Orchestrating enterprise social media for knowledge co-creation: an interactionist perspective

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57

Abstract

Purpose – This paper aims to present a conceptual framework of four knowledge co-creation processes in enterprise social media (ESM). From an interactionist perspective, the paper proposes a model on the role of ESM and enterprise social networks (ESNs) in facilitating knowledge co-creation processes.

Design/methodology/approach – This conceptual paper revisits existing literature on ESM, ESNs and social knowledge management to propose, hypothetically, the relationship between ESM, ESN and knowledge co-creation processes.

Findings – ESM enhances employee-to-employee interaction, which allows employees to co-create knowledge in a social context. Firstly, ESM affords employees to create ESNs for knowledge co-creation. Secondly, the structure of employee-to-employee interaction in ESNs will influence knowledge co-creation processes. Thirdly, ESNs provide the mechanism through which ESM affordances enable or constrain knowledge co-creation in the organisation.

Practical implications – ESM creates a social context that allows employees to share, apply and recreate or reproduce knowledge in the process of knowledge co-creation. The action possibilities of ESM perceived and actualised by employees will enable or constrain knowledge co-creation. Such influences are fuelled by the structural properties of employee relationships on ESM.

Originality/value – The paper elucidates the concept of knowledge co-creation based on a representation of user activities in ESM. This paper suggests that knowledge co-creation is a salient outcome of both individual-to-individual interactions on ESM and individual-to-ESM interactions enabled by ESM affordances.

Keywords Social knowledge, Enterprise social networks, Enterprise social media, Knowledge co-creation

Paper type Conceptual paper

Introduction

Although social media is fundamentally designed for socialisation, particularly friending relationships, it offers many affordances for enabling knowledge in an organisation (Von Krogh, 2012; Newell, 2015). Organisations are therefore increasingly

using enterprise social media (ESM) to enable socialisation and facilitate knowledge processes (Hacker, 2017; Holtzblatt *et al.*, 2013; Razmerita *et al.*, 2014; Helms *et al.*, 2017). ESM and knowledge management are thus seen as "a perfect couple" (Helms *et al.*, 2017), mainly because ESM facilitates informal social interaction and conversation, which create a suitable context for enabling knowledge sharing and creation (Hacker, 2017; Helms *et al.*, 2017). Moreover, social interactions and online conversations provide an avenue to leverage collective knowledge to generate new knowledge (Ribière and Calabrese, 2016; Russell *et al.*, 2016). The increasing role of ESM in knowledge sharing, collective knowledge, and creation of knowledge has created a context for collaborative knowledge practices such as knowledge co-creation.

Social media, generally, enables individuals to interact, share, discuss and co-create unique outcomes (Helms *et al.*, 2017; Kietzmann *et al.*, 2011). ESM, in particular, provides a suitable context to foster knowledge co-creation by enabling a range of practices from information sharing to problem-solving (Hacker, 2017; Richter and Riemer, 2013). ESM could also facilitate knowledge co-creation because it supports crowdsourcing of ideas, interactive dialogue, finding expertise (Richter and Riemer, 2013; Riemer and Scifleet, 2012; Jarrahi and Sawyer, 2013), infusion of innovative ideas (Jarrahi and Sawyer, 2013) and allow organisations to leverage individual and collective knowledge (Razmerita *et al.*, 2014). Visibly, ESM supports knowledge negotiation, knowledge integration, and knowledge translation (Hacker, 2017). ESM is popular for information sharing, which makes it a rich context for knowledge co-creation because information flow through messages is a significant activity that supports knowledge creation (Nonaka, 1994). Moreover, information enables individuals to add to, restructure and develop knowledge (Machlup, 1983 cited in (Nonaka, 1994).

Organisations may not efficiently enable knowledge without sufficiently understanding and addressing the needs of social contexts (such as ESM) in which knowledge is shared and created (Newell *et al.*, 2009; Hacker, 2017). Despite the growing research interest in social knowledge management, the role of ESM particularly, and social media technologies in general, in sharing and creation of knowledge remains unclear (Bebensee *et al.*, 2012). Extant literature overly emphasizes knowledge management systems (KMS) and knowledge sharing (KS) while overlooking the social interactions between individuals, which limits our possibilities towards enabling knowledge creation (Ribière and Calabrese, 2016). ESM supports the formation of enterprise social networks (ESNs), which are avenues for knowledge exchanges and creation (Holtzblatt *et al.*, 2013; Schlagwein and Hu, 2016). However, an explicit representation of how ESNs enable knowledge processes is also desirable (Schlagwein and Hu, 2016).

To address the above-mentioned deficiencies, we draw on the interactionist perspective to define the role of ESM and ESN in enabling knowledge co-creation. We identify a key research question, which states:

RQ1. How does ESM influence knowledge co-creation in organisations?

