the social strength of the network (i.e. trust, bonds and transparency amongst actors) which influences not only the ability but also the motivation of the actors to exchange and create shared knowledge in the network. Their research also showed how the various learning actors participate in and form various networks on an ad-hoc basis, because accessibility to networks with multifaceted expertise allows the actors to cooperate and co-create 'knowledge-in-context' according to their situational needs (Kallio, 2015).

The 'value-in-context' approach also emphasizes the recursive/iterative nature of value co-creation in service ecosystems, as there are numerous interlocking relations amongst the three levels of context (Akaka and Chandler, 2011; Vargo and Lusch, 2011). Based on this view, the efforts of individual actors to (co)-create value for themselves not only contribute to individual levels of value, but they also contribute to the formation of the social context (composed of relationships and resources) through which value is being derived, via contextualisation (Chandler and Vargo, 2011; Vargo and Akaka, 2012) and/or institutionalisation (Edvardsson et al., 2011). The latter is important, because it is in line with: structuration theory (which also provides a theoretical foundation of SDL, Akaka et al., 2012) advocating the interrelations between the actor and its social system as well as the structure (norms, meanings and resources) and systems (reciprocal relations/interactions amongst actors); and with the previously discussed KM literature (e.g. Nonaka et al., 2000; Luhmann, 1995) recognising and highlighting the role of the inter-plays between the individual and the social cognitive processes for expanding one's knowledge processes and outcomes. In other words, in (knowledge) co-creation processes, what matters and contributes to the co-creation processes and outputs is not the one way directional and causal relations between the actors and their social network, but the inter-play and interlocking communication relations amongst the actors and their social networks (Vargo and Akaka, 2012). Hence, to better understand knowledge co-creation, research should emigrate from studying one's cognitive system and the factors influencing it to studying the interactions of one's cognitive system with his/her social networks and cognitive processes.

In addition, the social media enhances not only the functional (information cognitive processing), but also the socio-affective aspects that support collaborative KM processes, such as communication, peer pressure/recognition, trust building and enrichment of bonds amongst the members of social networks (Liu et al., 2007). For example, wikis and blogs allow collaboration and relationship building amongst individuals (Jonassen, 2000), while tagging enables the formation of social networks (Ullrich et al., 2008). Several authors have also analysed how the various social media tools motivate and enable people to (co)-create and share knowledge. For example, Yu et al. (2010) discussed how blogs enhance knowledge sharing amongst professionals, because blogs support both the codification of knowledge (e.g. through tags and the profiling information of the knowledge creators) and the interpersonal communication and conversations. Others (e.g. Ullrich et al., 2008; Bateman et al., 2007; Seldow, 2006; Hayman, 2007) have analysed how (social) tagging and geovisualisation tools (e.g. web mapping services, geotags) can support knowledge understanding, creation and dissemination by linking meanings, by exploring and visualising the inter-relations of concepts, by exploring the profile and networking with experts, as well as by enabling KM processes such as information filtering, categorisation, recalling and negotiation. The affordance of social media to enhance these socio-affective factors of KM processes is critically important, because research in knowledge co-creation (Haukkamaa et al., 2010) also found that the actors' efforts to exchange resources

Table 1
Knowledge conversion circles enabled by social media.

From	To	
	Tacit knowledge	Explicit knowledge
Tacit knowledge	**Socialisation** • Participate in online discussions/forums and social networks • Update profile and distribute information in social networks	**Externalisation** • Users placing tags to their bookmarks, to their documents; • Users posting comments to online discussions
Explicit knowledge	**Internationalisation** • Sense-making and learning-by-doing processes (e.g. participate in simulations on virtual words); • Passive learning by reading others' comments and online discussions; • Keeping notes of what it was read; • Writing reflections of reading/discussions	**Combination** • Users building a collective knowledge • Users uploading information on a social network or a wiki

Source: adapted from Nonaka et al. (2000).

for knowledge creation are intensified and deepen when their communication and co-operations are characterised by trust, transparency and mutual exchanges of resources.

In summary, the literature reveals how the social media can support all the four circles of the knowledge conversion processes (Table 1) by empowering people to create and renew knowledge in a dynamic, conversational and flexible way.

Overall, it is generally agreed that a three layer framework can be used for summarising and measuring the exploitation of information and communication technologies (ICT) for KM purposes (Jackson, 2000; Zack, 1999; Rosenberg, 2001). The lowest layer represents technology enabled document management that supports information storage and distribution. The second layer represents KM processes for information creation, sharing, and management, where people actually store information in the ICT, create new content, and enrich knowledge databases for further online retrievals. The third layer refers to the entrepreneurial wisdom, which expresses the affordances of ICT to empower people to create organisational know-how. Despite its theoretical underpinning and usability, this framework is limited in measuring the exploitation of social media for KM, because it only considers the information processing capabilities of ICT, while (as previously discussed), the social media have functionalities supporting the collaborative, participatory and conversational implementation of KM processes (i.e. social and emotional KM affordances).

To better consider the conversational affordances of social media and measure their exploitation for KM, Sigala and Chalkiti (2014) adapted the above mentioned three layer framework as follows: the lowest levels of social media exploitation represent the use of technological tools for searching, storing, categorising and linking information; higher levels of social media exploitation represent the use of technological tools for identifying and participating in social networks with the aim to develop and maintain interpersonal relations that can in turn support KM processes referring to the sharing, discussion and negotiation of information with others; while the highest levels of social media exploitation aim to support knowledge (co)-creation processes through the synthesising (i.e. comparing and contrasting) and discussion of information. The model encompasses usages of social media for all the KM processes (i.e. socialisation, externalisation, accommodation, internalisation) and so, it is in line with the previous analysis showing the role of social media to support KM by fuelling the interplay of internal and external KM processes (Nonaka et al., 2000; Luhmann, 1995; Cress and Kimmerle, 2008). The ranking/levels of the three types of social media use for KM purposes are also in accordance with research in collaborative and social media e-learning (e.g. Lin and Tsai, 2012), which found that in order to learn, people need to engage into high levels of interaction and participation within social media/networks ranging from low (shallow) levels of cognitive engagement (i.e. information processing skills such as browsing, searching and categorising information) to high (meaningful) levels of cognitive engagement (i.e. integration and adaptation of new knowledge into the existing knowledge base for creating new meta-knowledge).

