Article

Knowledge Brokering in an Era of Communication Visibility

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Abstract

This study presents an analysis of the extent to which enterprise social media (ESM) use enhances visibility of content (message transparency) and connections (network translucence) in organizations, and how this affects knowledge brokering. The findings support the theory of communication visibility by demonstrating that ESM use is associated with perceptions of message transparency and network translucence. Furthermore, the findings suggest that employees, regardless of their position within a network, are provided with a vision advantage and thus have the ability to engage in knowledge brokering. Future work needs to examine the impact of network characteristics on these effects. This article contributes to our understanding of knowledge brokering in contemporary networked and mediated workplaces. Specifically, this article offers an analysis of the theory of communication visibility and demonstrates the mediating role of communication visibility in the relationship between ESM use and intraorganizational knowledge brokering activities.

Keywords

knowledge brokering, enterprise social media, communication visibility theory, knowledge sharing

The widespread adoption of social technologies as new forms of organizational information systems has raised compelling questions about the ways in which these technologies affect organizational processes of communication, identification, collaboration, and knowledge sharing (Leonardi, 2014; Leonardi & Vaast, 2017; Madsen, 2016;

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Treem & Leonardi, 2013). Prior research demonstrates that traditional communication channels are more often used and considered more effective for team communication than social media (Cardon & Marshall, 2015). From a strategic communication perspective, however, Eisenberg et al. (2015) note that social networks can be leveraged to promote organizational effectiveness as they provide the opportunity to identify individuals that are crucial to the organization's information flow.

Similarly, Leonardi (2014) outlined a theory of communication visibility explaining how enterprise social media (ESM) platforms (e.g., Yammer, Jive, or Workplace) may improve knowledge sharing processes through increased message transparency and network translucence. Message transparency refers to the visibility of the content of messages including to third parties who are not involved in the initial interaction. Network translucence is defined as the possibility for third parties to view coworkers' communication connections and networks. Specifically, increased message transparency and network translucence may contribute to duplication avoidance, and offer opportunities for innovation (Leonardi, 2014, 2015). Although visibility is usually assumed to be beneficial for knowledge sharing, recent findings also suggest that visibility may have negative implications, as it increases information overload (Chen & Wei, 2019) and may generate opacity (Flyverbom et al., 2016).

However, many questions related to communication visibility and its implications for employees and organizations remain unanswered. This study investigates the extent to which ESM use enhances visibility of content (message transparency) and connections (network translucence) in organizations. Research suggests that social networking technologies enable communication visibility because they make the messages people exchange with their communication partners transparent and their network connections translucent (Leonardi, 2015, p. 749). However, others have suggested ESM may equally afford invisibility as workers strategically manage their online appearances and messages (Gibbs et al., 2013). In addition, although the communication visibility theory makes intuitive sense, "a good deal of work is needed to refine this theory" (Leonardi, 2014, p. 814) and thus far limited attention has been paid to heed this call (see Engelbrecht et al., 2019, for an exception). Hence, we contribute to the understanding of communication visibility by examining its mediating role in the relationship between ESM use and knowledge brokering within organizations.

Traditionally, attention for knowledge brokering activities has focused on interorganizational contexts especially in the health sector focusing on doctor-patient knowledge sharing (Ward et al., 2009), or in consultancy focusing on consultant-company knowledge exchanges (Pawlowski & Robey, 2004). In an intraorganizational context, knowledge brokering research (Haas, 2015; Hargadon, 2002; Kislov et al., 2017) is mostly reflected in social network research (Burt, 2002, 2004; Obstfeld, 2005). In contemporary workplaces characterized by the multivalent uses of social and collaborative tools, the ways in which these technologies contribute to knowledge brokering may play a crucial role for organizational learning, innovation, and performance (Leonardi, 2014, 2015).

Typically, knowledge brokers are employees who participate in multiple groups within an organization and facilitate the transfer of information and knowledge between them, linking knowledge producers and knowledge providers across organizational

units (Haas, 2015; Meyer, 2010). Research has suggested that the activities of knowledge brokers can range across three categories namely; knowledge managers, linkage agents, and capacity builders (Kislov et al., 2017; Ward et al., 2009). Knowledge managers engage in brokering by facilitating or managing the creation, diffusion, and use of knowledge. Linkage agents, in turn, focus on the interface between producers and users of knowledge and seek to foster links between the two. Finally, the capacity building role entails a focus on enhancing access to knowledge (Meyer, 2010; Ward et al., 2009).

