Theorizing on the Take-up of Social Technologies, Organizational Policies and Norms, and Consultant's Knowledge-sharing Practices

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Abstract

This study focuses on the knowledge practices of consultants in relation to their uses of social technologies and the ways in which organizational norms and policies influence these practices. For this study, the term, "social technologies" refers to the fast-evolving suite of applications and platforms, including both common applications (e.g. email, phone, instant messaging or emerging social networking platforms), and enterprising social networking technologies that are specifically hosted within an organization's computing environment (e.g., Socialtext). Social networking platforms can refer to often known as social media or Web 2.0 , such as blogs, public social networking sites (i.e., Facebook, Twitter, and LinkedIn). Building from structuration theory, this study focuses on the knowledge practices of consultants related to their uses of social technologies and the ways in which organizational norms and policies influence these practices. A primary contribution of this research is a detailed contextualization of social technology uses by knowledge workers. As many organizations are allowing social media-enabled knowledge sharing to develop organically, most corporate policy towards these platforms remains defensive, not strategic – thus, rich opportunities are lost. Implications on uses and expectations of social technologies arising from this research will help organizations craft relevant policies and rules to best support technology-enabled informal knowledge practices.

Introduction

This work focuses on how social structures, including both policies and emerging norms, within organizations shape uses of social technologies for knowledge sharing. For our purposes, we primarily view and define social technologies as a genre of Information and Communications Technology (ICT) that manifests as a viable platform upon which social interactions among individuals can be built. This definition of social technologies refers to tools that build on and facilitate social and interpersonal relationships, and therefore are useful for bolstering informal knowledge sharing across temporal and spatial boundaries. By viewing them through this lens, we are able to highlight some of the most common technological options that currently facilitate social interactions of knowledge workers (Bughin, Byers, & Chui, 2011).

What motivates this work is the growing need to understand how organizational norms and policies influence the uses of social technologies for informal knowledge. Previous research has established that institutional contexts shape information practices and technology uses (Lamb, King, & Kling, 2002; Rosenbaum, 1996; Wilson, 1999), and organizational rules and cultures are associated with whether the technology use succeeds or fails in organizations (e.g., Lai & Guynes, 1997; Leidner & Kayworth, 2006). As such, in order to reap the full benefits of social technologies and avoid the potential risks affiliated with their use, organizations must first understand (1) who is using social technologies in the organizations, (2) how they are using them, and (3) what policies must be put in place in order to facilitate the adoption and best use of these technologies (Burnham, 2011).

At present, the implication of the use of social technology in organizations is an open and vibrant topic. Despite its importance and topicality, the research on social media tends to focus on students' uses in educational contexts (e.g., Agosto & Abbas, 2010; Ahn, Bivona, & DiScala, 2011; Read, Shah, Lupita, & Woolcott, 2012; Stutzman & Kramer-Duffield, 2009) or information behaviors of Millennials on these platforms (Ahn, 2011; Beheshti, 2012; Kim, Yoo-Lee, & Joanna Sin, 2011; Lupita, O'Brien, & Jaqueline Woolcott, 2011). These studies primarily center on non-organizational or explicitly social domains, and are less focused on the impact of organizational structural factors as emerging norms and explicit policies.

Information scientists can contribute much to the advancement of our understanding of the use of social technology in the workplace. Organizations are a specific, common, and important context for information behaviors (e.g., Vakkari, Savolainen, & Dervin, 1997).

Cool (2001, p. 8) defines contexts as "dynamic environments, within which interpretive processes unfold, become ratified, change, and solidify." Information behaviors and technology uses are both formed and constrained by the way social structures define acceptable behaviors within a context (Solomon, 1997). Within the field of information studies, approaches such as context-aware computing seek to design technologies that can effectively interact with aspects of the context in which the technologies are used (Dourish, 2004).

Contextual factors, such as large-scale social structures and microstructures, shape human interactions with one another, as well as their interactions with technologies (Sawyer, 2006). To understand how employees' uses of social technologies and respective information behaviors unfold within organizations, it is critical to account for the structural influences of organizational contexts. Therefore, we examined social structures of consulting firms and their impact on knowledge practices and uses of social technologies. Extrapolating from structuration theory, we

characterize organizational contexts as collections of social structures, both enabling and constraining employees' actions.

As consultants are considered to be the epitome of knowledge sharer, (Anand, Gardner, & Morris, 2007), we found them ideal for our study. Our premise is that certain organizational policies and emerging social norms in consulting firms influence how knowledge workers, within these settings, organize their knowledge practices. The role of social technologies relative to these knowledge practices may be enacted differently if employees are not *members* of these firms. Therefore, our primary research question is: *How do organizational norms, policies and arrangements influence knowledge practice mediated by the use of social technologies?*

First, it is important to delineate between work practice and organizational policy. Work practice, in general, can be understood as a "recurrent, materially bounded and situated action engaged in by members of a community" (Orlikowski, 2002, p. 256). Therefore, we define social-technology-mediated knowledge practice, as a specific form of work practices through which knowledge workers use ICT and share knowledge, and may not be reflected in either the organizational chart or its formal processes, but emerge as workers attempt to accomplish their work. These practices provide a worker with necessary flexibility to adapt to new situations, since they often involve workarounds and improvisation.

Knowledge practices are inherently informal, emergent, spontaneous, and distinct from formal and articulated organizational processes (Brown & Duguid, 2000). Formal knowledge sharing in organizations, on the other end of the continuum, occurs via formal structures (McPhee & Poole, 2001) and follows an organizational hierarchy (Fish, Kraut, Root, & Rice, 1992). Therefore, a focus on knowledge practices allows us to capture dynamic relations and performances from knowledge worker's informal knowledge sharing practices.

In order to capture social-technology-mediated knowledge practices, we draw on a typology of knowledge practices in organizations offered by Jarrahi and Sawyer (2013) (see Table 1). The typology embraces the most common informal knowledge practices conducted by knowledge workers.

Table 1. Five common knowledge practices mediated by social technologies, adopted from (Jarrahi & Sawyer, 2013).

Knowledge practice	Knowledge Objectives	Resultant knowing	Technologies commonly used
Expertise locating	Finding a relevant piece of information, often easily searchable in databases or repositories	Knowing how to accomplish certain tasks: • Codified knowledge • Directly related to work	• Knowledge repositories • Wikis

Expert-locating	Findings a person with relevant expertise	Knowing who holds the relevant expertise: • Often non-codified knowledge • Directly related to work	• Email • Forums • Yammer • Twitter • LinkedIn • Corporate portals or internal social networking platforms
Reaching out	Finding the answer to a knowledge problem, difficult to articulate and search for in databases	Knowing how to accomplish certain tasks: • Often non-codified knowledge • Directly related to work	• Phone • Email • Instant messenger • Twitter
Socializing	Generating, learning about, and maintaining social ties	Knowing about colleagues and other social contacts	• Blogs • Facebook • Twitter • LinkedIn
Horizon broadening	Finding broader perspectives on work and professional interests	Knowing how broader business and technology trends unfold	• Twitter • LinkedIn • Facebook • Blogs

In examining knowledge sharing practices, we adopt a holistic definition of the social technologies which consultants use in their knowledge practices, rather than focusing on a single technological platform. Current research showcases that knowledge workers interact with multiple social technologies (as part of an even larger suite of ICT being used), and therefore the interactions among people and tools cannot be examined in isolation (Bélanger & Watson-Manheim, 2006; Turner, Qvarfordt, Biehl, Golovchinsky, & Back, 2010).