To operationalise this research question, we pose the following sub-questions:

RQ1.1. What knowledge co-creation processes occur on ESM?

RQ1.2. What ESM affordances could influence knowledge co-creation processes?

RQ1.3. What is the role of ESNs in knowledge co-creation on ESM?

To contribute towards addressing these questions, firstly, we discuss user activities on ESM that constitute knowledge co-creation processes. Secondly, we discuss ESM affordances that could enable or constrain interaction for knowledge co-creation. Thirdly, we discuss potential structural properties of enterprise social networks that may enable or constrain knowledge co-creation on ESM.

From knowledge sharing to knowledge co-creation
Knowledge sharing is not an end in itself; individuals share knowledge to foster action and develop new knowledge (Hendriks, 1999). Collective knowledge spaces such as communities and social networks allow individuals to interact, share ideas, and solve problems; thus, valuable knowledge is generated (Russell *et al.*, 2016). Moreover, individuals interacting in a community not only share knowledge but think together to create new knowledge (McDermott, 1999). The point to note is that "communities of interaction contribute to the amplification and development of new knowledge which is associated with the extent of social interaction between individuals that share and develop knowledge" (Nonaka, 1994). This paper, therefore, follows the idea that individuals do not merely share knowledge, but they share, think together (e.g. brainstorming) and *co-create knowledge*. Knowledge co-creation is fundamentally supported by interaction, information flow, and knowledge exchanges in social networks and other collective spaces (e.g. communities of practice and social media).

Increasingly, researchers (Karpouzoglou *et al.*, 2016; Medema *et al.*, 2017; Peschl and Fundneider, 2014) recognise knowledge co-creation, also referred to as collaborative knowledge creation, as a significant process that lies beyond knowledge sharing. Unfortunately, this discourse is too limited to offer sufficient insights into this process and lacks an appropriate definition of the measures of knowledge co-creation (Namisango and Kang, 2017). The process of knowledge co-creation relies fundamentally on three foundational processes, i.e. *knowledge sharing, knowledge creation* and *co-creation*. Knowledge sharing is:

> [...] the process where individuals exchange their (tacit or explicit) knowledge and jointly create new knowledge in a knowing process within a social context that is also constructed out of these activities (Shuhua, 2008).

Knowledge sharing constitutes actions undertaken by individuals to make knowledge available to others in a usable form (Ipe, 2003). Knowledge creation is the process of amplifying and crystallising knowledge possessed among individuals (Nonaka, 1994). It is a continuous process of unlearning and learning by acquiring new contexts, views, and knowledge (Nonaka *et al.*, 2000; Nonaka and Toyama, 2003). Co-creation is a process of joint creation intensified and enacted through a platform of engagement (Ramaswamy and Ozcan, 2014). The co-creation process enables individuals to advance their ideas, solve problems, and meet their needs by socialising and collective meaning-making (Ind and Coates, 2013). Roughly, knowledge co-creation is:

> [...] a process of jointly creating new knowledge enacted through a platform of engagement that enables socialisation and individual knowing processes to occur within a social context for the benefit of all actors (Namisango and Kang, 2017).

Enterprise social media and knowledge processes
According to Leonardi *et al.* (2013), ESM refers to "web-based platforms that allow workers to:

- communicate messages with specific co-workers or broadcast messages to everyone in the organization.
- explicitly indicate or implicitly reveal particular co-workers as communication partners.
- post, edit, and sort text and files linked to themselves or others.
- view the messages, connections, text, and files communicated, posted, edited, and sorted by anyone else in the organization at any time of their choosing".

Like publicly accessible social media platforms, e.g. Facebook and Twitter, ESM allows users in an organisation to interact internally with colleagues or externally with customers and suppliers by socialising, creating and sharing content on different matters especially organisation work, products and lessons learned (Leonardi et al., 2013; Turban et al., 2011). This paper focuses on internal communication and social interaction on ESM, a phenomenon that existing studies rarely investigate (Leonardi et al., 2013).

In the lens of knowledge practices, social media generally provides an environment for informal relationships and interactions for knowledge, skills, experiences, and learning (Panahi et al., 2013). ESM brings opportunities for workers to participate, engage, and collaborate on collective knowledge practices (Razmerita et al., 2014; Razmerita et al., 2016). Realising that social media users are not merely consumers of content but knowledge creators (Paquette and Desouza, 2011), organisations are continuously using social media to support their knowledge management processes (Schlagwein and Hu, 2016). ESM provides an easier means of enabling tacit knowledge (Bolisani and Scarso, 2017) and is supporting tacit knowledge sharing (know-how) more abundantly than explicit knowledge sharing (Molly and Samer, 2008).