From a network perspective research has suggested that brokering is likely to occur near structural holes (Burt, 2004). These structural holes are weaker connections between groups in the organizational network and people on different sides of a structural hole circulate in different flows of information (Burt, 2002). Employees may obtain vision advantage from bridging across structural holes in an organization's communication network (Tushman, 1977). This study contributes by demonstrating that ESM makes communication universally visible, thus giving all organizational members similar vision advantages *casu quo*—the ability to engage in brokering activities—regardless of their network position.

Theoretical Framework

Enterprise Social Media Use and Visibility

ESM platforms can be defined as

> web-based platforms that allow workers to (1) communicate messages with specific coworkers or broadcast messages to everyone in the organization; (2) explicitly indicate or implicitly reveal particular coworkers as communication partners; (3) post, edit, and sort text and files linked to themselves or others; and (4) view the messages, connections, text, and files communicated, posted, edited and sorted by anyone else in the organization at any time of their choosing. (Leonardi et al., 2013, p. 2)

Hence, within the organizational boundaries, ESM provide a platform for public communication among employees where messages and connections may become visible beyond the intended users (Treem & Leonardi, 2013), making them particularly suited for capturing metaknowledge and improve organizational learning (Leonardi, 2014).

Although the visibility of work and tasks have been researched for quite some time (Jones, 1984), the recent and widespread adoption of enterprise social technologies (Haddud et al., 2016) has led to a renewed sense of urgency of studying visibility among organization and communication scholars (e.g., Gibbs et al., 2013; Pearce et al., 2018; Treem & Leonardi, 2013). Communication visibility theory suggests that ESM improves metaknowledge (i.e., knowledge of *who knows what* and *whom*) by increasing message transparency and network translucence (Leonardi, 2014). The theory was developed based on series of studies (Leonardi, 2014, 2015) in a large financial company with data collected through interviews and a network survey. The findings indicate that an exposure to ESM contents and connections increases employees' metaknowledge (Leonardi, 2015) and this metaknowledge can be used in avoiding duplication of work, more innovative products and services and vicarious learning

(Leonardi, 2014). Later conceptualizations of the theory of communication visibility (Treem et al., 2020) argue that communication visibility (1) is an action possibility for the user of communication technology, (2) involves both immediate audience an third-party observers to whom communication is made visible, and (3) is managed in a sociomaterial context related to the technology mediated setting in which the communication occurs.

Importantly, although conceptually and theoretically, ESM may afford communication visibility (e.g., Treem & Leonardi, 2013), it remains an open question whether the use of ESM platforms increase communication visibility in terms of message transparency and network translucence (Leonardi, 2014, 2015). For instance, most ESM users primarily post promotional content, without paying explicit attention to viewing the content created by others (Bulgurcu et al., 2018). This lack of attention for the content that is made available by others may limit perceptions of communication visibility. Moreover, information may be difficult to retrieve, access, or locate on social media platforms, causing information to remain largely invisible to workers (Leonardi, 2014), or workers may deliberately disengage to regulate potential information overload (Gibbs et al., 2013). Finally, a perspective of knowledge through a conduit model where information technologies simply transfer knowledge is challenged by the epistemology of practice perspective, suggesting that effective knowledge transfer (both explicit and tacit) requires extensive and direct social interaction (Hislop, 2002).

Yet despite these findings, most studies suggest that ESM use facilitates communication visibility (Gibbs et al., 2013; Leonardi, 2014, 2015; Treem & Leonardi, 2013). Recently, Engelbrecht et al. (2019) demonstrated that the use of ESM may yield immediate increases in metaknowledge. The study demonstrates that ESM affords goal-directed information seeking, allowing employees to satisfy their information needs through different ways of seeking for information. Hence, regardless of employees' communication awareness (Engelbrecht et al., 2019), they can search for specific topics or person's connections, look through profiles, and actively request information through posts (Ellison et al., 2015), thereby increasing communication visibility. Hence,

Hypothesis 1a: The use of enterprise social media increases message transparency in organizations.
Hypothesis 1b: The use of enterprise social media increases network translucence in organizations.