3. Employee creativity and social media

3.1. Employee creativity: definition, types and determining factors

Creativity is generally related with the production of new and useful ideas on products, practices, services or procedures that are both *novel* and *potentially useful* to the organisation (Oldham and Cummings, 1996; Shalley et al., 2004; Amabile, 1988; Ford and Gioia, 2000; Madjar et al., 2002). Thus, to be creative, ideas have to provide business value, e.g. by creating new products and services, taking advantage of business opportunities, and/or improving organisation effectiveness (Zhou and George, 2001; Mumford and Gustafson, 1988; Shalley et al., 2004). Sundbo (2012) identified two major types of creativity that can provide business value and increase the firm's innovativeness: path-breaking radical new behaviour, ideas or things; and defensive problem solving behaviour (e.g. new ways or new means that overcome daily impediments).

An employee's creativity is described by a framework where creativity is a function of personal characteristics (e.g. personality, skills, experience, motivation), characteristics of the organisational context (e.g. leadership, management style, culture), and the interactions amongst these characteristics (e.g. Amabile, 1988; Shalley and Gilson, 2004; Woodman et al., 1993; Zhou and Shalley, 2003). However, recent research provides significant evidence showing that in order to maximise the efficiency of the individuals' creativity, firms have to primarily nurture and support collective thinking rather than individual cognitive processes (Baer, 2010; Hargadon and Bechky, 2006). Indeed, research in creativity is immigrating from an individual focus to a social and KM perspective (Aubke, 2013; Hemphälä and Magnusson, 2012) and it stresses the need to identify the factors influencing the individual cognitive processes by focusing on people's accessibility to diverse knowledge such as, the employees' social structures (Perry-Smith, 2006; Hemphälä and Magnusson, 2012) and their collaborative networking ties (Hargadon and Bechky, 2006; Baer, 2010; Aubke, 2013).

3.2. A KM approach for explaining employee creativity

There are numerous studies supporting that creativity is a social and communicative process supported by KM processes rather than an individual cognitive process. Brown and Duguid (1998) and Wenger and Snyder (2000) draw upon cognitive aspects (i.e. learning theory and KM) for showing how communities of practice

and informal networks can enable knowledge sharing, learning and creativity by fostering reciprocity, trust, and communication amongst members. The Burt's (2004) structural hole hypothesis that provided evidence of the impact of social networks on individual creativity is a significant study adopting a KM approach to creativity. Burt (2004) showed that employees with bridging structural holes between cliques can become more knowledgeable of alternative ways of thinking and behaving, because connections across cliques enable four major KM processes: accessibility and awareness of each others' interests and difficulties; transfer and translation of best practices amongst cliques; adaptation of knowledge to each others' thinking or behaviour; synthesis of the cliques' practices into new beliefs or behaviours. The importance of social relationships for creativity is also adopted by Perry-Smith and Shalley (2003) who developed a social perspective on creativity. Although actor-centric creativity research traditionally focused on domain-relevant knowledge alone (Aubke, 2013), Perry-Smith and Shalley (2003) highlighted the importance of cognitive processes as transfers of domain relevant knowledge. Other authors (Mumford and Gustafson, 1988; Simonton, 1984) have also argued that the potential for creative performance increases with the levels of domain-relevant knowledge that someone possesses or has access to, while Obstfeld (2005) advocated that open networks are better at creating opportunities for generating new ideas. Studies also show that the creative activity is mainly an outcome of collective processes taking place within teams (Hargadon and Bechky, 2006) and that employee creativity increases in collective situations (Runco, 2004). Thus, the focus is shifting from the individual creative person to the connections that this individual possesses, and more importantly the focus is placed on how these connections facilitate knowledge transfer and KM processes that in turn result in creative output. This KM approach on how creativity is generated is also in line with the previously discussed literature on KM and social media showing that social networks create a meso level of inter-personal relations, whereby an inter-play between internal and external cognitive processes takes place, and which in turn fosters the (co-)creation of new knowledge.

However, although research has highlighted the need to examine the generation of employee creativity from a KM approach emphasising the social networking and communication/collaboration aspects, no research has examined yet the relation between the employees' creativity and the employees' accessibility and interactions with social networks. Earlier, Woodman et al. (1993) had proposed a conceptual interactionist model for examining the influence of group dynamics on individual creative behaviour, but later studies have solely focused on measuring the impact of group dynamics on collective (and not individual) creativity and on proposing organisational and process variables that can influence the results of collective creativity (e.g. Taggar, 2002; Pirola-Merlo and Mann, 2004). Consequently, the role of social interactions in enhancing the creative capabilities and performance of employees is still ignored. Some recent studies (Rodan and Galunic, 2004; Perry-Smith and Shalley, 2003; Baer, 2010; Hemphälä and Magnusson, 2012; Kratzer et al., 2004, 2006, 2010) have examined the relation between employees' creativity and employees' social ties with other internal staff, but this research is also limited, because of two reasons. First, these studies are spatially and contextual limited to relations taking place within firms or creativity teams, while nowadays technology advances in social media: (a) expand the social and conversational interactions of staff beyond the organisational borders; and (b) enrich and transform the nature and the impact of social interactions. Indeed, advances in technology tools and human-computer interaction afford three new ways for supporting creativity (Nakakoji, 2005): they help people develop skills related to creativity or creative thinking; they support people's creative process (and so, free up cognitive resources) while engaging in a creation task; and they engage people in new kinds of experiences. In addition, the social media can boost creativity through the facilitation of human-to-human mass and personal interactions and communication (Hemsley and Mason, 2012). Secondly, studies examining the impact of social networks on creativity have focused on creativity and innovation outputs and not on identifying and explaining the factors and processes through which social networks influence creativity (Aubke, 2013). In addition, these studies have provided mixed results, because they have measured different innovation outputs by various methods (Hemphälä and Magnusson, 2012), such as patents, managers' performance, managers' innovation involvement and knowledge transfer. Consequently, research explaining the role and the ways in which social media can influence employees' creativity is urgently required.