The paper proceeds as follows: In the next section, we briefly describe the theoretical framework and research methods. Then we report research findings based on two components: (1) salient knowledge practices and (2) identified social structures representing organizational policies, structures, and norms. Next, drawing on a practice lens (Orlikowski, 2000), the discussion focuses attention to distinct social structures arising from social technology uses (technology-in-practice), reflecting on the organizational contexts of consulting firms. The paper concludes by offering implications for research and practice.

The conceptual frame: Structuration and practice lens

Being a member of an organization involves adhering to rules, arrangements and norms in sharing information and using different organizational resources, such as information and communication technologies. We frame these influences in terms of the concept of social structures and adopt Giddens' definition of social structure as the "rules and resources, organized as properties of social systems" that can both enable and constrain people's daily practices

(Giddens, 1989, p. 258). Like Berends, Boersma, and Weggeman (2003), we argue this definition of social structure is distinct from and broader than the notion of social structure commonly used in most organization studies.

In organizations, social structures stem from two distinct sources. First, they can be a direct result of the organization's structures, norms, and formal policies or rules formally articulated by organizations. Each organization consciously designs these structures to anticipate and guide the interactions and activities of its employees (R. Scott & Davis, 2007). These structures are typically reinforced through training and concrete policies.

Second, social structures may gradually arise from the ongoing processes of negotiation and social interaction among the members of that organization (Barley, 1990). These forms of social structure are correlative with articulated formal policies, but are primarily rooted in a common understanding of what organizational work requires and how it is to be accomplished. Scott and Davis (2007) refer to this dimension of social organizations as "the behavioral dimension" because it reflects the recurrent and spontaneous behaviors of employees rather than normative structures set by organizations. Several of the informants referred to such assumption as "common sense."

In their social practices and use of technologies, workers constitute social structures. The enacted social structures help them make sense of their working environment, partly shaping what workers do and when they do it (Orlikowski & Yates, 2002). According to the Giddens' formulation of structuration theory, human agents draw on social structures in their social practices, and at the same time, these practices produce or reproduce social structures. In this sense, social practices and structures are in a recursive relationship, and this is the meaning imparted by the term "structuration" (Giddens, 1984).

Structuration theory further accentuates the mutual constitution of social practices and knowing. The concept of "knowing" involves knowledgeability of actors. "Knowledgeability", or "knowing-in-practice" is continually constructed and reconstructed through practices, and so is not explicitly directed or defined via objects or systems (Orlikowski, 2002). Structuration theory treats human agents as knowledgeable, reflexive, and continually observing the flow of actions, while they recurrently interact within the context in which their actions are situated. This theoretical approach views actors' knowledgeability as being enmeshed in contextual conditions and social structures (e.g., social, technological, historical, financial, and cultural) while social "structure has no existence independent of the knowledge that agents have about what they do in their day-to-day activity" (Giddens, 1984, p.

26). Thus, practices and habits of social communication, while falling into distinguishable patterns that are able to be observed, are organic in nature and subject to change as culture and technology develops.

As Giddens (1984) details in structuration theory, social structure is a result of actions recurrently produced and reproduced through situated interactions of people, and Orlikowski (2000) formulates a *practice lens* as a theoretical approach and proposes the notion of technology-in-practice, which refers to the structure of technology use enacted by social actors, while they interact recurrently with a particular technology artifact. In turn, the technology-in-practice is a set of rules and resources that serves to shape interactions.

The practice lens explains how employees are influenced by the organizational norms and policies prevalent within these organizational contexts, and how they may appropriate social technologies, enacting distinct technology structure (technology-in-practice). Technology-in-practice enacted by organizational workers partly represents the influence of the social structures dominating the organizations because the use of similar technology artifacts in other social contexts may result in different types of technology-in-practice. For example, technology-in-practice arising from the use of Facebook by knowledge workers may be different from the knowledge practices of college students using the same technology.

Figure 1. Adaptation of practice lens (Orlikowski, 2000) to explain the interplay between knowledge practices and social structures.

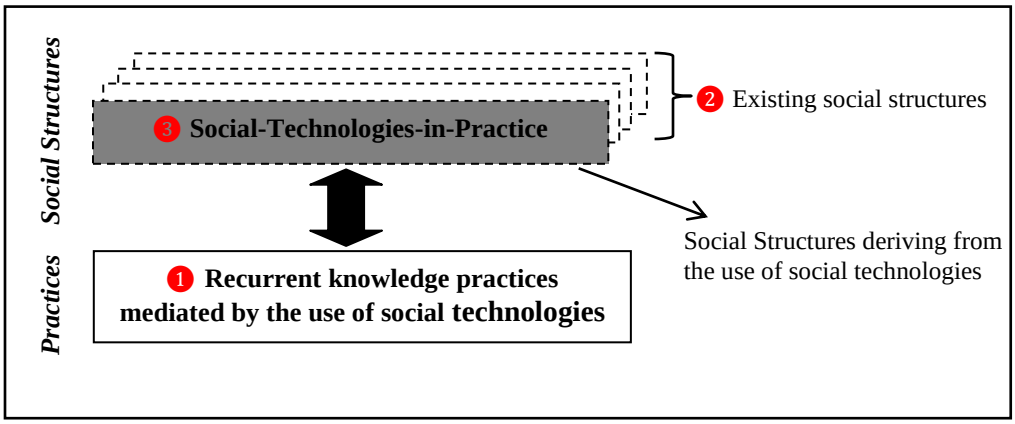


Figure 1 represents our adaptation of Orlikowski's practice lens for studying the reciprocal relationships among social structures, knowledge practices and the uses of social technologies. This study defines knowledge practices as recurring and regularized actions of individuals that are situated within an organizational context and are conducted to share knowledge with other social contacts. That is, knowledge and technology are engrained in

people's practices (Orlikowski, 2002), and studies of the roles of social technologies should focus on practices with which these technologies are entangled. Focusing on knowledge practices allows for comprehensive examination of the process through which organizational knowledge is actually generated, shared and consumed. It enables us to study knowledge sharing from the perspectives of individuals, rather than structural or organizational perspectives.

Research design, data collection and analysis

A field-based study was used to examine the ways social structures influence knowledge practices and worker's uses of social technologies for advancing work. Focusing on better understanding consultant's knowledge sharing led to the selection of research participants from multiple organizations. As explained above, extant management literature indicates that consulting firms are the archetypal knowledge intensive environments and are excellent places to study informal knowledge sharing (e.g., Anand et al., 2007; Dunford, 2000; Empson, 2001; Morris, 2001; Werr & Stjernberg, 2003). Moreover, consulting firms represent a broader population of knowledge-intensive environments and empirical research demonstrates that many characteristics of these organizations (e.g., high informality in organizational processes and autonomy for employees) are not unique, but represent a wide range of knowledge-intensive workplaces (Greenwood, Hinings, & Brown, 1990).