Visibility and Knowledge Brokering

Knowledge brokers facilitate the transfer of information between different groups and move between different groups across organizational units, connecting knowledge producers and knowledge providers (Haas, 2015; Meyer, 2010). Typically, knowledge-brokering activities fall into three categories: knowledge managers, linkage agents, and capacity builders (Kislov et al., 2017; Meyer, 2010; Ward et al., 2009). Similar categorizations are discussed throughout the literature, largely outlining

knowledge brokering activities and behaviors related to access to information, facilitating learning, creating capital, and linking and implementing (new) knowledge (Hammami et al., 2013; Hargadon, 1998, 2002; Obstfeld, 2005). Following Kislov et al. (2017), this study conceptualizes knowledge brokering as (1) *information management*, which involves identifying, analyzing, and packaging of codified knowledge in order to inform other potential users; (2) *linkage*, which involves facilitating interaction, coordination, and exchange of ideas between different groups; (3) *capacity building*, which involves using knowledge to develop capacity, facilitate innovation, and enact positive change.

The role of brokering has been well documented in the social network literature in the context of social capital and organizational innovation in dense and sparse networks (e.g., Burt, 2002, 2004; Obstfeld, 2005). Typically, sparse networks, rich in structural holes, are characterized by an absence of connections among those in the network, therefore presenting unique opportunities for brokering new ideas. In contrast, dense networks are characterized by relatively homogenous, well-connected groups, which may present unique opportunities for coordinated actions, but experience greater obstacles to generate new ideas (Obstfeld, 2005). Although the networks within organizations are not the focus of this study, this body of literature advances our understanding of how notions of visibility—that is, network translucence and message transparency—may benefit brokering activities in general. Indeed, a large part of the functionality of information and communication technologies in organizations has focused on the structural aspects of social capital, through which technological infrastructures allow human actors to find, communicate, and cooperate with each other (Huysman & Wulf, 2006).

Previously, strategic positions in a network could be used to one's benefit and were vital in bringing in new knowledge and ideas. In this view of brokering and networks, the strategic orientation was focused on separation among parties. Early work by Georg Simmel (Wolff, 1950) suggested that introducing a third party changes the social dynamics of dyads. Simmel discusses the *tertius gaudens* concept to explain the active separation of two parties tied to a third and explains that in this orientation, the broker has the inherent benefit of a (i.e., strategic) position between two disconnected parties, who because of their unfamiliarity with each other can be manipulated to the third party's benefit. This orientation is especially relevant to understanding social activity that occurs around structural holes. Burt (2002, 2004) also addresses a broader set of triadic-based brokering behaviors including introducing third parties and moving knowledge and information between connected parties. Obstfeld (2005) adds to this discussion by proposing the *tertius iungens* strategy, which is a behavioral orientation that emphasizes creating and facilitating ties among people in one's social network.

Similarly, ESM platforms may be used to facilitate the mapping and visualization of organizational networks. Parties may be previously unconnected in the sense of being completely unacquainted or may have previous strong or weak ties along various dimensions but be unconnected in relation to a given project or task. Regardless, *tertius iungens* strategy suggests that brokers may operate in sparse networks or

dense networks of already related nodes immobilized for a specific effort (Obstfeld, 2005). Building on this notion, Leonardi (2014) suggests that ESM may improve visibility, and in doing so, any employee within the network, regardless of its position within that network, can connect people and content by either introducing disconnected individuals or facilitating new coordination between already connected individuals and content.

The use of ESM provides ample opportunities for the production of user generated content and the articulation of communication networks, and these opportunities are intricately related to the ways in which knowledge can be shared (Leonardi, 2015). Scholars suggest that ESM may facilitate knowledge sharing as these platforms help make invisible networks and interactions visible for instance through "friend" lists and activity feeds (Ellison et al., 2015). Visibility may further enhance knowledge brokering in organizations as improved metaknowledge (i.e., who knows what and who knows whom) can lead to more innovative products and less knowledge duplication (Leonardi, 2014). Leonardi (2014) further notes that communication visibility allows for vicarious learning rather than learning through experience enabling workers to more effectively recombine ideas, reuse knowledge, and avoid duplicating tasks. Along similar lines message transparency and network translucence may facilitate conditions for workers to engage in brokering activities as they have a better sense of where knowledge is located.