4. Research methodology

4.1. Research aims

The study had two major aims: (a) to investigate the role and influence of social media on supporting, enhancing and transforming KM; and (b) to explore the relation between social media exploitation for KM purposes and employee creativity. To achieve that, the paper reviewed the literature and developed related hypotheses, which were then tested by collecting data from Greek tourism professionals. Tourism was selected as the context of this study due to the critical role that knowledge and social media play in tourism, as well as the importance of creativity on tourism firms' survival and competitiveness.

4.2. Development of the research hypotheses

The previous sections have thoroughly debated the role of social media and KM on creativity. Analytically, the following were discussed: (a) how the use of social media can enrich and accelerate the cognitive and learning abilities of individuals through collaborative and conversational KM processes in order to generate knowledge and increase their creativity; and (b) the shift of creativity research from an individual focus and cognitive processes to a network/connection focus and social cognitive processes that highlight and adopt a collaborative KM approach for explaining individual's creativity enhancing processes and performance. Sigala and Chalkiti (2014) provided a three level framework that effectively summarises the exploitation of social media for collaborative KM purposes. Hence, this framework is adopted here in order to identify previous studies in creativity that can be used for explaining how each of the three levels of social media exploitation for collaborative KM can support and influence the employees' creativity performance. The results of this literature review are presented below.

The lowest level of social media exploitation represents a technology usage relating to searching, storing, categorising and linking information. Idea exploration and information search are considered as critical triggers pushing and instilling someone's ability and motivation to generate ideas and start the creative generation process (e.g. Kanter, 1988; Farr and Ford, 1990; Basadur, 2004). Hence, the use of social media for information search can enhance a person's creativity. Moreover, from a dynamic and cognitive approach, idea generation is also considered as the combination, linking and/or reorganisation of information and existing concepts to solve problems or to improve performance (Goldschmidt and Tatsa, 2005; Amabile et al., 2005). For example, according to Lisa et al. (2008, p. 55) creativity is '*the emergence of new ideas through the original combination of common understandings,*

or the transformation of existing concepts through the reorganisation of existing knowledge networks'. Kanter (1988) also advocated 'kaleidoscopic thinking' (i.e. the re-arrangement of already existing pieces into a new whole) as a critical idea generation technique. In this vein, people using the social media for storing, categorising and linking/relating information (e.g. by using tags or scanning the social graph of people's profile in social networks) can significantly support their creativity performance. This is because, as it was previously discussed, (social) tagging and geovisualisation tools enable people to better understand information, explore the connections of concepts and inter-relate meanings in new ways (e.g. Ullrich et al., 2008; Bateman et al., 2007; Seldow, 2006; Hayman, 2007).

Thus, based on the above:

H1. The use of social media for first level KM processes (i.e. searching, storing and categorising information) is positively related to employee creativity.

The second level of social media exploitation represents KM processes whereby people identify and participate in social networks for developing and maintaining interpersonal relations, and for sharing, discussing and negotiating information with others. This level of social media exploitation is different from the previous one, because in this level, the people are not solely passive receivers of information coming from various networks, but they are also active discussers and users of this information with other people on the networks. Thus, by going from level one to two, social media support not only inner but also external cognitive KM processes. Several studies are identified below providing evidence on how these technology-enabled KM processes can enhance the creativity performance of employees.

People build and participate in social networks as well as develop personal relationships in order to give and receive help and support from others (Podsakoff et al., 1997; Zhou and George, 2001; Perry-Smith and Shalley, 2003). Indeed, people participate and use online social networks for providing and sharing information as well as for getting access to a mass amount of diversified information. Numerous studies point to the potential of knowledge diversity and accessibility to improve the innovativeness of staff (Kilduff et al., 2000; Obstfeld, 2005; Granovetter, 1983). Indeed, connections with various networks enable people: to be exposed to and access heterogeneous knowledge, alternative views and so make creative solutions (Amabile, 2000, 2006; Woodman et al., 1993; Perry-Smith, 2006); more quickly generate new ideas and solutions and to improve their ability to perform complex tasks using new methods (Perry-Smith and Shalley, 2003); to combine existing ideas with new ones, exchange new information more quickly, and gain value from this knowledge-interaction process (Sigala, 2013); and to be more fully informed (Rodan and Galunic, 2004). Burt (1992, 2004) argued that more interactions with the same people are likely to reveal redundant and similar types of information and so, they result in the creation of less knowledge. Thus, the use of social media for building diversified contacts and for expanding the staff interactions beyond the internal employee networks and the known (status quo) organisational mental schemas can be a valuable source and mechanism for employees to generate creative ideas. Because of that, it is not surprising that building network ties or being exposed to different contacts and networks is found to increase individuals' creativity (e.g. Zahra et al., 2000; Yli-Renko et al., 2001; Obstfeld, 2005; Hemphälä and Magnusson, 2012; Kijkuit and Van den Ende, 2007). By using a social network theory and technique, Cattani and Ferriani (2008) have also recently shown that individuals who occupy an intermediate position between the core and the periphery of their social system have greater creativity outcomes in relation to others located at the core of a network. This is because the location of the former enables them to access more and diversified social systems, which in turns also exposes them to: different information; ways of thinking and sources of inspiration and stimuli; and so, various opportunities to co-create knowledge. Thus, it was concluded that participation in (various) social networks is an enabler of individual creative achievements.

Creativity research adopting a social psychology approach also provides supports for the impact of participation in social media on employees' creativity. For example, Simonton (1984) advocated that building the creativity ability of a person demands the creative individual to be placed within a network of interpersonal relationships. Perry-Smith and Shalley (2003) also argued that building and maintaining contacts and interactions within social networks can significantly enhance an individual's creativity, because: it increases the range, depth, and speed of information access; and it exposes people to a variety of connections which in turn increases the experience of 'learning by doing', the ability to integrate accumulated knowledge, and, so, the speed and depth of subsequent creativity outcomes. By studying the affordance of networks to foster collective creativity, Hargadon and Bechky (2006) identified four specific types of social interactions enabled by participation in social networks that can in turn increase the employees' creative abilities: *help seeking, help giving, reflective reframing and reinforcing*. H*elp seeking and giving* include actions that individuals use to induce others to join in efforts to resolve a particular problematic situation. Thus, these activities play a major role in instilling and triggering moments and events for starting the creativity developing processes. *Reflective reframing refers to actions* when participants in social interactions make new sense of what they already know, while *reinforcing activities*, support individuals as they engage in help seeking, help giving, and reflective reframing and, thus, they are also critical to enabling those moments when collective creativity emerges.