This work combined four forms of data collection: (1) interviews, (2) micro-studies of practice, (3) documents, and (4) system level data. Our primary source of data consisted of interviews with 58 consultants from multiple management consulting firms. Informants were identified through purposive sampling of possible contacts. To provide a basis for comparison, informants were selected based on the similarity of their work context, the comparability of the work roles they performed and their ability and willingness to provide key information.

All informants held knowledge-intensive roles. A knowledge-intensive role is one that: 1) produces and transmits knowledge, 2) involves intellectual skills, such as manipulation of abstractions, 3) is primarily non-routine problem solving that involves creativity, and finally 4) requires theoretical and technical knowledge (and formal education) (Schultze, 2000).

Our sampling approach reflected our intent to pursue maximum variations across age, gender, level in the organization (managers vs. non-managers), and adoption behaviors (adopter and non-adopter of social media). This allowed for the creation of a diverse group of knowledge workers that our early interviews suggested might influence the interpretation of organizational norms and policies, knowledge practices and use of ICT for work. For

example, interviews with managers revealed some of the rationales behind formal policies. Most interviews provided insight into the ways those policies were appropriated as well as on informal norms that emerged from their common work practices.

We designed a four-part interview protocol that included questions about: (1) informant's professional background, (2) the nature and structure of their work, (3) the roles of different ICT used within the organization, including social technologies in knowledge practices, and (4) the organizational context, norms and policies that define informant's work practices. Interviews, on average, took 43 minutes and all the interviews were transcribed.

We also conducted five micro-studies of practice in order to better understand consultants' daily uses of social technologies in their work practices. We shadowed five participants and observed their work practices. These participants were identified based on their willingness to participate and their knowledge-intensive work as management consultants. Observations focused on worker's knowledge-sharing activities and their uses of social technologies in their work. These micros-studies averaged four hours in length and generated a wealth of field notes.

To supplement the interview data and micro-studies, we analyzed a variety of personal and organizational documents. During interviews, we asked for relevant documents such as the organization's social media policy or appraisal documentations (e.g., annual performance review documents). In total, we acquired ten documents; the most relevant for our study being, "code of business ethics", "email policies" and both "internal and external social media policies". We found the codes of business ethics useful in that they both defined acceptable work behavior, as well as provided specific guidelines for technology practices.

Documents were coded primarily to identify organizational rules and policies, and codes were organized using the qualitative research software package NVivo9. This analysis provided an understanding about the ways consulting firms formally regulated knowledge processes and the use of social technologies. For example, analysis of performance reviews revealed consulting firms' preferences and priorities relative to work practices.

With participants' permission, we also connected to informants on LinkedIn and followed them on Twitter. This system-level analysis allowed for observation in the ways informants employed Twitter and LinkedIn in their knowledge practices. We particularly focused on postings, tweets, and activities. The document analysis and the system-level data were then utilized to corroborate consultants' interpretation of organizational norms.

As is recommended for qualitative research, data collection and analysis proceeded concurrently (Miles & Huberman, 1994). The analysis involved numerous iterations between data collection and construction of an

emerging theory. Data analysis was inductive, since we were looking for emergent ideas, leads, and issues (Glaser, 1978). Data analysis was also framed by the concepts of social structures and knowledge practices. This iterative process enabled the generation of an emerging theory about the ramifications of common social structures for daily knowledge practices and adoption of social technologies in the work of knowledge workers.

The study's focus on two concepts of knowledge practices and social structures guided the integration and analysis of divergent data sources. Review of interview transcripts, field notes, organizational documents and personal activities on public social media identified salient knowledge practices, social structures and their interdependencies. Finally, employment of the method of constant iteration created mutually exclusive and exhaustive categories (Miles & Huberman, 1994). In the review process, relevant passages were coded using NVivo and passages perceived as relevant to similar concepts were coded in the same category.

The iterative process allowed for comparison of data across different sources and supported the analysis into how these categories were related to similar ideas, issues or relationships concerning social practices and structures. For example, as we reviewed different sources, we observed that the consultants we shadowed used different technologies to interact with their social and work-related contacts. Interview transcripts revealed the same pattern and informants commonly had specific routines in which they drew a line between the two. Organizational social media policies reinforced the same norm. To allow for this emerging trend, a category of "segregation between personal and professional lives" was created in our analysis to recognize and capture these observations. As a result, the overarching focus of this study and the new themes that arose were knitted together to expose divergent sources of data, and allowed for engagement in "gestalt analyses" (Gioia & Thomas, 1996).

Summary of Findings

Findings reported here showcase the effect of several social structures on digitally-mediated knowledge practices in consulting firms. In order to capture these effects, we adapt structuration theory while recognizing that in any structurational analysis, some structures should be foregrounded and others should be backgrounded (Giddens, 1979). Even though numerous social structures impact knowledge work in consulting firms, data coding and analysis focused on social structures that were more pronounced relevant to social technology uses for informal knowledge sharing. As a result, our findings highlight those social structures (as organizational norms, policies,

arrangements, and expectations) exerted the most significant impact on knowledge workers' perception and use of social technologies for informal knowledge sharing (see Table 2).

Table 2. The impact of social structures on knowledge practices and the use of social technologies.

Social structures	**Influence on knowledge practices**	**Shaping of the social-technologies-in-practice**
Matrix organization	– Links around projects facilitating ▪ Horizon broadening ▪ Reaching out and expert-locating practices – Knowledge silos around projects	– Extensive use of email, phone or IM to communicate with strong ties forged around projects – Extensive use of project-centric technologies
Client centricity and distributed collaboration	– Highly technologically-mediated knowledge practices (distributed collaboration) – Strong links with specific clients – Socializing (creating new connections) through hoteling – Fragmented knowledge sharing within larger organizations	– More prevalent use of digital technologies by employees located at client premises – Reliance on clients' technological infrastructure – Extensive use of cellular phones – Compliance with (often more restrictive) technological policies of clients
Technological context	– Diversity of social technologies mediating knowledge practices – Less attachment of knowledge workers to corporate physical offices – Constant connectivity and communication	– Flexibility in selecting and using social technologies for knowledge practices – Allowing social tools to grow organically – Dominance of email in knowledge practices – Use of mobile devices to bypass corporate IT infrastructures
Norms of collaboration and sharing	– Prevalence of social networking for knowledge sharing – Strong internal-knowledge communities bolstering knowledge sharing	– Effective use of email and telephones for reaching out to coworkers – Participation in internal forums and Yammer
Social networking norms	– Informal physical events serving as ▪ Networking opportunities (bolstering socializing knowledge practices) ▪ Conduits of experiential knowledge	– Overshadowing the benefits of enterprise social networking tools – Privileging the use of traditional social technologies as complementary mechanisms
Bounded knowledge sharing	– Constrained sharing of knowledge with individuals outside the firm – One-directional outside-in knowledge sharing – Keeping and sharing knowledge based on different layers around projects and clients – Tapping strong ties for accessing project-specific information	– Limiting the use of public social media for most work-related knowledge sharing practices – Encouraging the use of company-owned technological platforms – Client and project-centric use of technologies – Moderating the informal tone of communication on internal platforms
Separation of personal and professional lives	– Separating personal and professional lives in knowledge sharing practices – Diminishing the effect of context collapse	– Disassociating oneself from the organization on public social media – Segregating social groups across different channels: use each social media for connecting with different groups of people

We next discuss how seven social structures (the second component in Figure 1) may affect knowledge practices mediated by the use of social technologies (the first component in Figure 1). Structuration theory stipulates knowledge practices are influenced by social structures embodying both intended or formulated organizational policies and emerging norms. In the remainder of this section, we discuss the most important social structures in our empirical findings (the second component in Figure 1), and explain the way each shape knowledge workers' knowledge practices and respective uses of social technologies. These social structures include specific organizational arrangements, formal policies and informal norms. Table 2 outlines the structural influences (the second component in Figure 1) that shape knowledge practices (the first component in Figure 1) and characteristics of social-technologies-in-practice (the third component in Figure 1).