It is important to note that ESM, like other publicly accessible social media, offer many affordances to support, not only knowledge sharing but also knowledge co-creation. Largely because social media is a significant platform for co-creation of content and development of collective intelligence (Razmerita et al., 2016). Affordances refer to "the possibilities for goal-oriented action afforded to specified user groups by technical objects" (Markus and Silver, 2008). The idea of affordances originates from an ecological psychology perspective by James J. Gibson in 1966 and 1979. According Gibson (2015), the environment, i.e. objects and surface, have affordances for behaviour (of an animal). Affordances provide a means of technology appropriation in different contexts (Faraj and Azad, 2012). Therefore, affordances for a particular group of individuals may be completely useless to individuals in another group (Markus and Silver, 2008).

Social media supports knowledge creation by affording new types of behaviours that were not possible with previous forms of computer-mediated communication" (Wagner et al., 2014). Social media supports socialisation for tacit-tacit knowledge sharing and creation through affordances such as association and reviewability (Wagner et al., 2014). It also supports the crystallisation of tacit knowledge through authoring and editability (Wagner et al., 2014). Most ESM mimic publicly accessible social media platforms concerning the look, feel, and functionality (Leonardi et al., 2013). Basing on the literature on social media affordances for both the public and organisations, this paper generates a count of ESM affordances as mechanisms producing knowledge co-creation in the organisation (Table I). While these affordances in Table I support different goals among people in different organisations, communities, and societies, they may be useful for knowledge creation (Wagner et al., 2014).

ESM affordances	Description	Authors
Visibility	The ability for users to identify and represent themselves in the desired way (such as experts, advisors, interest in particular matters)	Treem and Leonardi (2013), Kietzmann *et al.* (2011)
Authoring	The ability for users to craft and re-craft content in both synchronous and asynchronous mechanisms	Treem and Leonardi (2013)
Persistence	The ability for users to sustain content overtime and explore multiple ways of communication	Treem and Leonardi (2013)
Association	The ability for users to connect and relate to others with whom they can pursue a specified function	Kietzmann *et al.* (2011), Treem and Leonardi (2013), Mathiesen *et al.* (2013)
Dialogue	The ability for users to engage in two-way communication for constructive conversations and discussions	Kietzmann *et al.* (2011)
Community	The ability for users to form desired communities of interaction, i.e., groups	Kietzmann *et al.* (2011)
Sharing	The ability for users to exchange, distribute and receive various forms of information	Kietzmann *et al.* (2011)
Social presence	The ability for users to know of the existence of other members and feel a sense of connectedness	Kietzmann *et al.* (2011), Treem and Leonardi (2013)
Collective effort	The ability for users to collaborate in a shared space to achieve their intended goals	Mathiesen *et al.* (2013)

Table I.
Enterprise social
media affordances

The distinctive features of ESM correspond with central knowledge processes (Helms *et al.*, 2017); however, lack control and accuracy over social media content render social media a challenging application for support knowledge processes (Razmerita *et al.*, 2016). Helms *et al.* (2017) indicate three challenges. First, organisational proprietary knowledge could spill over to the outside, which jeopardises the organisation's competitive advantage. Second, incorporating unreliable knowledge from social networks into the organisation, thus suffocating the organisation's strategic position. Third, social media may lead to massive interaction and exchange overload, which can be destructive for workers (Razmerita *et al.*, 2016).

User activities in enterprise social media and emerging knowledge co-creation processes
User activities in ESNs may fall into two categories – relational or support actions and knowledge enabling actions. Relational activities facilitate, build, and strengthen ESN through consistent support and commitment to existing or emerging ESN (i.e. promote network citizenship). Knowledge enabling actions in ESNs facilitate knowledge donation, collection, and replication. From existing literature, we generate four knowledge co-creation processes – knowledge donation, knowledge collection, knowledge replication, and network citizenship.

(Knowledge) network citizenship involves acts of commitment, social responsibility, and support from actors involved in a knowledge centred network. Commitment supports knowledge donating and knowledge collecting, to the extent that without employee commitment to the process of knowledge sharing suffers (Van den Hooff and de Leeuw van Weenen, 2004). Further still, tacit knowledge creation anchors on the actions, commitment,

and involvement in a specified context (Nonaka, 1994). It is important to sustain sufficient citizenship behaviour to support on-going co-creation practices (Yi and Gong, 2013). Engagement and on-going participation are important in the survival of ESNs (Viol *et al.*, 2016). Network citizenship encompasses relational activities evident in ESN that enable individuals to establish connections, build relations, and establish links for knowledge flow. User activities enabling ESN citizenship presents relational activities enabling network citizenship for knowledge co-creation in ESM environment.