Indeed, ESM may make it easier to share knowledge because these platforms make other users' communication visible to casual observers, suggesting that knowledge seekers can gather information about knowledge and sources by observing interactions of others (Leonardi & Meyer, 2015). As such, the visibility created by ESM may help knowledge seekers and knowledge providers enhance interactions and broker knowledge within the network, regardless of their position within that network, or the specific network characteristics (Leonardi, 2015; Leonardi & Meyer, 2015; Levordashka & Utz, 2016). Hence, we hypothesize that ESM has a positive relationship with knowledge sharing behaviors because these platforms facilitate visibility (Ellison et al., 2015; Leonardi, 2014), allowing every employee in the network to engage in brokering activities regardless of one's strategic location (or lack thereof) in the network.

Hypothesis 2a: Enterprise social media use increases knowledge-brokering activities through message transparency.
Hypothesis 2b: Enterprise social media use increases knowledge-brokering activities through network translucence.

Method

Sample

The data were collected using Amazon Mturk, following the guidelines and ethical considerations recently outlined by communication scholars (Sheehan, 2018). In line

with these guidelines, respondents were paid fairly for completing the survey and attention checks were built in to ensure data quality. In addition, we monitored survey completion time as additional indicator of response quality as straight lining is associated with reduced completion times (Zhang & Conrad, 2014). Respondents that were currently employed in a full-time contract at a large organization (more than 100 employees) with multiple sites and an active ESM platform were eligible to participate. A sample of 326 U.S. workers completed an online questionnaire inquiring about ESM use, visibility, and knowledge brokering activities. The respondents were qualified based on several screening questions, including whether they had access to their organizations' ESM platform. Data were collected in January of 2019, of the respondents, 62.6% was male and the average age was 37.5 years ($SD = 9.74$). The employees reported an average organizational tenure of 8.5 years ($SD = 5.72$), and worked 42.8 hours on average per week ($SD = 6.22$). Most employees (64.4%) obtained an academic degree.

Measures

Table 1 provides more information on factor reliabilities and descriptive statistics. A confirmatory factor analysis was performed and is reported in the results. *Enterprise social media use* was measured using ten items tapping into different work-related uses of ESM (Sun & Shang, 2014). The respondents were prompted to reflect on the frequency with which they used the ESM platform implemented in their organization in the past 2 weeks. The question specified ESM and prompted respondents to consider the ESM offered in their organization, stating that ESM are web-based platforms that allow you to view content and connections of other organizational members, and post, edit, and share information with specific or all other organizational members, examples include Workplace and Yammer. The items measured the frequency with which employees performed specific activities on the social media platform such as posting updates and asking questions. Sample items included the following: "Post updates on work projects" and "Answer questions that have been posted." Responses ranged from 1 *never* to 5 *very often* (i.e., multiple times a day).

Communication visibility is measured based on Leonardi's (2014) exposition of communication visibility. Communication visibility is believed to lead to enhanced awareness of who knows what and whom through two interrelated mechanisms: *message transparency* and *network translucence*. Message transparency refers to the extent to which employees can see the content and information that has been shared by others, generating awareness of *who knows what*. "Seeing the contents of other's messages helps third party observers make inferences about coworkers' knowledge" (Leonardi, 2014, p. 796). As such we use items referring to the visibility of content shared by others, and the knowledge inferences people make based on that content. Sample items include the following: "I can see the expertise of other people through the content that they share amongst each other" and "I can see messages that shared among my colleagues even though I am not the designated recipient."

Table 1. Factor Correlation Matrix With Validity Statistics.

Variable	*M* (*SD*)	CR	AVE	MSV	MaxR(H)	1	2	3	4
1. ESM use	1.81 (0.96)	.97	.75	.10	.97	.87			
2. Message transparency	3.23 (1.03)	.88	.59	.51	.89	.31	.77		
3. Network translucence	3.18 (1.06)	.90	.65	.51	.92	.30	.72	.80	
4. Knowledge brokering	3.48 (1.12)	.96	.65	.14	.96	.21	.36	.38	.81

Note. Square root of the AVE is reported on the diagonal. CR = composite reliability; AVE = average variance extracted; MSV = maximum shared variance; MaxR(H) = maximum reliability; ESM = enterprise social media.
All correlations are significant at $p < .001$.