Matrix organization

The organizational structure of consulting firms is typically matrixed, project-oriented, malleable and largely dependent on informal networks across different units. Direct reporting in consulting firms is not as common as in more bureaucratic organizations (Anand et al., 2007). Consultants often work with a project manager, while they are in direct contact with a counselor or more senior member of the firm. Counselors are often from other departments and provide feedback regarding the counselee's progress and performance, and act as a coach. The counselor role is consequential in the evaluation and promotion of a counselee; however, these relationships are not strictly top-down and can involve informal mentorship and guidance.

Matrix organizations pool employees with needed skills for project assignments. This structure often involves less direct reporting, and provides knowledge workers both with greater autonomy and more informal coordination.

Consultants are bonded together by the social capital gleaned from social networks, more so than the bureaucratic forces of institutions. In this respect, to conduct the practice of *reaching out*, many consultants may leverage connections with colleagues from past projects.

A centerpiece of matrix organizing is the focus on project-based work. Consulting firms' projects almost always serve external stakeholders (e.g., client firms) and draw on people from different ranks and units. Projects may range from three to hundreds of consultants; however, each customer-based project typically involves a partner (the most senior manager), a group of managers, and consultants to accomplish the core tasks. In this context,

consultants typically participate in many different projects over the course of their career, and therefore have opportunities to interact with a wide range of individuals from introductory levels to upper management.

Project-centric structure and intensive collaborations enable consultants to forge social connections and leverage them for disparate knowledge practices, particularly in reaching out and expert-locating. As Nardi, Whittaker, and Schwarz (2002) argue, the social relationships formed around a project will persist after the project's completion and may serve as a basis for future collaboration.

These assemblages of social connections between people often replace the "old-style corporate hierarchy", and become the foundation for most of the short- and long-term collaborations. Projects are not permanent and consultants collaborate with different groups of colleagues over time, – including individuals outside their immediate team – learn about their expertise, and develop rapport. Social interactions formed around projects yield ample social capital for employees, especially those who are with the organizations for longer periods of time, which can then be extended over the course of numerous projects.

Once these social relationships are established, traditional social technologies such as email, telephone and IM are leveraged in situations where consultants need to seek out advice through the practice of reaching out or expert-locating. Therefore, the use of traditional social technologies is entwined with social relationships formed around projects. Finally, working with different workers over time raises the scope of project members' worldviews and areas of expertise, offering significant opportunities for horizon broadening (Grolik, Kalmring, Lehner, & Frigerio, 2003).

However, project-based structures also compartmentalize consultants around projects, and therefore the consultants interact primarily with colleagues engaged on the projects. While this type of organizing provides flexibility in dealing with clients' needs, it also creates knowledge silos around projects. Informant 14 noted:

> *"If you're on a project, you might share information with your colleagues. But, that's more driven by the project and what you're trying to do, as opposed to something that's structure to interact globally, or with the other functions like tax and audit, so everything's very fragmented in that perspective."*

Due to this organizational structure, some of the social technologies that coordinate projects are only accessible to project teams, hindering broader collaboration. Many knowledge repositories and wiki systems deployed internally revolve around specific projects and, therefore, are not deployed company-wide (across different functions and countries). For example, we found that in most organizations where wiki systems are deployed, the wikis are

project-based and are primarily used as repositories for projects documents and deliverables. Consultants engaged in other projects, typically, are not given access to the content.

One ramification of this is that consultants often focus on only a handful of projects and client assignments and therefore may be unable to spare time to share their experiences with colleagues outside of these projects. The second ramification is that socializing with individuals beyond an immediate project team may be challenging. A project-centric structure, therefore, proves more supporting in reaching-out and locating expert and expertise and for addressing immediate client issues.

While the centrality of projects in consultants' work may cause the current technology infrastructure to fragment, emerging enterprise social technologies – such as Yammer – may allow knowledge workers to circumvent these project-based silos and conduct socializing and expert-locating practices beyond projects. We observed Yammer is used to seek inputs from colleagues outside the project teams. For example, informant 34, a consultant based in the UK, recounted using Yammer to converse with colleagues in Norway on shared topics of interest:

> *"I've done a bit of client work toward the end of last year where I'd produced quite a detailed report on the future of payment technology. Through Yammer, I was able to share information on some of these payment technologies with our Norwegian colleagues, and to get involved in a discussion. I certainly can't think of how that sort of interaction would have happened personally with these guys in Norway had it not been through Yammer."*

Therefore, the use of enterprise social technologies may allow workers to share knowledge across both geographical boundaries and knowledge silos formed around projects.

Client centricity and distributed collaboration

We found that, like other professional service firms, management consultants are typically organized around clients and follow a distributed model of authority and collaboration. These consciously-designed social structures guide the activities of consultants and define their informal knowledge practices and uses of social technologies. Depending on a client organizations' ICT infrastructure, these practices similarly influence how consultants approach social technologies.

The majority of a consultants' daily work is entwined with the needs of specific clients. Consistent with the extant research, we observed most employees in consulting firms spend most of their time at their client's premises (e.g., Anderson-Gough, Grey, & Robson, 2000; Grey, 1994). This colocation involves ongoing connection and close

collaboration with a number of clients. As consultants work with a client, they develop relationships and an understanding of a client's business and environment. By the time consultants are promoted to managerial positions, they typically achieve an extensive portfolio of clients with whom they are likely to continue to collaborate. Our analysis of annual evaluation documents indicates that consulting firms additionally emphasize a working relationship with the client and appreciate consultants with client-specific knowledge. The primacy of clients in professional service firms affects specific knowledge and technological practices.

Fragmented technological infrastructure.

Being physically located at a client's premises concretely impacts a consultant's knowledge sharing and use of social technologies, as they typically must rely on their client's technological infrastructure. In interviews, several informants noted intermittent connectivity as one of the key challenges they encounter while working on client premises. That is, consultants can't be guaranteed reliable access to various types of information resources and social technologies. Some did not even have access to desktop phones while at client sites. Thus, consultants do much of their knowledge sharing and communications via mobile phones.

Another challenge concerning technological infrastructure is how consultants collaborate with their clients using the same technological platform. Members of client organizations are often directly engaged in projects, but consulting firms find it challenging to integrate multiple types of digitally-mediated collaborations into a single platform. Because clients can't have access to the consultants' internal resources – and vice versa due to credential problems – individuals from both sides may simply resort to email to surmount the gap. Unfortunately, email may prove ineffective in many instances of communication and knowledge sharing (Olson & Olson, 2009). In many cases, a client firms' technology policies are even more restrictive than the consulting firms', and thus, consultants are pushed even more towards reliance on their smartphones.