Thus, based on the above:

H2. The use of social media for second level KM processes (i.e. accessing and debating information with others) is positively related to employee creativity.

Moreover, as participation in various social media and networks exposes people to different types of information, ideas and perspectives, which in turn accelerates their creativity, it is hypothetised that:

H3. The number of social media and networks used for collecting or discussing information is positively related to employee creativity.

The highest level of social media exploitation refers to the use of technology for (co)-creating knowledge. Numerous studies (see literature review by Ryzhkova, 2015) and connectivism theory (Siemens, 2005) provide evidence of how the dialogical processes enabled by social networks can assist users to (co)-create knowledge. For example, Füller et al. (2007, 2011) and Chalkiti and Sigala (2008) demonstrated how the discussions facilitated in online communities enrich the ideation process and enable community participants to (co)-create more and innovative new service ideas. Haukkamaa et al. (2010) showed how the conversations developed amongst actors of a learning network increase the knowledge co-creation processes and the actors' knowledge outputs. Schröder and Hölzle (2010) and Kleinschmidt et al. (2010) also showed how firms can increase the innovation and creativity performance of their employees by building and using virtual communities. In sum, these studies show that by supporting dialogues and interactions, social networks enable people to (co)-create knowledge and ideas, because people get exposed to various situations and information on which they can reflect, compare and contract their own experiences/knowledge and so, ultimately create new (meta)-knowledge by synthesising the various accumulated resources.

In this vein:

H4. The use of social media for third level KM processes (i.e. co-creating and generating knowledge) is positively related to employee creativity.

4.3. Data collection methods and sampling

Data was collected through a large-scale web-based survey. The questionnaire was pre-tested by two academics and three professionals for checking its content reliability and usability. Apart from some minor editing changes that were done for making the questionnaire easier to understand and complete, no other changes were found to be required. The questionnaire was distributed to Greek tourism professionals through various means: (a) publication of press releases and of a clickable banner on a major tourism portal (www.traveldailynews.gr) promoting the study and motivating tourism professionals to fill in the online questionnaire; traveldailynews.gr was selected, as it represents the most widely known and the largest professional portal in the Greek tourism industry featuring more than 10,000 thousands daily newsletter subscribers and numerous online daily website visitors; (b) press releases promoting the online survey were also published in several other online and offline media (e.g. Melody radio station, Greek Travel Pages, www.GTP.gr); and (c) an e-mail campaign targeting the 324 members of the eBusiness Forum group specialising in tourism (this network is part of the Greek Networking and Research, www.grnet.gr); the latter group was used because it includes tourism professionals that are interested and actively involved in tourism and technology developments, and so, they were very appropriate and likely to respond to the survey.

One hundred and thirty six responses were received. After excluding the incomplete questionnaires, 132 usable responses were further analysed.

4.4. Measures and data analyses

The research instrument included three sections collecting information about: (1) the respondents' demographic and working profile as well as their experience with the internet (Table 2); (2) the respondents' use of various social media (Table 3) as well as their level of social media exploitation for KM purposes (Table 4); and (3) the respondents' creativity (Table 4).

Based on previous studies (Sigala and Chalkiti, 2014; Rosenberg, 2001), ten items were used for measuring the use of social media for KM purposes: four items related to the use of social media for searching, storing and reading information for personal or public use (first exploitation level); four items reflected the use of social media for networking, sharing and discussing information with others (second exploitation level); and two items measured the exploitation of web 2.0 for (co)-creating and generating new knowledge (third level of social media exploitation). These ten items were not only previously validated for measuring the use of social media for collaborative and conversational KM processes (Sigala and Chalkiti, 2014), but they also reflect and measure the way people use social media/networks for communicating, connecting and interacting with their social networks – meso system. So, the first exploitation level of social media represents individual cognitive processes, while the second and third exploitation levels of social media highlight the use of social media for integrating and fuelling individual with social cognitive processes, which as previously discussed (SDL, KM and e-learning theories). Measuring how people use the social media not only for personal KM purposes but also for interacting with this meso system is critically important to measure, because it is the interplay amongst individual and social cognitive systems that technologies support and fuel which in turn

Table 2
Respondents' profile.

	N	%
Age		
19–30 years	31	23.5
31–40 years	47	35.6
41–50 years	24	18.2
51–60 years	17	12.9
>60 years	13	9.8
Total	132	100%
What is your highest education achievement?		
High-school	8	6.1
Vocational education	16	12.1
Undergraduate degree	51	38.6
Postgraduate degree	48	36.4
PhD	9	6.8
Total	132	100%
How many years have you worked in tourism?		
<5 years	29	21.9
6–10 years	32	24.2
11–20 years	36	27.3
21–30 years	21	16.0
>30 years	14	10.6
Total	132	100%
What is your gender?		
Male	69	52.2
Female	63	47.8
Total	132	100%
Years of using the Internet		
1–3 years	4	3.0
3–6 years	22	16.7
>6 years	106	80.3
Total	132	100%
Type of professional activity		
Firm owner and manager	36	27.3
Employee	96	72.7
Total	132	100%
In which tourism sector do you work?		
Hotel	42	31.8
Restaurant	12	9.1
Travel agency	24	18.2
MICE	8	6.1
Transport	5	3.8
Cultural organisations, leisure	6	4.6
Destination management organisation	11	8.3
Public tourism organisation	15	11.3
Other (consultants)	4	3.0
Other (education)	5	3.8
Total	132	100%
What is the size of the business you work for?		
1–10 employees	67	51.0
11–20 employees	15	11.3
21–50 employees	16	12.1
> 50 employees	34	25.6
Total	132	100%
Where is your work/business located?		
Peninsular (urban)	62	47.0
Peninsular (rural)	21	16.0
Insular (urban)	26	20.0
Insular (rural)	23	17.0
Total	132	100%
In which department do you work?		
Marketing	37	28.0

Table 2 (*Continued*)

	N	%
Operations	44	33.3
Finance	11	8.3
Human resources	8	6.1
General manager	23	17.4
Other (international relations)	4	3.1
Other (education)	5	3.8
Total	132	100%

enables people to expand their cognitive and creative performance. According to Zhou and George (2001), thirteen items were used for measuring employee creativity.