Network translucence refers to the extent to which employees can see how others have articulated their connections either through friend lists or interactions. This dimension provides insights into *who knows whom* in organizations. "Seeing the structure of coworkers' communication networks helps third-party observers make inferences about hose with whom coworkers regularly communicate" (Leonardi, 2014, p. 796). Hence, items refer to the visibility of messages that are shared among others—for example, I can see who my colleagues are connected with. Both dimensions are measured using five items to which respondents could answer using a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Knowledge-brokering activities were tapped by measuring three roles knowledge brokers can engage in *information managers, linkage agents*, and *capital builders* (Haas, 2015; Hammami et al., 2013; Kislov et al., 2017). Twelve items were used to measure these knowledge-brokering activities. *Information management* refers to identifying, analyzing, packaging, and spreading codified knowledge to inform other potential users. Items included the following: "I have discussed current projects with people from different organizational units." *Linkage* refers to enabling interactions, coordination, and exchange of ideas between different users across organizational units. A sample item is "I have facilitated the involvement of members of my team into work projects initiated by other organizational units." Finally, *capacity building* implies the use of knowledge to develop capacity, integrating current knowledge, and enabling the creation of new knowledge. Items included "I have provided examples to other people of how organizational information can be used." In total 12 items were used to capture these dimensions of knowledge brokering. The analysis demonstrated that a unidimensional measure for knowledge brokering fitted the data best. Respondents were prompted to indicate how often they performed knowledge-brokering activities in the past 3 months ranging from 1 *never* to 5 *daily*.

Analysis

The hypothesized model is tested using structural equation modeling (SEM). To gauge model fit, we examined the χ^2 statistic, incremental, and absolute fit indices. Model parameters and corresponding confidence intervals (CIs) are estimated extracting

5,000 bootstrap samples from the data. Before testing our structural model, we examine validity and reliability of the factor structure of our hypothesized four-factor model through a confirmatory factor analysis.

Results

Because this study relies cross-sectional data, additional analyses were conducted to establish the degree of common method bias. First, Harman's single-factor method demonstrated that the variance explained by one factor is 36.1%. This means common method bias does not seem problematic. Next, a common latent factor analysis was conducted. The delta for the factor loadings in the model with a common latent factor did not differ substantially from those in the retained measurement model without the common latent factor ($\Delta\lambda$ ranged between .00 and .06). These results indicate that common method variance is not of substantial concern to our data.

Measurement Model

The measurement model fitted the data well: $\chi^2(457) = 1122.79$; comparative fit index = 0.93; Tucker–Lewis index = 0.92; standardized root mean square residual = 0.05 and root mean square error of approximation = 0.067 (CI [0.062, 0.072]). The model including four factors—that is, ESM use, message transparency, network translucence, and knowledge brokering—demonstrates good composite reliability ranging from .88 to .97. Convergent and discriminant validity were assessed to gauge construct validity. The average variance extracted ranged from .59 to .75. The maximum shared variance is the highest between two dimensions of visibility (.51), who knows what and who knows whom. Further evidence of construct validity is reported in Table 1, which demonstrates that the maximum shared variance does not exceed the average variance extracted. In other words, the latent constructs share more variance with their observed indicators than with other latent constructs. Hence, the measurement model shows sufficient convergent and discriminant validity. Examination of the standardized factor loadings show values ranging from λ .61 to λ .89. In sum, further investigation of structural dynamics in the model is justified.

Structural Model

The hypothesized structural model, depicted in Figure 1, fitted the data well: $\chi^2(458) = 1124.93$; comparative fit index = 0.93; Tucker–Lewis index = 0.92; standardized root mean square residual = 0.05; and root mean square error of approximation = 0.067 (CI [0.062, 0.072]). The standardized model parameters are represented in Figure 1; below unstandardized regression weights are reported. The hypothesized model starts with the assumption (Hypothesis 1a) that the use of ESM technologies increases message transparency (B = .304 [0.204, 0.404], $p < .001$) and (Hypothesis 1b) network translucence (B = .274 [0.185, 0.378], $p < .001$). Hence, the findings support Hypotheses 1a and 1b.