Distributed collaboration.

Client-centricity makes project structures highly distributed. Informant 35 described this:

> *"For the current client we are working for, half the team is out of Chicago, the other half is in Virginia-- I'm the only one from New York. So, whenever we have to discuss something, we either jump on a call or an online meeting, so you don't necessarily have to be in the same office at the same location."*

As the above excerpt highlights, because of the dispersed nature of work, knowledge practices must be mediated by some form of digital technologies. Mechanisms, such as video-conferencing or teleconferencing, enable synchronous collaboration and knowledge sharing, while email helps employees to communicate and collaborate from different time zones and geographies. Consultants draw on these technological platforms to orchestrate remote work when face-to-face interactions are not possible.

Consistent with the centricity of clients, hoteling is becoming more prevalent among large consulting firms. Hoteling refers to a method of providing unassigned seating in an office environment (Barnatt, 1995). Since many consultants spend a large portion of their time at clients' premises, they take advantage of temporary spaces when they must work in their own organization's offices. Instead of being assigned to a permanent physical office, the shared office space of hoteling facilitates distributed work when consultants need to spend time away from their core team project. It also creates opportunities for informal connections that can be leveraged for future knowledge sharing. As Informant 26 notes:

> *"I see new people all the time. Sometimes, they just introduce themselves, start a conversation and I know more about them -- and sometimes, I can reach back to them for stuff."*

In this way, hoteling provides cross-team networking opportunities. However, keeping in touch with these *consequential strangers* is challenging, especially as consultants move between client sites and disparate hoteling locations. "Consequential strangers" are social connections outside of the consultant's inner circles and occupy the broad territory between strangers and close ties (Fingerman, 2009). To sustain these weak and ephemeral relationships, social technologies – such as enterprise social networking platforms – are seen as useful. Nonetheless, we did not observe much of this type of use.

Over the course of a project, consultants are often physically removed from the rest of the organization and coworkers. Similar to the focus on projects, centricity of clients in work practices may further isolate consultants from the rest of their own organization and causes further fragmentation in the organization's shared knowledge community. This poses certain limitation for organization-wide knowledge sharing. Informant 33 described this challenge:

> *"Because we're a distributed workforce, we need to be out in client site. But we need to be part of the same company. In practice, when we're out on client site, there's very little sharing that goes on back to the firm,*

so we tend to focus very strongly on the client and, in consequence, we have a culture which is very client-centric and less about sharing information and knowledge within the firm."

The distribution of knowledge work across disparate clients may impede the flow of knowledge within consulting firms.

Technological context

Technological context refers to those social structures that derive from the ongoing uses of existing technologies. These social structures are the social order arising around the use of different technologies in the same context (Barley, 1990). A current technological context can be thought of as existing technologies-in-practices that are enacted and institutionalized over the years. Our empirical observations reveal three important dimensions of the technological context within consulting firms: (1) flexibility in the use of technologies, (2) the dominance of email-based communication, and (3) the reliance on mobile technologies.

Flexibility in the use of technologies

Similar to other forms of knowledge work, consultants show strong preferences for autonomy and control over their work (Anand et al., 2007). We found that they also enjoy a higher level of liberty in terms of installing and using different applications. In general, consultants find it relatively easy to utilize technologies that facilitate their work and knowledge-sharing practices. In contrast to many other types of organizations (e.g., financial institutions and public agencies) which ban access to public social media or even employees' personal email accounts (Sheerin, 2012), we observed that few public websites are blocked, so consultants can easily access public social networking sites at work. The flexibility of policies in consulting firms provides employees with more freedom to draw on a wide variety of tools in accordance with their personal preferences and needs. Therefore, the technology portfolio which consultants possess appears to be more diverse (but not fully unconstrained).

Data further suggests that while the majority of consulting firms invest in enterprise social networking technologies, little formal pressure exists to mandate their use. This flexible approach towards technology adoption can also explain the organic outgrowth of public enterprise social networking tools in the consulting industry. For example, most of the consultants in this study worked at firms which did not espouse or ban the use of Yammer. As

such, a few employees started to rely on it for some of their knowledge sharing practices and, over time, more and more employees started to use Yammer. Informant 34 noted:

> *"Yammer is kind of growing very organically in [our consulting firm]; it just sort of started, and people came initially in drips and drabs and then in greater numbers -- but I'm not sure that I've ever seen any sort of official policy on what you should or shouldn't do with Yammer."*

Therefore in consulting firms we studied, Yammer use went viral without much pushback from the organizations involved.

The dominance of email

Prior literature delineates the importance of email use in organizations (e.g., Dabbish, Kraut, Fussell, & Kiesler, 2005; Finholt & Sproull, 1990; Haythomthwaite & Wellman, 1998). The American Management Association (AMA) reported the number of organizations that have formulated email policy training doubled from 24% in 2001 to 54% in 2004 (AMA, 2005). These rules often focus on disclosure policies and the way employees attend to email-based communication. Email may be distinct from all other social technologies in organizations because of the establishment of sets of norms and expectations woven around its use. Some researchers argue that the widespread adoption of email by organizations, and specifically organizational rules later inscribed into organizational email, transformed email into the preferable official channel for organizational communication (e.g., Meijer, 2008).

This study's data suggest email is now a pervasive, inseparable, technological component of organizational communication and knowledge practices. Two consequences for knowledge practices are the result of the institutionalization of email: (a) in order to be integrated into knowledge practices, new social technologies should compete with already-institutionalized social order formed around the use of email, and (b) several rules now regulate how email should be used for knowledge sharing. For example, emails that are sent from corporate mail servers normally contain a message in the footer which warns against the disclosure of privileged and confidential information. Emails may also include a statement highlighting that the firm may monitor outgoing and incoming email on its email servers. By replying to emails sent from the system, a user gives his or her consent to such monitoring. We found most informants were aware of these rules. Informant 26 asserted:

> *"If someone accidently sent you an e-mail about a project, even if you know it's within the firm, you're not allowed to read it. If it's not your project and the email contained sensitive information, classified data, and*

you don't have the right security clearance, there's a law department, there's all sorts of people that you need to contact in order to rectify that situation…they're pretty strict on that."

Beside policies regarding the protection of confidential information, a few organizations' policies cover how often employees should check their email. For example, in one organization, consultants were required to have their email application (e.g., Microsoft Outlook) open all the time. However, we observed that most organizations did not reinforce this type of expectation. The prevalent use of email, over time, gave rise to certain informal, but commonly-held understandings regarding email-based communications. Most notably, we found a commonplace expectation was that emails from coworkers should be replied to, or at least recognized, within certain period of time. Informant 21 elaborated on this informal norm:

"I think there is a general expectation and unwritten rule that if you aren't going to be able to check your e-mail, you have to send out an office reply to say that you're not going to be able to check e-mail. Because a lot of the time, people will send you a query by e-mail. They obviously expect you to respond - if not straight away – but, like, the same day, for example."

Specific organizational policies, together with informal norms emerging from recurrent practices of knowledge workers, make email the dominant social tool used in many knowledge sharing and communication activities.