ESM activities as avenues for (knowledge) network citizenship among ESNs:

- *Engagement* – getting involved and regularly communicating with others in the community (Hacker *et al.*, 2017; Rowe *et al.*, 2013). Engagement is a significant activity for the survival of ESNs (Viol *et al.*, 2016).
- *Social (focus) dispersion* – communicating with diverse sets of other users, thus contributing to different topics (Hacker *et al.*, 2017; Rowe *et al.*, 2013).
- *Focusing* – communicating with a bounded subset of social network users (i.e., users groups defined by similar characteristics, interests, or activities) (Hacker *et al.*, 2017).
- *Sociability* – use of social media for generating cohesiveness, fellowship, devotion among users in an organisation (Schlagwein and Hu, 2016).
- *Gossiping* – gossiping involves comments that are not related to the idea at hand but are necessary for socialising (Füller *et al.*, 2014).
- *Initiating* – starting a dialogue, contributing to or seeking new content from the social media community (Rowe *et al.*, 2013).
- *Social praise* – acknowledging success stories and efforts of network members to a wider group as well as thanking someone for good work done (Richter and Riemer, 2013; Holtzblatt *et al.*, 2013).

Knowledge donation involves contributing knowledge to others (Van den Hooff and de Leeuw van Weenen, 2004; Van Den Hooff and De Ridder, 2004). Knowledge donation can be defined as the act of "communicating to others one's intellectual capital" (Van Den Hooff and De Ridder, 2004). During knowledge contribution, the contributors dedicate their valuable time to externalise (e.g. authoring and post) their knowledge, particularly ideas, skills and experiences on the ESM for others to receive and reconstruct the knowledge to foster action. An individual will have a reason to donate knowledge (Huysman and De Wit, 2004). One's decision to contribute knowledge is affected by one's perception of their identity and reputation in a community (Wasko and Faraj, 2005). It is important for ESM users to have the ability to make themselves visible in a particular way they perceive to be desirable. It is also important that individuals can appropriate value from knowledge donation (Paquette and Desouza, 2011). Furthermore, the structure of one's social network, e.g. centrality (concentration of social ties) (Wasko and Faraj, 2005; Chai and Kim, 2012), level of commitment of members of the community (Van den Hooff and de Leeuw van Weenen, 2004) and the level of use of the information technology (Tohidinia and Mosakhani, 2010) may influence knowledge donation. User activities enabling knowledge donation below, presents user activities in ESM that support knowledge donation.

ESM activities as avenues for knowledge donation:

- *Information sharing* – creating messages or content to inform other users about something, such as events or one's experiences (Hacker *et al.*, 2017). Information

sharing supports knowledge restructuring (Nonaka, 1994) and co-creation practices (Yi and Gong, 2013).

- *Contributing* ideas to dialogues initiated by others in the community (Rowe *et al.*, 2013).
- *Suggesting* – providing hints for improvement or building of ideas (Füller *et al.*, 2014).
- *Responding* – is creating a message (content) directed to another message (Hacker *et al.*, 2017). For example, replying to a question.
- *Focus dispersion* – is when users make contributions on a wide range of topics or ideas (Rowe *et al.*, 2013).
- *Broadcasting* – is when users create awareness about past, present, and future events to a wider audience (Schlagwein and Hu, 2016; Richter and Riemer, 2013).

Knowledge collection is consulting others to access their intellectual capital (Van Den Hooff and De Ridder, 2004). Individuals collect knowledge through interaction with knowledge possessors and accessing narratives available on the shared media. Knowledge collection may involve activities such as searching or locating knowledgeable individuals in one's social environment. Social networks are elements of an organisation's memory system that enables individuals to collect knowledge (Olivera, 2000). Individuals connect and contact others "to get recommendations for how to solve problems, solutions to specific problems, project-related documents, names of experts, pointers to where experience may be located, background information on general topics" (Olivera, 2000).

Knowledge collection also involves efforts to connect and extract relevant knowledge from knowledge contributors linked by the same network. Knowledge collectors may seek to address an immediate need or future knowledge required to accomplish a certain task. Technology and social networks allow the organisation to accumulate and store knowledge, thereby providing a powerful avenue for individuals to collect the organisation's experiential knowledge (Olivera, 2000). However, the structure of the social network predicts the individuals' ability to collect knowledge (Olivera, 2000). Additionally, the level of use of the available share media may deter knowledge collection among some knowledge seekers (Tohidinia and Mosakhani, 2010). In User Activities enabling knowledge collection, we provide ESM user activities for knowledge collection.