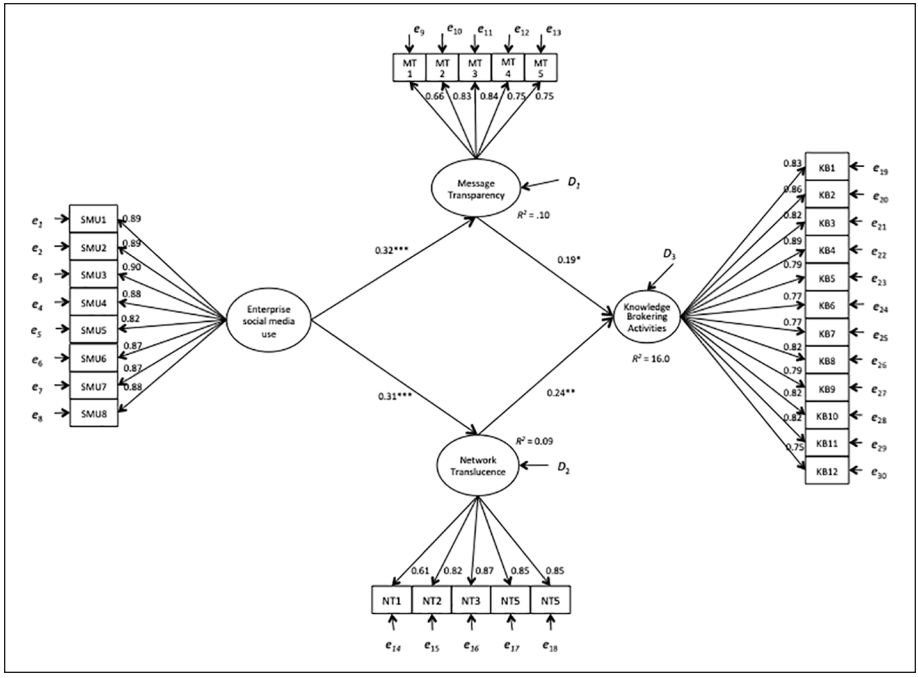

Figure 1. Final structural model: Standardized coefficients reported.
Note. R^2 indicates explained variance. *D* represents disturbance term and *e* indicates modelled error terms of observed variables.
Significance is flagged *$p > .05$ **$p > .01$ ***$p > .001$.

Hypothesis 2a links the use of ESM to knowledge brokering activities through message transparency. Notably, although a significant correlation was found between ESM use and knowledge brokering ($r = .21$), this effect did not persist when estimating the full model with mediators (B = .096 [−0.019, 0.219], $p = .103$). The findings demonstrate a significant indirect effect of ESM use on knowledge brokering activities through message transparency (B = .070 [0.003, 0.164], $p = .038$). Hence, the findings support the assumptions reflected in Hypothesis 2a. In turn, Hypothesis 2b assumes that the use of ESM is related to knowledge brokering activities through network translucence. Indeed, the findings demonstrate a significant indirect effect (B = .088 [0.022, 0.186], $p = .014$), supporting Hypothesis 2b.

Discussion

This study demonstrates that the use of ESM is associated with communication visibility in organizations and thereby facilitates knowledge brokering. Specifically, drawing on the theory of communication visibility this study argued that visibility related to where knowledge is located and how others are connected to in organizations are important mechanisms through which knowledge brokering activities

are facilitated. Although our data does not permit the analysis of specific network structures, the findings allow for some speculation about how visibility can facilitate brokering activities regardless of one's position in a network—that is, employees who reported higher levels of communication visibility of others were also more likely to engage brokering activities.

Theoretical Implications

These findings have several important implications for understanding the relationship between ESM use and knowledge brokering behaviors in organizations. First, this study adds to our understanding of the theory of communication visibility (Leonardi, 2014), by demonstrating how communication visibility mediates the relationship between ESM use and knowledge brokering. Communication visibility theory suggests that ESM enable communication visibility because these platforms provide transparency about exchanges "of messages of people with their communication partners and translucent network connections" (Leonardi, 2015, p. 749). Intuitively and theoretically, the theory of communication visibility seems evident, at least to the extent that ESM platforms may afford the possibility to increase visibility of communication (Chen & Wei, 2019; Leonardi, 2015; Treem & Leonardi, 2013). This study contributes to recent efforts to empirically verify this theory (Chen & Wei, 2019). The findings support the idea that ESM may facilitate brokering activities in the organization regardless of one's position in the network, as communication visibility provides a "vision advantage" to everyone (Leonardi, 2014).