Reliance on mobile technology

Mobile, or nomadic computing, refers to access to technological infrastructures and computing resources for individuals who move from place to place. Mobile technologies are accessible, but not necessarily embedded in the work environment (Yoo & Lyytinen, 2005). Access at anytime and anywhere is a pillar of mobility (Perry, O'hara, Sellen, Brown, & Harper, 2001). With the rise of technological capabilities such as smartphones and short range Wi-Fi, mobility pervades consulting firms. It provides consultants with freedom to work and collaborate with colleagues without being tied to any one physical place, be it a corporate office or a home office. This shift enables a very flexible work style, in which consultants are empowered to choose where, when, and how they prefer to work, and is in-line with emerging patterns (such as hoteling, described above).

We found that he consulting companies where the consultants worked have provided their employees with smartphones, enabling consultants to check their corporate email on these mobile devices, which – as stated previously – provide continuous access to organizational electronic communication. Some companies only provide smartphone for managers, others for all employees. Another option was for the company to provide their employees

with a monthly subsidy for the use of their personal phone. These variations underscore the reign of email in organizational communications and knowledge sharing.

In line with other empirical work, we observe that the use of mobile technologies strengthens expectations about constant connectivity (Cameron & Webster, 2011; Mazmanian, Orlikowski, & Yates, 2005; Prasopoulou, Pouloudi, & Panteli, 2006). Part of this pressure arises from the ongoing engagement of consultants with mobile technologies. In their study of information professionals' use of wireless email devices, Mazmanian, Orlikowski, and Yates (2005) found that the chronic use of BlackBerrys by organizational members inadvertently constructs and reinforces norms that bind workers to their mobile devices and sustains constant connection with organizational communication. Similarly, our findings suggest recurrent use of mobile technologies produce certain informal assumptions, which obligate consultants to check their email on their smartphone even during non-work hours. The following interview excerpts reflected this informal assumption:

> *"I'm hooked to my Blackberry…even though the company did not directly ask us to check the email on the move, but because they gave us this mobile phone we assume that there is an expectation…"*

The pervasiveness of mobile technologies also lets consultants untie themselves from organizations' infrastructure and more easily check social media websites such as Facebook. Several informants state that even though public social media are not blocked at work, they use their smartphones to access them. Informant 21 stated:

> *"You can access Facebook through our work laptop, so it's not blocked. But I use it on my personal phone anyway, so it wouldn't be an issue - because it's not [the company's] phone, it's my phone."*

The use of smartphones and public social media (particularly Facebook) creates a unique social-technologies-in-practice, which reflects employees concerns over company's surveillance.

Norms of collaboration and sharing

In consulting firms, knowledge workers generally perceive their organizational climate as collaborative and hospitable for knowledge seeking. In this environment, social networking is seen as useful for accessing relevant sources of knowledge, especially since most coworkers are not hesitant to share expertise and experiences.

Likewise, organizational policies encourage internal knowledge sharing among consultants. Consultants are explicitly rewarded for participating in knowledge communities and for sharing knowledge internally with their coworkers. Our review of annual performance evaluations revealed that a common component of measurement

focused on how consultants are supportive in terms of offering expertise and guidance to others and being active in intra-organizational communities. During their annual review processes, consultants can receive credit for contributing to knowledge communities. For example, informant 30 noted:

> *"They just ask you to write about ways in which you've given back to [the company]. I have occasionally cited some of my knowledge sharing efforts. For instance, one time I figured out how to change the background color of a table in Word and paste that into a wiki, and I posted that kind of work-around solution on the forum, and then some other people cited that they managed to use it successfully."*

Knowledge practices are essentially built on social relationships and encourage reciprocity and the collaboration culture. These norms allow consultants to easily use email or telephone to reach out to colleagues that they have come to know through previous projects. Informant 35 recounted how she easily approached senior members of firm:

> *"So the types of people I work with are very knowledgeable, and very helpful, and they go out of their way to help people. So I never hesitate to reach out to them... It was like the first year I was with the firm I was on a client engagement and so I had very good terms with that manager. Now, in my second year as a senior associate, I ran into a couple of problems on my current engagement. I wrote an e-mail to my previous senior asking for clarification and asking for his guidance on how to approach the thing, and he was prompt in replying to my e-mail."*

Moreover, the prevalence of sharing norms makes the uses of other social technologies – such as internal forums or Yammer – useful for finding relevant experts on a certain topic, or for seeking advice in regard to knowledge problems. We found informants were comfortable contributing to online forums or responding to public enquiries, as sharing knowledge and contributing to internal communities is seen as a fulfilling practice. Collaboration norms can also help organizations overcome an important stumbling block of knowledge sharing: competition among individuals. Such competition can undermine knowledge sharing practices in many organizations (Argote, 1999).

A pervasive norm of social networking

A pervasive social networking culture within consulting firms influences how consultants carry out knowledge practices (particularly the practice of instrumental socializing), and use social technologies. Workers with extended social networks within the firm are regarded as an invaluable knowledge resource. Knowledge workers working with the same partner periodically get together for quarterly meetings or other informal events. Quarterly meetings

involve the review of performance, followed by informal icebreakers or breakout sessions. Project-based meetings also commonly serve as avenues for exchanging the experiential knowledge generated in the various ongoing projects (Werr & Stjernberg, 2003). These networking events help consultants socialize across projects and units, lessening the downsides of the distributed and fragmented aspects of work.

Existing solid network structures explain the reluctance of many consultants towards the adoption of enterprise social networking technologies. The benefits of a strong social networking norm makes enterprise social technologies seem less attractive. Consultants already leverage alternative social mechanisms, such as networking events, to learn about and to communicate with colleagues. Multiple informants attributed their hesitance to employ enterprise social networking technologies, due to the pervasiveness of already-existing networking mechanisms.

However, there are other factors at play that may reduce the use of certain social networking or enterprise social networking among consultants. As consultants view face-to-face interactions within these organizations as effective for transferring organizational knowledge, most of consultants collocated in the same office, and consider it easier to reach out to colleagues down the hallway. In one company, Yammer did not gain ground because many employees simply think there is not much to be gained by using it. They believe they already have seamless networking and information seeking mechanisms in place. This suggests that social networking platforms and other social technologies compete with one another to fit into the information ecology of knowledge workers, and also with traditional, non-digital social networking activities.

In addition, the strong norms regarding social networking lead to a social infrastructure reified in the form of informal networks for knowledge practices of instrumental socializing. This social infrastructure, together with the use of traditional social technologies such as email and telephone, may meet a large portion of the knowledge sharing and communication needs of consultants, and therefore may make the use of social networking technologies less appealing for consultants.

Bounded knowledge sharing

Even in collaborative and social-network-oriented workplaces, knowledge practices are constrained by several organizational rules and norms, as all organizations have a natural proclivity to reinforce their boundaries and control the flow of information across these boundaries (Bouty, 2000).

For example, consultants are not allowed to share thoughts and opinion on either public or organizational platforms. Organizational policies prevent employees from posting work-related information on public social networking sites, and several legal boundaries are set up to prevent the leakage of corporate and client information, as well as the infringement of intellectual property rights. These requirements assure that the confidential information of the firm and its stakeholders is not recounted on public venues. Most consulting firms also establish procedures through which corporate information must be approved prior to posting it on the Web.