Multiple regression analysis was used for exploring the four hypotheses. Since age, gender and professional experience are found to influence employee creativity (Robinson and Beesley, 2010; Tsaur et al., 2011; Wong and Ladkin, 2008; Puccio and Grivas, 2009), the estimation model controlled for respondents' age, gender and experience in the tourism industry (i.e. number of employment years) as follows:

$$\text{Employee creativity} = \text{constant} + b_a \times \text{Age} + b_b \times \text{Gender} + b_c \times \text{Tourism experience} + b_1 \times \text{1st exploitation level} + b_2 \times \text{2nd exploitation level} + b_3 \times \text{3rd exploitation level} + b_4 \times \text{Number of social media/ networks used}$$

5. Analysis and discussion of the findings

5.1. Respondents' profile

The profile of the 132 respondents reflects a representative sample of the professionals working in the various sectors of the Greek tourism industry (Table 2). Respondents represent both young and matured professionals (59.1% were until 40 years old), have received tertiary education (81.8%) and reflect a good gender representation (52.2% were male). The majority of the respondents worked for hotels (31.8%), travel agencies (18.2%) and public tourism organisations (11.3%), while the remaining 38.7% were employed in several other sectors such as, the MICE (Meetings, Incentives, Conferences, Exhibition), the transport, cultural, educational as well as other sectors. A good percentage of respondents represent firm owners and managers (27.3%) in relation to respondents reporting working as employees (72.7%), which is important given the high percentage of tourism entrepreneurs representing micro, small and medium firms in the Greek tourism industry. Respondents also work in both small and large businesses, since 62.3% work for firms having no more than 20 employees, and 37.7% work for firms with more than 21 employees. The respondents work mainly in operations and marketing positions (61.3%), while a significant part of the respondents (17.4%) are general managers. The respondents also represent professionals with a varied experience in the tourism industry, as their working experience is almost equally distributed amongst all categories from 1 to more than 30 years. Although the majority of the respondents (47%) are located in peninsular urban locations, the remaining respondents represent employees almost equally located in other geographical areas. Finally, the respondents reported a very good experience in Internet use (80.3% are using the internet for more than six years).

Table 3
Adoption and use of social media tools.

Types of social media tools	*N*	%
Use of social networks, e.g. facebook.com or linkedin.com [Number of social networks that you are a member 4.3 = the average number of social networks that users reported to be a members]	122	92.4
Do you have a personal blog?	28	21.2
Do you read the blogs of other users?	74	56.0
Are you a member of a microblog, e.g. twitter?	38	28.7
Do you use a collaborative authoring tool? e.g. wikipedia.com	23	17.4
Do you use a content sharing network (e.g. youtube.com, flckr.com)?	98	74.2
Do you use any collaborative tagging website (e.g. delicious)	24	18.1
Do you use any text, audio, videoconferencing sharing tool? e.g. skype, slideshare.com, scrib.com	87	66.0

The number of the types of social media tools and the number of the social networks used by respondents were added in order to *determine the number of social media and networks (construct included in the regression model)*. Average number of social media and networks used per respondent = 7.6.

Table 4
Social media use for professional KM purposes.

When using social media for professional purposes, I use at least one social media tool in order to:	Mean	SD	Factor loading
1st level of social media exploitation	(α = 78.1, variance explained = 11.23)		
Read information	6.4	0.91	0.81
Search for collecting information	6.1	0.83	0.77
Upload information online for storing it for personal use	4.3	1.12	0.63
Upload information online for storing it for public use	4.1	1.11	0.76
2nd level of social media exploitation	(α = 77.5, variance explained = 10.86)		
Update my personal profile and status	4.3	1.08	0.78
Share information for discussing it	5.6	0.96	0.78
Become a member of professional networks	4.1	1.16	0.75
Identify experts for debating information	3.8	1.14	0.79
3rd level of social media exploitation	(α = 74.4, variance explained = 9.13)		
Participate in online discussions for creating new knowledge	3.4	1.08	0.76
Compare information for creating new knowledge	3.1	1.19	0.77

Use of social media was measured by a 7 point Likert Scale: 1, very rarely; 7, very often.

5.2. Social media use for KM and employee creativity: reliability analyses

Findings showing the adoption of the various social media tools by the respondents (Table 3) reveal that wikis, collaborative tagging, personal blogs and microblogs are the least used tools, while social networks, text/audio/videoconferencing sharing tools, content sharing tools and reading other users' blogs represent the most highly used social media tools. Overall, the use of social media amongst respondents was quite good, as there was no respondent reporting the use of none social media tool, while the average number of social media and networks used per respondent was found to be 7.6.

As concerns the use of social media for KM purposes (Table 4), the respondents reported to use the social media very frequently for KM activities relating to the first level of social media exploitation (i.e. the highest average scores), quite frequently but less than previously for conducting KM activities relating to the second level of social media exploitation, while the use of social media for third level KM activities was found as the lowest frequent usage of social media. Thus, the respondents tend to: heavily use the social media for searching, reading, collecting and storing information; they also highly use the social media for sharing and discussing information within social networks; while they do not usually exploit the social media interactions for (co)-creating new knowledge. In other words, according to the Li and Bernoff's (2008) typology of social media users, the respondents tend to represent *joiners* of social communities, as they are mainly using the social media for searching, storing and collecting information (*collectors*) for personal use, and they use the social media less frequently for distributing (*distributors*), debating (*critics*) and (co)-creating (*creators*) new knowledge. Hence, the Greek tourism professionals can be characterised as mainly 'consumers' and not 'producers' of knowledge in the social media sphere. This is not only a current gap and weakness, but it also reveals a potential opportunity and direction on how social media can be exploited in the future. Indeed, the findings highlight that the Greek tourism professionals need to stop being solely passive collectors and consumers of online content. In contrast, they should become more active online contributors by commenting, exchanging and creating knowledge in the various social media platforms.