The findings also add that social media may not only afford employees the possibility to make their own communication and connections visible to others through social media usage (Gibbs et al., 2013; Leonardi et al., 2013; Treem & Leonardi, 2013), but that ESM use itself, indeed also increases the visibility of other's communication and connections in the organization (Flyverbom et al., 2016). Employees who use these platforms report higher levels of awareness about the content of others' messages (message transparency) and how people in the organization are connected to one another (network translucence; Leonardi, 2014, 2015). In the context of knowledge brokering, the findings demonstrate that being able to see what knowledge others possess and to whom others are connected are both important preconditions for employees to engage in knowledge brokering. Arguably, the emphasis on knowledge sharing and bridging across intraorganizational boundaries foregrounds the importance of how others in organizations are connected or could be connected based on their expertise or knowledge. Central to knowledge brokering activities is that information and knowledge are transferred across intraorganizational boundaries. Thus, understanding how and to whom others are connected allows knowledge brokers to facilitate connections and build bridges across such boundaries between knowledge users and knowledge providers (Burt, 2004).

Conversely, the findings allow for some speculation about active and passive information sharing strategies (see, e.g., Ramirez et al., 2002) through which communication is made visible on ESM. Enterprise social platforms typically afford users to build and maintain profiles, follow colleagues or groups, activity streams,

posting, commenting, and liking options, as well as group capabilities (e.g., Hacker, 2017; Kane, 2017). The features of ESM may affect visibility in different ways depending on whether people view others' profiles or when they engage in updating or editing their own profiles. Network translucence occurs partially in an automated manner in social media; most of the ESM platforms notify the knowledge seekers automatically when a user they follow likes a post or joins a community or group. These passive information-sharing strategies require little effort from the knowledge provider but signal the knowledge seekers about who knows whom. In contrast, message transparency requires active communication behaviors from the knowledge providers in the form of posts or profile updates to provide the information for the knowledge seekers who knows what in the organization. This way ESM may afford more network translucence than message transparency, especially if the knowledge providers engage more in passive (liking others' posts, viewing a colleague's profile) rather than active (posting, editing profile information) knowledge sharing strategies. To some extent passive uses will afford a knowledge advantage, compared with active uses, as liking allows workers to keep track of the topics and conversations they liked, and viewing other's profiles may provide invaluable insights about their network connections. This seems to align with studies suggesting that online social networks (in organizations) function as "enhanced address books" (Krasnova et al., 2010, p. 119), challenging the often-accorded role of these technologies to be effective conduits for knowledge transfer (Hislop, 2002).

The findings also contribute to earlier studies on knowledge transfer in the context of ESM. For instance, studies on knowledge stickiness identified two important preconditions that allow knowledge to flow more freely through the organization. The first condition is the interpersonal relationship between knowledge seekers and knowledge sources. The second is the knowledge seeker's ability to identify knowledge needs and requests and understand knowledge (Brown & Duguid, 1998). It is argued that the tie strength between the knowledge seeker and knowledge source (interpersonal stickiness) and the complexity of knowledge sought (knowledge related stickiness) influence knowledge seeker's decisions to ask for knowledge or broker connections. Social media may function as a social lubricant that may help knowledge seekers to unstick sticky knowledge—that is, improve knowledge seekers' access to information and use of knowledge. The awareness about knowledge sources and the knowledge itself can reduce ambiguity and lubricate sticky knowledge (Leonardi & Meyer, 2015). These notions of knowledge stickiness tend to privilege the role of knowledge seekers. Our findings demonstrate that knowledge about interpersonal relationships is especially important for knowledge brokers (i.e., providers) as they need the information to broker connections and content across organizational boundaries. Thus, social media are especially beneficial for knowledge brokering activities to the extent that they lubricate *interpersonal* stickiness. Another explanation for these findings might be that knowing how people relate and to whom they are connected establishes a certain amount of trust and contextual awareness that eases knowledge transfer (Neeley & Leonardi, 2018).