These type of rules also shape how consultants select technologies for conducting knowledge practices, and is often the driving force in selecting company-owned technologies for use in social communication. For example, the data indicate that in several organizations where the informants work, regulations mandated that sharing most work-related knowledge must happen via corporate email. While free consumer email platforms, like Gmail, offer more advanced features, consultants are prohibited to use these for work-related communication. The use of corporate email for most organizational communication does not necessarily indicate that it is considered to be more superior in terms of efficacy or user-friendliness, but it is more likely to be enforced due to security measures within the company. We found that informants at a number of organizations must log in through Virtual Private Networks (VPN) and go through several security processes to access corporate emails when working physically outside of their firm.

Unique types of technological uses evolves in cases of technologies that are both used frequently, but reside outside any one organization's technological infrastructure, (e.g., Yammer or Facebook). For example, when consultants want to share internal content over Yammer, they tend to post an internal link rather than actually sharing the content itself (because sharing the content means storing it on a third party's infrastructure). Although most firms where the informants work did not have any specific policies regarding the use of Yammer, employees came up with improvised technological practices to comply with the general expectation.

One-directional, outside-in knowledge sharing strategy

While many knowledge workers use sources outside of the organization for practices such as horizon broadening via public social networking sites, their organizations' policies typically emphasize internal knowledge sharing. Most of the organizations employing the consultants we studied primarily reward employees based on their contribution to intra-organizational communities of practice. This often leads to a *one-directional, outside-in*

knowledge sharing strategy whereby organizational members function primarily as consumers of information. Since inter-organizational communities (such as professional communities on LinkedIn) build on norms of reciprocity, this strategy is difficult to address. Through a one-directional and outside-in knowledge sharing strategy, consultants may take advantage of public social networking sites. But they are less prone to contribute to these public platforms because, as informant 4 explained:

> *"[Information shared on LinkedIn communities] is immediately relevant to my job, and I can start to look at the conversation stream on LinkedIn, and see how people are using it to talk about issues that are relevant to my career. Now the challenge is, we have a social media policy that suggests that we don't chime in that much, which is a little bit of a challenge for going to that next level."*

In the performance reviews that serve as an important basis for decisions regarding promotion, most consulting firms take into account only the employee's knowledge sharing contributions on internal communities. This includes both active participations in physical and virtual communities within the organization. As a result, given their limited time and resources, knowledge workers may then prefer to focus their effort on internal communities.

Encapsulation of information

A significant consequence of a consulting firm's organizational policies is the encapsulation of information. Encapsulation, in this context, means keeping information about certain projects or clients from other organizational members as well as colleagues in other organizations. Owing to the project and client-centric nature of consulting engagements, consultants use different levels of encapsulation in exchanging or withholding project-related information. The social media policy of Capgemini (a large European consulting firm) reflects the organization's demand for encapsulation:

> *"Don't use social computing platforms to exchange information that is client, firm or supplier confidential, unless access is restricted to a tightly controlled closed community with each participant having been cleared for receipt of such information, and the platform has been cleared for appropriate security levels" (Capgemini, 2012).*

Encapsulation of information leads to certain social technology use patterns. Most notably, individuals tend to use their own project-centric tools and resources for communicating with other project members. Informant 26 stated:

"Sometimes the wiki may have sensitive information you just want people in the project to know. If people typically had questions about your code or your design or something they would ask you, they wouldn't snoop around the wiki of other people. You want to keep it private just for the project."

In such contexts, company-wide expertise locating may be less feasible as information is not available on company-wide platforms. Access to this type of information often hinges upon strong interpersonal ties. Due to the encapsulation of information around clients or projects, consultants often need to tap into and "reach out" to their strong ties, in order to access knowledge generated through specific projects.

For sharing select information that involved clients and projects names, informants rely on common practices, such as removing a client's name and information posted on corporate platforms. However, in the public sphere, consultants are required to exercise a higher level of encapsulation due to strict prohibitions on revealing even the most miniscule of client-related information. Informants almost unanimously concede that sharing even the most unimportant piece of information about their clients may entail serious repercussions. For instance, merger consultants using geotagging on public social media websites (e.g., Foursquare), may reveal very important information about clients who may be involved in the merger. It is now much easier to draw conclusions from the information posted on people's multiple profiles on different social media sites. Information shared on Facebook or Foursquare can be easily linked to knowledge workers' public profiles on LinkedIn, uncovering key information about professional affiliations and activities.

Maintaining a professional tone

While consultants are comfortable sharing knowledge and communicating on company protected platforms provided and protected by their firm, they inadvertently or purposely try to project a professional tone congruent with the corporate culture. The perception that the organization owns a technological platform and the power to monitor it may limit the amount of informal communications conducted on internal platforms. For instance, several informants note corporate instant messaging systems are useful tools for informal communication with coworkers. Yet, IM use may still be different than their public counterparts. Informant 40 highlighted the subtle difference:

"I think even, like, with the Sametime (an off-the-shelf enterprise IM system developed by IBM), I felt like a lot of people were very conscious about what they mentioned, because all of this stuff is recorded in some way or another. I don't think someone tracks it, like every single second of the day, but you know, it's

something that could be retrieved, so we were definitely very careful about what we said over SameTime even though it was a very informal medium."

One possible explanation for this technological behavior is that consultants are generally cognizant that all communication conducted over internal platforms is stored and may be used against them in the future.

Segregation of personal and professional lives

The line between personal and professional life is becoming less clear due to simultaneous social and technological changes. On the social front, for example, for new generations joining the organization, the line between work and personal life is increasingly blurred. These employees are more likely to use technologies at work for personal purposes and at home for work purposes (Barzilai-Nahon & Mason, 2010). On the technological front, our empirical observations suggest that the trend of extensive use of mobile devices, both in the workplace and after work, renders the line less clear. Encouraging and reinforcing the use of mobile technologies for work-related communication and knowledge sharing inevitably propels workers to extend this communication outside the workplace (Prasopoulou et al., 2006).

Though the separation of work and home today has substantially eroded, it is important to note that this concept of separation was integral to the workforce's perception since the 19th century (Orlikowski & Barley, 2001). This social norm is currently reinforced by most consulting firms and is apparent in the spontaneous practices and attitudes of consultants. Consulting firms rigorously promote a separation between personal and professional networks in order to make sure that the two spheres are not conflated through the use of social media.

Social media policies encourage people to reveal as little information as possible about their work and call for separation between their personal and professional personas. For example, companies require employees to use a disclaimer when participating in discussions on public social media in order to make it clear that they are not representing the company with which they are affiliated. In other words, employees cannot represent their company unless they are formally given permission or tasked to do so. The Capgemini's social media policy reads:

"Please remember that when you participate in social media, you are speaking as an individual and not on behalf of the Capgemini. Identify yourself using the first person singular… Establishing a Capgemini account or becoming an official Capgemini representative that shares information about the firm and the areas we work in, requires approval from Capgemini or local Marketing & Communications teams." (Capgemini, 2012)

We also found several organizations have taken further steps and crafted detailed policies. For instance, one firm's policy precluded employees from posting recommendations for other people on LinkedIn. The rationale behind the policy is that the recommendation may not reflect the opinion of the firm, while the affiliation of the employees with the firm is evident on LinkedIn.