ESM activities as avenues for knowledge collection:

- *Information seeking* – requesting for information, ideas, or creating messages that pose a question to others (Hacker *et al.*, 2017).
- *Receiving information* – reception of information as an answer to a request (Hacker *et al.*, 2017).
- *Expert locating* "knowledge identification" – establishing knowledge gaps, knowledge requirements, and who has that knowledge (Hacker *et al.*, 2017).
- *Invisible usage* – passive participation in a community whereby a user rarely contributes to dialogue (Viol *et al.*, 2016).
- *Analyse contributions* – reacting to posts through comments. Online comments occur in different forms, i.e., critique – critic and disapproval, support – approvals without reason, feedback – approvals with some reason (Füller *et al.*, 2014).

Knowledge replication is closely related to knowledge creation which represents a continuous process of unlearning to learn through assimilation of a new context, view,

and knowledge (Nonaka *et al.*, 2000; Nonaka and Toyama, 2003). Knowledge creation occurs as individuals display their experiences while others observe (Tsoukas, 2005). When individuals interact with others, share their experiences, knowledge is replicated and recreated as an outcome of human action, interaction, thinking, and sensemaking (McDermott, 1999). Knowledge replication occurs in reflection to existing knowledge (McDermott, 1999; Shuhua, 2008). As individuals engage in knowledge sharing, knowledge possessors act or think in the present moment allowing engaging individuals to recreate knowledge relevant to particular problems or environments (McDermott, 1999). Sharing information and discussing emerging issues on ESM offers organisation employees an avenue for sharing knowledge, largely because "information is a process by which knowledge is acquired" (Krogh *et al.*, 1994). Therefore, sharing experiences, accessing information, and taking action enables employees to replicate and recreate knowledge as a residue of their thinking and sense-making process (McDermott, 1999; Nonaka and Konno, 1998).

Individuals will replicate and create knowledge consciously or unconsciously through three processes (Paquette and Desouza, 2011). The first is transmission, whereby an individual receives and interprets messages. The second process takes individuals through a series of cognitive tasks (i.e. cognition) where the person integrates their interpretations with existing knowledge as well as accommodate their arising interpretations by updating and altering their existing knowledge. The third process is task-focused positioning, which necessitates an individual to use the new knowledge to create new actions and behaviour. We explore ESM activities that allow users to engage in cognition and task positioning. For instance, knowledge creation occurs through the process of idea generation while tapping into ideas existing in a diverse network of individuals (Hacker, 2017; Riemer and Scifleet, 2012; Richter and Riemer, 2013). Similarly, individuals arrive at shared meaning through knowledge negotiation (Stahl, 2003). Knowledge negotiation is a natural and ongoing process of reproducing knowledge within ESM (Hacker, 2017). It offers an efficient mechanism for environmental sensing, interpreting information, and creating relevant knowledge (Alavi and Tiwana, 2002). User Activities enabling Knowledge Replication summarises some ESM user activities, which may be associated with cognition and task positioning, leading to knowledge replication.

ESM activities as avenues for knowledge replication:

- *Combining ideas* – generating new ideas through crowdsourcing or online brainstorming (Riemer and Scifleet, 2012). Users of ESM *integrate knowledge* by consolidating and organising emerging ideas from discussions in a consistent way (Hacker, 2017).

- *Problem-solving – also known as knowledge application* – harnessing existing expertise to solve problems (Riemer and Scifleet, 2012). To create knowledge, individuals use acquired knowledge to accomplish desired tasks (Paquette and Desouza, 2011) while reflecting on their existing knowledge and the needs of their environment (Shuhua, 2008).

- *Knowledge negotiation* – involves on going reproduction of knowledge where users discuss, synthesise reconstruct and confirm a particular idea, opinion, or stance (Hacker, 2017).

- *Collaboration* – facilitating working together with individuals across different fields and locations (Schlagwein and Hu, 2016; Holtzblatt *et al.*, 2013).

- *Dialogue* – "engaging in open-ended communication" (Schlagwein and Hu, 2016).

A conceptual framework of knowledge co-creation processes
The conceptual framework of knowledge co-creation draws on the arguments of social interaction and sensemaking as pillars of knowledge creation. We recognise that as individuals interact, they think together and make sense of the information and environment around them to accomplish their tasks. This involves key activities such as donating and collecting knowledge, knowledge network citizenship, and knowledge replication. These activities are inherently supported by social interaction and sensemaking.

Individuals cognise messages (i.e. blocks of information) transmitted as part of their process of creating knowledge (Paquette and Desouza, 2011). Individuals create knowledge by interpreting (cognise or make sense of) the received messages (information) and applying this to solve tasks (Paquette and Desouza, 2011). Individuals do interpret blocks of information received through a reflective process of relating to their environment and their existing knowledge before composing an instance of knowledge relevant for the task at hand (Shuhua, 2008). This involves a process of *sensemaking* (Shuhua, 2008).