The unidimensionality of the scale measuring the exploitation of social media was examined with a principal component analysis (Table 4), which confirmed the three dimensional structure of the construct (the extracted three factors had eigen values more than 1 and explained 31.22% of the variance). Overall, the results of the factor analysis appeared satisfactory, as the measurement items also loaded strongly onto the constructs they were supposed to measure (load factors ranging from 0.63 to 0.81), and the Cronbach's α of the constructs surpassed the threshold point of 0.7 (Nunnally, 1978). The 132 respondents was sufficient for conducting the principal component analysis, since 10 items × 5 responses = 50 minimum responses were required (Tabachnick and Fidell, 1996).

Table 5
Employee creativity.

	M	SD
I suggest new ways to achieve goals or objectives	4.23	0.87
I come up with new and practical ideas to improve performance	4.26	1.25
I search out new technologies, processes, techniques, and/or product ideas	4.65	0.96
I suggest new ways to increase quality	4.34	0.95
I am a good source of creative ideas	4.02	1.11
I am not afraid to take risks	4.61	1.07
I promote and champion ideas to others	3.65	1.23
I exhibit creativity on the job when given the opportunity	4.17	1.16
I develop adequate plans and schedules for the implementation of new ideas	3.36	1.22
I often have new and innovative ideas	3.14	1.14
I come up with creative solutions to problems	4.22	0.94
I often have a fresh approach to problems	3.88	1.12
I suggest new ways of performing work tasks	3.67	1.08

7 point Likert Scale, 1= very rarely, 7 very often, Cronbach's α = 76.4.

The thirteen items measuring the employee creativity were also found to reliably measure the construct, as the Cronbach's alpha coefficient was higher than 0.70. The findings also revealed that the employees reported relatively high levels of creativity performance, since the average scores of the eleven out of the thirteen items measuring creativity were higher than the mid-point of the Likert scale (i.e. 3.5) (Table 5).

5.3. Social media use for KM and employee creativity: hypotheses testing

Multiple regression analysis was used for testing the hypotheses. Table 6 gives the means, standard deviations and inter-correlations of the measured items. Almost all correlations between and amongst the variables were significant (Table 6). Multicollinearity was also checked by using the tolerance level indicating the proportion of variance of each independent variable that is not explained by the other independent variables in the equation. The tolerance values of all independent variables were close to 0 indicating that that there is no multicollinearity in the analysis (Aiken and West, 1991).

An hierarchical entry method was used for performing the regression analyses. The first regression model included the control variables as independent variables, and its results showed that the model explains only a small part of the variance of employee creativity (Adjusted $R^2 = 0.054$, $p < 0.013$). Subsequently, in addition to the control variables, the regression model included all the four variables related to the use of social media for KM purposes. The second model reflects a higher explanatory power than the previous model and its results indicate a significant regression (Table 7). The standardised coefficients of the model also revealed significant relations between the variables reflecting the use of social media and employee creativity (i.e. all four hypotheses are

Table 6
Inter-correlations amongst variables.

	M	SD	1	2	3	4	5	6	7
1. Creativity	4.02	1.13	–						
2. 1st level of social media exploitation	5.22	1.16	0.44**	–					
3.2nd level of social media exploitation	4.45	1.12	042**	0.35**	–				
4. 3rd level of social media exploitation	3.25	1.02	0.33**	0.31**	0.26**	–			
5. Number of social media/networks used	7.60	2.71	0.27**	0.32**	0.31**	0.22**	–		
6. Age	35.7	6.24	0.04	0.03	0.07*	0.09**	0.02	–	
7. Tourism experience	13.1	3.16	0.06	0.04	0.03*	0.00	0.00	0.59**	–

* $p < 0.05$.
** $p < 0.01$.

Table 7
Regression analysis (standardised coefficients).

	Beta	*t*-Value
Independent variables		
1st level of social media exploitation	0.16**	3.94
2nd level of social media exploitation	0.24***	2.83
3rd level of social media exploitation	0.21**	3.74
Number of social media/networks used	0.18***	3.03
Control variables		
Age	0.08	1.46
Tourism experience	0.06	1.53
Gender	0.06	2.71
R^2	0.487	
Adjusted R^2	0.458	
ΔF	18.538	

Gender: 1, male; 2, female.
** $p < 0.01$.
*** $p < 0.001$.

accepted). The findings also revealed greater significant relations between the second and third levels of social media exploitation and employee creativity performance than the relations between the first exploitation level and employee creativity.

Analytically, the first level of social media exploitation significantly relates with employee creativity ($\beta = 0.16$, $p < 0.01$), while in relation to the use of social media for first level KM purposes, the exploitation of social media at a second and third level is related to a significant greater degree with employee creativity, as the standardised coefficients are higher (i.e. $\beta = 0.24$, $p < 0.001$ and $\beta = 0.21$, $p < 0.01$ respectively). In other words, in relation to respondents with lower levels of self-reported creativity, respondents with greater self-reported creativity levels tend to use the social media significantly more not only for searching, collecting and categorising information (first exploitation level), but also for networking, sharing and discussing information with others (second level exploitation) and for discussing, combining shared knowledge and generating new knowledge (third level of exploitation). The first exploitation level of social media represents individual cognitive processes, while the second and third exploitation levels of social media highlight the use of social media for integrating and fuelling individual with social cognitive processes. Thus, the study's findings are important as they confirm the previous literature advocating that people can expand their cognitive processes and creativity not only when they add new knowledge to their individual cognitive system (i.e. first level of social media exploitation), but also and more importantly when they share (externalise), discuss and integrate their existing knowledge with the knowledge of others (i.e. second and level of social media exploitation) as well as when they participate in network discussions and combine/compare shared knowledge for (co-)creating knowledge (i.e. third level of social media exploitation). Consequently, the findings confirm the existence of a meso level (i.e. the links/relations of employees with their social system and the use of these relations for communication and discussions) and its relation with employee creativity. Hence, it is suggested that employees should not only exploit the social media for acquiring and reading information, but also, and more importantly, for sharing and discussing this information with others, because this can help them to better analyse and understand this information and so, more effectively exploit and integrate it into their daily professional life, as well as co-create and generate new knowledge and ideas.