Practical Implications

At least two implications for organizations and practitioners emerge from our data. First, the findings demonstrate that the use of ESM in organizations helps develop metaknowledge. Therefore, in contrast to more private channels such as e-mail, which are still very prevalent in organizational life, a shift to more open channels of communication, such as ESM, might aid organization-wide knowledge sharing. These platforms contribute to making communication more visible to interested third parties obtain accurate metaknowledge, which helps them become knowledge brokers by managing information, creating linkages across organizational units, and building capital. Especially insights into how coworkers are connected are important for knowledge brokers as they facilitate the flow of information across intraorganizational boundaries.

Second, the findings suggested that even at low levels of ESM usage employees' perceptions of communication visibility increase. Given that the relationship between platform usage and knowledge brokering activities is primarily driven by message transparency and network translucence, organizations may want to focus on the platforms' ability to create awareness of social networks. Many social media platforms pride themselves primarily in allowing users to share and generate information, not explicitly focusing on how and to whom users are connected. These networking-related information-sharing behaviors (such as sending or accepting requests to connect, liking of other's posts or updates or just exploring other users' friend lists) often require less effort from the users than more complex forms of information sharing such as sharing knowledge and know-how through posts and updates. Our findings demonstrate that it would behoove managers and organizations to also emphasize the "social"—that is, connections—in social media, next to the ability of these platforms to convey work-related information. The passive information seeking and providing strategies (Ramirez et al, 2002) may be more effortless and helpful for employees to become aware and signal who their communication partners are, which may further increase their knowledge brokering behaviors.

Limitations and Future Research

The theoretical and practical implications of this study are, as with all studies, limited by the choices we made in our research design and data collection. First, the study relies on a sample of full time U.S. workers across organizations and industries, and we only solicited the perspectives of employees, not their coworkers or managers. Therefore, we are not able to make claims regarding the potential effects of technological, organizational, or team-based characteristics. Additionally, we do not have information about the structure of their social networks (e.g., density of network), limiting our possibilities to contribute to theory on brokering behaviors in sparse versus dense networks. Future research may examine how different types of social networks affect the dynamics uncovered in this study. Such network characteristics could be investigated through ESM log data or through ego-centric mapping in surveys

where respondents indicate their networks providing insights into characteristics such as network centrality and network density. In addition, we were not able to assess specific organizational hierarchies in our sample. However, Engelbrecht et al. (2019) demonstrated that managers develop more metaknowledge through message transparency and network translucence than nonmanagers. Hence, future research may consider the influences of social hierarchies within networks as well.

Second, we relied on retrospective judgments of respondents to assess technology use, specifically ESM use, and knowledge brokering activities. Future research might employ a mixed-method design, for instance, to obtain more objective behavioral data through the content analysis of social media content (Leonardi & Vaast, 2017; van Zoonen & Treem, 2019). In addition, we specifically assessed the used of ESM, while workers often have a multitude of different technologies, and other methods, at their disposal to engage in brokering activities. However, we focused on ESM specifically for their capacity of increasing communication visibility, although ESM platforms may differ in their affordances and uses depending on the platform, its users, and the social context within which the platforms are used. Different organizational contexts, including organizational culture and climate might affect the (in)visibility of communication (Laitinen & Sivunen, 2020), as well the extent to which employees engage in brokering behaviors. In addition, ESM might contribute to the avoidance of knowledge duplication (Leonardi, 2014), however, ESM may also reinforce organizational silos and create (social) bubbles that reduce pluriformity of knowledge and thought. Future studies may focus on how these factors influence the mechanisms uncovered here. Finally, the cross-sectional nature of the data prevents us from making any causal claims.

Despite these limitations, the findings foster a greater understanding of the role of communication visibility in organizational knowledge brokering. Future studies should also focus on the role of active and passive information sharing and seeking strategies on ESM (e.g., posting and commenting vs. liking and viewing). By identifying how these strategies are related to both types of communication visibility (message transparency and network translucence) could help managers and organizations further promote knowledge brokering behaviors through ESM. In addition, research has suggested that increased visibility does not necessarily mean increased transparency, in other words more visibility may in fact lead to opacity (Flyverbom et al., 2016). This occurs for instance when visibility might contribute to a perceived information or communication overload. Future studies might consider to what extent visibility may contribute to perceived overload and possibly result in detrimental effects for organizational effectiveness.

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