Sensemaking is the process of "turning circumstances into a situation comprehended explicitly in words, and that serves as a springboard into action" (Weick *et al.*, 2005). Individuals re-create knowledge through thinking and action (McDermott, 1999). Moreover, sensemaking evolves through thinking and action (Weick *et al.*, 2005). Viewed as a significant process in knowledge creation, sensemaking is root through which individuals interpret events and derive meaning that informs or constrains action (Weick *et al.*, 2005).

Social interaction allows individuals to create (and re-create) knowledge by combining different kinds of information to obtain a shared understanding (Shuhua, 2008). Knowledge creation occurs as an individual attempts to make sense of things and deriving relevant knowledge which could be reasonably expressed in explicit terms (Shuhua, 2008). After synthesising literature on user activities in ESM, Figure 1 presents a conceptual framework highlighting processes of knowledge co-creation.

Enterprise social networks and knowledge processes
ESM supports the formation of social networks, which consequently drive knowledge processes to become social and network centred (Razmerita *et al.*, 2016). Such networks are commonly referred to as enterprise social networks (ESNs), see for example (Turban *et al.*, 2011). A social
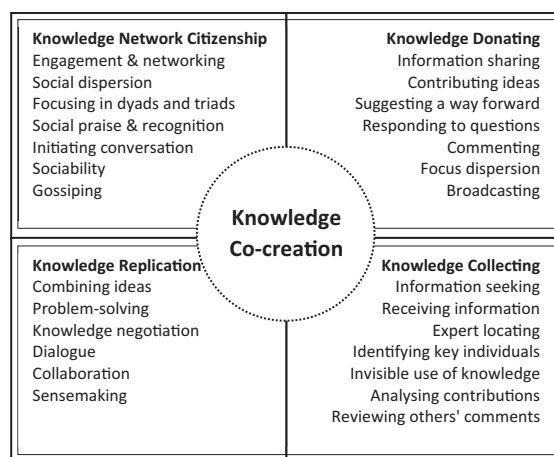

Figure 1.
A conceptual framework of knowledge co-creation processes

network consists of a boundless set of actors with relationships between them (Wasserman and Faust, 1994). Online social networks – such as ESN – offer a natural context of engagement for knowledge co-creation (Namisango and Kang, 2017). Therefore, as individuals create and share content on ESM, they formulate networks that offer the opportunity to contribute and learn from each other (Leonardi *et al.*, 2013; Turban *et al.*, 2011). Because "individuals are the primary creators of knowledge" (Paquette and Desouza, 2011), any approach to knowledge sharing and creation relates to connecting and engaging individuals (Fernie *et al.*, 2003). ESN offers an avenue for people to connect, they, therefore, offer an avenue to knowledge sharing and creation (Turban *et al.*, 2011; Hacker, 2017).

Organisations ought to recognise that when people connect, they are naturally prompted to think together (McDermott, 1999). Moreover, "knowledge is a product of thinking" (McDermott, 1999). Furthermore, when people connect, they constitute a community of members which may take various forms, including existing virtually or otherwise (Young, 2012). Social networks allow people to connect and form communities, thus a "cornerstone of knowledge creation" (Young, 2012). Social networks as self-organizing and open activity systems based on shared practices offer possibilities for effective knowledge sharing and externalisation (Razmerita *et al.*, 2016). Interacting and harnessing existing knowledge amongst peers constitutes a *knowledge network* (Bush and Tiwana, 2005). Unfortunately, "successful knowledge networks represent the occasional island dotting a sea of failures" (Bush and Tiwana, 2005). An important question is how to ensure continuous participation and productivity by individuals in the network (Bush and Tiwana, 2005). A success factor for knowledge networks is the structure of relationships built among individuals (Bush and Tiwana, 2005). Several structural properties have been associated with knowledge processes and activities, e.g. strong ties, bridging ties, and network centrality.

Bridging ties represent nonredundant sources of information, advice, and ideas (Burt, 2004). Bridging ties involve relationships that establish links between two separate groups in a given community (Burt, 2009; Granovetter, 1973). With strong bridging ties across different groups or organisational units access new information, ideas, and insights. Moreover, intra-organisational bridging ties activate cross-boundary knowledge for innovation (Tortoriello and Krackhardt, 2010).

Like bridging ties, strong ties support knowledge sharing (Wijk *et al.*, 2008). Strong ties increase individuals' willingness and ability to engage in long and complex discussions as well as discuss a wide range of ideas, thus enabling effective knowledge sharing and transfer (Reagans and McEvily, 2003). It is also important to ensure reciprocated exchange in social networks through symmetric ties (Koput, 2010) to create a context for co-creation. Without symmetric ties, dialogue for knowledge replication is almost impossible. Over and above the above structural properties, social cohesion (i.e. cohesive ties) are a more significant predictor of knowledge interactions in a network (Reagans and McEvily, 2003). Cohesive ties involve relationships characterised by a sense of belonging and commitment to a group of contacts (Forrest and Kearns, 2001; Friedkin, 2004), therefore closely associated with strong ties (Reagans and McEvily, 2003).