The findings also revealed a significant relation between the number of social media and networks used by professionals and employee creativity ($\beta = 0.18$, $p < 0.001$). This also confirms that the creativity performance is positively related to the number and type of information sources and perspectives that one has access and is exposed to (e.g. Perry-Smith and Shalley, 2003; Zahra et al., 2000). As increased creativity is observed in respondents using more social media and networks, it is suggested that employees can significantly benefit and enrich their creativity if they use social media for networking with various (external to the firm) communities and for being exposed to various perspectives/information. This is because connections with different but also contradictory approaches to the firm's internal status quo, can inspire and trigger the employees' cognitive system and creative processes.

The positive relation between employee creativity and the number of social media/networks used by respondents may also be interpreted that professionals with greater creativity levels tend to use significantly more social media/networks. Similarly, the positive relation between employee creativity and the exploitation levels of social media may also be interpreted that more creative people use the social media for higher order KM processes. However, this interpretation does not influence the conclusion of the study, i.e. the existence and the relation of a meso level with employee creativity. This is because the use of more social media and/or the use of social media for higher order KM activities by more creative people can crucially enrich the individual cognitive system of these people and give them access to more input/resources to compare, expand and better understand their existing knowledge and so, produce new knowledge. This increased emergent creativity can then be related again to greater use of more social media, which in turn can also result in greater creativity performance, and so, the iterative processes between individual cognitive and social processes with the one reinforcing the other will go on and on. However, the critical issue is not the direction of these effects and which variable causes the other (i.e. individual or social cognitive system performance). The most important issue is the existence of this meso level (inter-employee relations and their use for communication) and its relation to enhanced employee creativity, as a result of the spiral inter-related cognitive processes taking place between an individual and social system. So, the fact that the professionals using the social media mainly for low level KM activities and/or using less social media were found to have lower levels of creativity in relation to those professionals that use more social media and use them for higher exploitation levels shows that respondents using significantly more social media and also for communicating/interacting with others (i.e. enabling inter-plays between individual and social cognitive systems and combining various information sources) were associated with significant greater creativity levels in relation to respondents that used less social media and mainly only for individual cognitive processes and understanding of their own individual knowledge. This conclusion is also in line with the previously discussed literature in KM claiming that KM is not anymore an individual but a collaborative and conversational process taking place not in isolated individuals but within networks, because the findings provided evidence that the use of social media for conversations and connections is related to greater knowledge/creativity. This conclusion and finding is also compatible with the literature in creativity highlighting that research aiming to explain the creativity generation processes should immigrate from studying the factors influencing the individual cognitive processes to examining the factors influencing the people's access to and interaction with various resources (Perry-Smith, 2006; Hemphälä and Magnusson, 2012; Aubke, 2013). In this vein, the study shows again how the use of social media not only for individual cognitive processes but also for blurring individual with social cognitive processes can be related to increased employee creativity.

Overall, the study's findings highlight the importance of employees to engage in higher levels of KM activities and become active and effective users of social media, as a passive and basic use of social media for information search and collection is not sufficient to fuel and enrich their individual cognitive and creativity

processes and outcomes. In contrast, the use of social media for externalising, disseminating and discussing information with others within various social networks (that may represent different and sometimes conflicting perspectives) as well as for combining and generating shared (new) knowledge can further trigger, enrich and expand the employees' individual cognitive abilities and provide them with stimuli for generating and (co)-creating more and newer ideas/knowledge. Thus, in relation to a basic use of social media for searching, collecting and categorising/storing and understanding information (first exploitation level of individual cognitive processes), the study confirms the existence of a meso level (i.e. inter-employee relations and their use for communications and conversations) that can make the use of social media to be more significantly related to employee creativity. This is because the meso level can enable an inter-play amongst individual and social system cognitive processes.

6. Practical and research implications of the findings

Given the vital importance of knowledge on creativity and the recent technological advances on social media that empower people to enrich and expand their KM practices, this study aimed to investigate the role and use of social media for employee creativity. Findings gathered from Greek tourism professionals revealed relatively high levels of social media exploitation for KM activities, but also a critical gap in social media exploitation for higher order KM activities that reflect use of social media for discussing and sharing information with others, and for (co)-creating new knowledge. Thus, tourism professionals need to enhance their participatory and engagement level in social media by becoming active discussants, analysts, commentators and producers of online content. Results of the regression analysis also highlighted that employees have to engage in higher levels of social media exploitation and to join various social networks and media, as the latter are related with higher levels of employee creativity performance. This is because participation in social networks can provide employees with access to various types of information (i.e. video, audio, hypertext) and perspectives, while the use of social media for higher level KM activities create an inter-play between individual and social cognitive processes. This access to more/various information resources and iterative cognitive process at a meso level can in turn fuel and enrich/expand creativity spiral generating processes and so, be related to greater employee creative performance.

However, to achieve that, employees need to advance their social media literacy skills and capabilities. Analytically, the employees need to acquire and excel capabilities for effectively performing all the three levels of social media exploitation, For example, employees need to develop:

- abilities in identifying and searching content on social media platforms; ability to use social media for storing and categorising content; ability to evaluate and judge the authenticity and reliability of information found on social media (first exploitation level, i.e. become effective collectors and recipient of information).
- abilities to influence the way in which content gets diffused, moves through and is being debated in social networks. For example, become social influencers who help in spreading and reinforcing the message or become a public opinion influencer (second exploitation level, i.e. become effective distributors and commentators of information).
- abilities to select and mash-up online content for creating new knowledge; ability to reflect on discussions, summarise and synthesise their results (third exploitation level, i.e. become effective co-creators of knowledge).

However, research identifying and discussing the capabilities and the new information literacy skills that people need to develop for effectively exploiting the social media is very limited. In addition, qualitative research should be carried out in order to study in more depth the social media literacy capabilities that can enable people to more effectively exploit the social media for creativity purposes. For example, research should explore the skills and the ways in which people can identify, evaluate and select: (a) the right channels and social networks for (re)-distributing and/or discussing content; and (b) the quality features (e.g. reliability, authenticity, credibility and validity) of online content. The results and the implications of such research are currently imperative, as research into the social media literacy skills of tourism employees as well as of tourism graduates seeking a job in tourism is still in its infancy.