Centrality measures the number of connections per individual, while density is the proportion of existing ties in a network (Jackson *et al.*, 2016). An individual's network position enables or constrains knowledge sharing and transfer, given that, centrality increases one's ability to access and share new and diverse knowledge (Tsai, 2001). The absorptive capacity of the central actor is essential, however, for effective replication of knowledge (Tsai, 2001). Similarly, a large number of social ties offer information and knowledge advantages (Tang, 2011). A high number of relations will increase access to

external knowledge as a centralised position allows the individual to share knowledge more
productively (Wijk *et al.*, 2008).

An interactionist theoretical perspective and propositions

From an interactionist perspective, "behaviour follows from naturally occurring
transactions between persons and settings", where observed behaviour is as a result of the
attributes of persons, or the attributes of situations (Schneider, 1981). We would therefore
not solely focus on persons or situations in the determination of behaviour, but, "situations
are as much a function of the person as the person's behaviour is a function of the situation"
(Schneider, 1981). On ESM, employees interact with fellows (i.e. human↔human nexus), and
such interactions could inherently involve share and exchange knowledge. They also
interact with technology (human↔technology nexus) in the sharing and exchanging of
knowledge. We encourage critical look into both human↔human and human↔technology
interactions as these would shape knowledge co-creation and expected outcomes, as
indicated in Figure 2.

Enterprise social media affordances and knowledge co-creation
ESM is useful for different organisational functions, but using it to support knowledge co-
creation, organisations will need to articulate and understand how employees use ESM to
achieve knowledge goals. We suggest that ESM and ESN conflate to enable knowledge co-
creation in the organisation. Like other technologies, ESM offers opportunities for action (i.e.
functional affordances) and communicative possibilities (i.e. symbolic expressions) that will
shape the overall outcomes of its use (Markus and Silver, 2008). ESM offers different
affordances as generative mechanisms that produce a variation of outcomes (Leidner *et al.*,
2018). Recognising knowledge co-creation as an outcome allows us to consider ESM
affordances as mechanisms that produce this outcome because existing evidence suggests
that social media affordances influence online communal knowledge sharing (Majchrzak
et al., 2013). Focusing on affordances as the mechanisms and knowledge co-creation as an
outcome also allows us to conflate knowledge processes over ESM into one consistent
process, avoid superimposition of ESM technical features and static conception of social
media in different contexts Faraj and Azad (2012). Moreover, ESM is identified as the perfect
context for enabling knowledge in the organisation (Bebensee *et al.*, 2012; Bolisani and
Scarso, 2017; Hacker, 2017; Helms *et al.*, 2017; Russell *et al.*, 2016).

For instance, sharing and visibility affordances would enable employees to donate and
seek knowledge. Authoring and editing affordances could support replication of knowledge.
Persistence would allow individuals to traverse wide sources of knowledge to collect and
replicate knowledge, while association affordances could allow individuals to engage in
dialogue, thus enabling knowledge replication. Dialogue could also enable individuals to
donate and collect knowledge. Like community affordances, social presence in ESM will
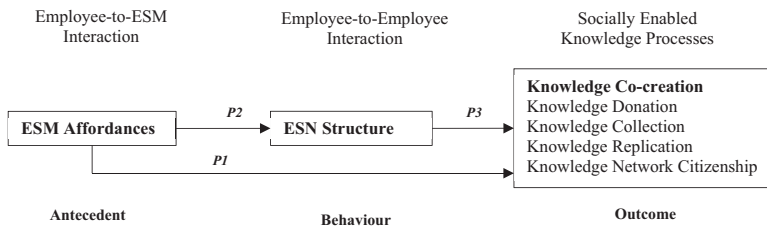

Employee-to-ESM   Employee-to-Employee   Socially Enabled
Interaction   Interaction   Knowledge Processes

Knowledge Co-creation
Knowledge Donation
ESM Affordances   *P2*   ESN Structure   *P3*   Knowledge Collection
Knowledge Replication
P1   Knowledge Network Citizenship

Antecedent   **Behaviour**   **Outcome**

Figure 2.
A conceptual model
of ESM, ESN and
knowledge co-
creation

support knowledge network citizenship, enable individuals to identify and link to knowledge seekers or possessors. Lastly, collective effort not only instils a sense of belonging and community for network citizenship but also increases individuals' ability to replicate knowledge, even in cases of low absorptive capacity among some knowledge seekers or receivers. We, therefore, propose that:

P1. The perceived and actualised action possibilities offered by ESM to organisation employees (ESM affordances such as those indicated in Table I) will positively influence knowledge co-creation processes, but such influence will be partially mediated by the structure of ESNs.