Firms should also take an active role in raising the social media literacy abilities of their employees. To that end, firms need to cultivate an organisational climate and culture that supports the use of social media in all firm's operations and departments. Managers should also become strong leaders motivating employees to leverage and integrate the use of social media into their jobs. An open organisational structure should also encourage the development of employees' interactions with external networks and partners, as well as foster employees' collaborations across internal and external boundaries.

The findings have confirmed the impact of social networks on employee creativity performance. However, the study has not made a detailed exploration of this impact in terms of which types of social networks can support and instil what type of creative ideas. For example, future studies could explore whether different types of networks (e.g. heterophilic vs homophilic, small vs large, formal or informal) may have a different influence on different types of creative ideas (i.e. radical vs incremental innovation). The study has given evidence of the impact of social networks on the ideation generation process of innovation (i.e. employee creativity), but future studies could expand this inquiry by investigating the impact of social networks on the implementation and testing of these new ideas (i.e. the other stages of the innovation process).

Previous studies have primarily focused on studying the individual and organisational factors influencing the employee creativity. Recent studies are migrating creativity research from studying the creative person or context to studying the influence and role of people's networks on employee creativity. However, this stream of research had been limited by the spatial and context bounds of its scope as well as its focus on the innovation outputs rather than on the processes enabling the creativity outputs. This study contributes to this field of creativity research by identifying a meso level linking the micro (intra-individual factors) and the macro (organisational factors) level factors influencing employee creativity (Pirola-Merlo and Mann, 2004). Analytically, the study adopted a KM approach for explaining how participation and interaction in social media/networks can foster an interplay between the internal cognitive processes of employees with external (collaborative) cognitive processes that in turn fuel iterative creativity generation processes and so, they are related to enhanced employee creativity. However, more detailed research is required for exploring the social network mechanisms and factors (e.g. the types of bonds, ties and interactions) that can motivate and/or inhibit people's willingness and ability to engage in such creativity processes and outcomes.

The existence and relation of this meso level (i.e. links/connections to social networks and the use of these connections for communication and conversations) with employee creativity also calls for further studies to investigate the factors and the features of the social networks that can influence employee creativity. For example, social network analyses can be performed

for studying the impact of social networks' density, centricity and variability on employees' creativity. Moreover, further research is also required to examine the interaction between the factors of the various levels that influence the creativity and the cognitive processes. For example, the absorptive capacity (i.e. the ability to value, assimilate and exploit information from external sources) of people (a micro level factor) may influence their ability to leverage the use of social media (a meso level factor) for enhancing their creativity, while the people's personality can also perplex the relation, since the latter influence the people's willingness to participate and interact in social networks (e.g. Correa et al., 2010). Research could also examine the features and the functionality of the social networks (e.g. the visualisation tools of information and discussions, the tools allowing someone to visualise and construct its own social identity/profile online) that may influence the people's absorptive capabilities to search, acquire, evaluate, assimilate, transform and create knowledge. Rigid and close organisational structures and cultures (organisational level factors) may also influence the role and use of social media (meso level factors) on employee creativity, and so, future studies are also required to explore these issues as well. For example, managers cannot easily know and control the employees' informal networks, but the latter can critically influence the employees' creativity. In this vein, future studies should focus on exploring the type of trust, and industrial relations between employees and their managers that support and instil their networking activities. In general, future studies exploring the inter-relations of variables at all levels (micro, meso and macro) can also reveal interesting findings.

Overall, the study has introduced an interesting approach and intermediate variable that can lead to a series of future quantitative and qualitative studies which can further explain and in more depth explore the effective ways for exploiting and integrating the social media in business for boosting employee creativity and performance.

7. Conclusions and research limitations

Although technological advances in social media significantly support innovation processes by changing the way people search, read, share and discuss information, no research has investigated yet the specific role and influence of social media on employee creativity. This is also in contrast to recent arguments highlighting the need to study the influence of employees' social interactions on their creativity (e.g. Aubke, 2013). By adopting a KM approach, this study explained and practically examined the role of social media on employee creativity by showing how the use of social media can enrich the people's cognitive processes and support conversational and collaborative KM processes, whose inter-play in a meso level can fuel and enhance one's creative processes and outcomes. Indeed, respondents using the social media for supporting only internal cognitive processes (e.g. searching, storing and reading information) were significantly associated with lower creativity than respondents who also used the social media for supporting an inter-play between their individual and external cognitive processes (e.g. sharing, discussing, debating and synthesising information from various networks). Thus, the study also contributes to the creativity literature by providing primary evidence of the existence and relation of a meso level (links/relations amongst people and their use for communication/interaction) with employee creativity, Moreover, the study findings also provided numerous practical implications in relation to the exploitation of the social media for employee creativity purposes. The findings also provided useful ideas for advancing research in the field even further.

Overall, the major implication of this study is the emerging need to shift the emphasis in creativity research and management from identifying and managing creative individuals (micro level research) and creativity supportive organisational contexts (macro level research) to understanding, creating and managing social networks and contexts (meso level research) that can instil, foster and support inter-employee interactions and exchanges. Furthermore, research should shift from a focus on relatively constant variables and factors determining creativity to a need to unravel, understand and manage the dynamic interactions of the factors of the various levels that perplex the processes determining employee creativity. For example, managers would be interested to learn what mix of employees (i.e. in terms of personality, educational background, perspective and leadership profile), from which organisations and social networks should interact and collaborate in what specific ways and through which social network platforms for supporting specific business tasks, e.g. new service development, incremental changes, customer or complaint management.

The study was conducted in a specific industry and time period. As technology tools advance very rapidly as well as the way in which people interact with the technology is also changing, further and continuous research is required in order to better understand the dynamic human–computer interactions and their influence on people's cognitive and creative processes. In addition, the findings should be refined and tested within other countries, cultural and industrial-professional contexts, as these variables may also influence the ways in which the social media are used and so, influence employee creativity.

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