Enterprise social media affordances and enterprise social network structure

ESM affects employee socialisation, which involves developing relationships with other employees and adjusting to organisation culture (Leidner *et al.*, 2018). Socialisation in social media communities involve deep multifaceted relationships (Kane *et al.*, 2009), which one can sufficiently define by digging into the structure of these relationships (Kane *et al.*, 2014). Structural factors include different facets that allow us to understand the configuration of employee relationships and connections to one another. Such structural factors would include, but not limited to, social ties, centrality, or network density (Kane *et al.*, 2014). Social media allows its users not only to establish a network of connections but also to maintain one's network (Kane *et al.*, 2014; Kane *et al.*, 2009). Namisango and Kang (2018) assert that social media affordances will influence the type and structure of social relationships embedded in co-creation processes. For instance, community affordances could provide a key mechanism for building and maintaining networks of knowledge seekers and knowledge possessors. Association affordances, on the other hand, could allow employees to develop a sense of connection, enabling them to strengthen and sustain their networks because such affordances may foster a sense of connection and commitment. We, therefore, propose that:

P2. The perceived and actualised action possibilities offered by ESM to organisation employees (as those indicated in Table I) will shape ESN embedded in knowledge co-creation practices.

Enterprise social network structure and knowledge co-creation

ESN structure refers to the nature of social relationships, i.e. network properties – among engaging individuals in ESM. ESNs continuously enable employees to communicate and share knowledge (Turban *et al.*, 2011; Hacker, 2017). ESNs also enable individuals to solve complex problems by harnessing existing knowledge through seeking information and advice from others, therefore, enabling individuals to create new knowledge (Hacker, 2017). Knowledge creation occurs when individuals work with others rather than working individually (Newell *et al.*, 2009). Consequently, knowledge exchange between individuals provides an initial step towards organisational knowledge creation (Von Krogh *et al.*, 2000) and reflects the status of knowledge as a whole in the organisation (Ipe, 2003). Generally, the nature of social relationships influence an individual's intention to ask for or give information (Borgatti and Cross, 2003). Particularly, the following network properties foster knowledge exchange – centrality (Wijk *et al.*, 2008; Tsai, 2001), density (Tang, 2011), cohesive ties (Reagans and McEvily, 2003), strong ties (Wijk *et al.*, 2008; Reagans and McEvily, 2003) and bridging ties *a.k.a.* structural holes (Burt, 2004):

P3. The structure of ESN (such as strong ties, bridging ties, symmetric ties, cohesive ties, individual's position in the network, i.e., centrality, and the ESN density) will positively influence knowledge co-creation on ESM.

Discussion and outlook

This paper presents three key aspects of recognising and managing ESM for knowledge co-creation. First, we recognise that ESM provides an interactively functional context not only for knowledge sharing or exchange but also for knowledge co-creation. Knowledge co-creation is a contextual outcome of employee interaction on ESM that occurs in four processes – i.e. knowledge donation, collection, replication, and network citizenship. Secondly, we indicate that ESM could inherently allow employees to perceive, discover and actualise opportunities for knowledge co-creation. Such opportunities could be realised on ESM that supports visibility, authoring, persistence, association, dialogue, community, sharing, social presence, and collective effort among groups. Recognising such possibilities for action allows the organisation to define and understand the role of ESM in enabling organisation knowledge and therefore support the analysis and implementation of ESM for knowledge processes. Thirdly, we recognise that the social nature of ESM creates an underlying deep structure of social relationships, which could also influence knowledge co-creation. Understanding the structure of ESN allows the organisation to define social factors enabling knowledge co-creation in ESM.

Despite the hype on managing and enabling knowledge in organisations, scholars rarely explore social processes of collective knowledge creation – evocatively noted as knowledge co-creation. The idea presented in this paper acknowledges that knowledge co-creation is a social process, which enlightens the link between social interaction and multiple knowledge processes to enable the creation of new knowledge at both individual and group level. The social nature of this process indicates that there is an underlying structure of social relations, which are instrumental in knowledge co-creation. At this point, we conclude that four knowledge processes conflate into knowledge co-creation. To bolster knowledge co-creation, the organisation would have to analyse, recognise, and support its ESN by encouraging strong, cohesive, bridging, and symmetric ties. ESNs grow organically with ESM; the organisation should realise that the formation of ESN could enable or constrain knowledge co-creation and other goals that individuals pursue on ESM. Understanding the influences of ESM and knowledge related outcomes would enable organisations to design and implement ESM applications that are sufficient for supporting and strengthening ESNs and enabling knowledge co-creation. Lastly, it could be perspicacious of future research to explore knowledge co-creation a salient avenue to enabling individual–organisational learning.

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