In addition to policies laid out by each organization, consultants' common perceptions and recurrent practices also support the separation of personal and professional lives in knowledge sharing practices and respective uses of technologies. As a result, this social structure is partly rooted in the employees' perception of notions such as work, privacy, and personal life. The informants formulate different strategies for drawing the fine line between professional and personal lives on digital media. In spite of variations, we find these strategies converging as almost all of the informants segregate personal and professional lives across different tools. This norm leads to the enactment of a number of distinct social technologies-in-practice. The overwhelming majority of the informants show very similar types of technological behaviors. They connected to their friends and family on Facebook and with work colleagues (that are not close friends) on LinkedIn. Informant 2 stated:

> *"So if I have a colleague that contacts me on Facebook, (Laughs), I usually send them over to my LinkedIn, unless we're friends."*

Consultants' primary vehicle for connecting to their colleagues (from the same or different organizations) is through LinkedIn. In general, LinkedIn exhibits a very professional spirit and little personal interaction is conducted via this platform. Some consultants articulate a more nuanced strategy to segregate their personal and professional contacts on public social media. For instance, these individuals may friend coworkers on Facebook, but use privacy filters, offering limited access to their postings or personal information. Informant 4 detailed how he interacted with his coworkers on Facebook:

> *"They're all on my Facebook; they can't really see anything. I mean maybe there's a certain sets of pictures I might share that I think are safe. But, like, if random pictures come in, they shouldn't see those. And every now and then I go up there and test it."*

This social structure enables organizational members to overcome the effects of *context collapse* in the adoption of technologies. Context collapse takes place when individuals are faced with a mixture of connections from different contexts on digital platforms (Marwick, 2011). Because of Context collapse, self-representation and knowledge sharing on digital platforms are more difficult as a person needs to communicate with a broad range of

audiences (e.g., family and professional contacts and school friends) on the same platform. One can conclude that the norm of segregating professional and personal lives pervades many consulting firms, and automatically diminishes context collapse that may be more common in other social contexts (e.g., higher education institutions).

Discussion

The social structures described above influence both how consultants conduct knowledge practices and different social technologies uses for conducting those practices. With the influence of these social structures, employees in management consulting firms enact distinct forms of knowledge practices. Like most other organizational practices, these knowledge practices are mediated by a suite of social technologies. According to the Orlikowski's *practice lens*, the emerging use of technology can also be understood as social structures (Orlikowski, 2000). Technology structures emerge from consultants' recurrent practices of continually comparing the functionality of a social technology to other technological options, and using them in combination for different knowledge practices. This phenomenon is what we call social-technologies-in-practice.

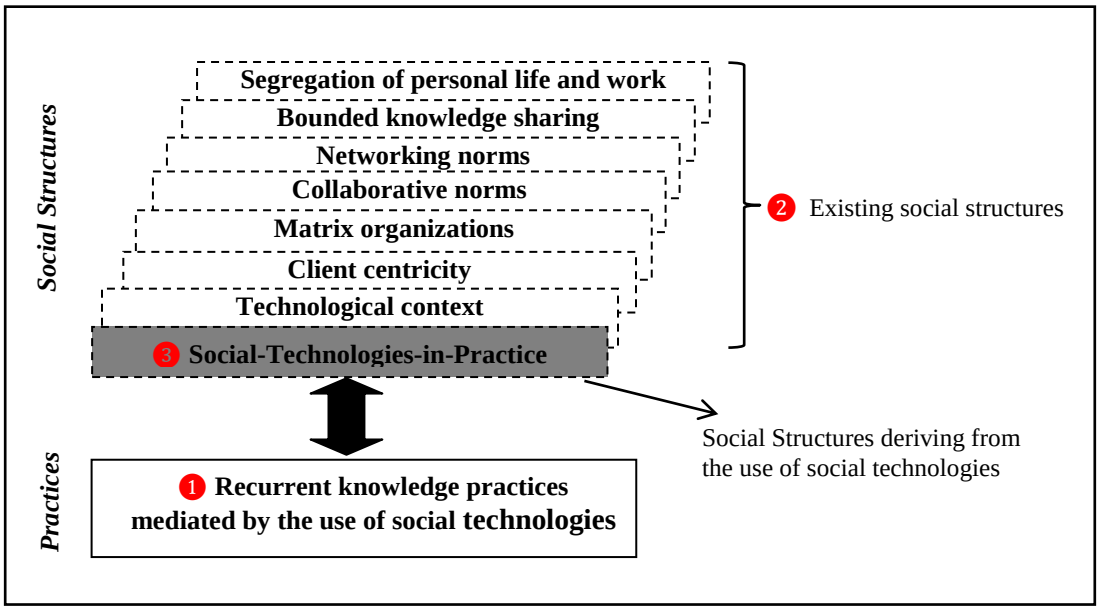
It is important to note that social technology artifacts themselves enable and constrain the enactment of social-technologies-in-practice. The ways social technologies are used in practice are not entirely socially constructed. According to recent theorizations of science and technology articulated by scholars such as Schroeder (2007), all technologies have specific features or material properties that partially determine how they can be used. For example, no matter their interpretations of corporate IM systems, workers cannot use them to communicate with social contacts from outside of their organization. Therefore, any social technologies, independent of the interpretations of users and the context of use, have properties that shape knowledge practices. As Leonardi and Barley (2008) succinctly put, constraints and affordances of the technology itself push social practices in one direction rather than another.

While consultants enact social-technologies-in-practice through their present use of social technologies, at the same time their practices are shaped by the previous social structures (Orlikowski, 2000). Figure 2 represents the recursive structuration process between ongoing uses of social technologies in knowledge practices, and social structures that are both influenced and derived from these knowledge practices.

Through the structuration processes, the emerging structures of social technologies use also define how employees interact with one another and their future use of technologies. In effect, these patterns of use are social

structures in their own right and integrate into existing technological context. Consultants' engagement with new technologies can lead to emerging structures of technologies, and these social structures can then influence how employees engage with future new technologies. This is in congruence with Rogers' (1995) argument that technology clusters (social orders around prior technologies) can influence the adoption and diffusion of new technological innovations.

Figure 2. The reciprocal relationship between technology-mediated knowledge practices and social structures.



The social structures represented in Figure 2 influence the competition among social technologies and may push employees towards distinct enactments in their use of social technologies. For example, despite the influx of various forms of social technologies in consulting firms, email is still the most prevalent digital means of organizational communication. This, in part, is due to the influence of organizational policies that may privilege the use of email over other social communication platforms. As a result, social-technologies-in-practice in these organizations may be more skewed towards email-based communication.

Notwithstanding the existing pervasive norms of email use in organizations, social media begin to offer distinct affordances for certain knowledge sharing practices.

First, our findings suggest email-based communication is primarily used for internal communication. Workers may use emails to reach out to their contacts outside the organization for work-related information. But, this use of

email is less frequent than the use of email for internal purposes. On the contrary, the nature of social media such as Facebook, LinkedIn, and Twitter allows for the formation and maintenance of social ties that cross organizational boundaries. A primary contribution of public social networking platforms is therefore heightened awareness about groups of social contact and colleagues outside the formal organization.

Second, in many instances, our findings show that social media channels are useful for nurturing weak ties and, therefore, facilitate the transfer of innovative knowledge (for horizon broadening). These fresh ideas emanating from outside of the organization can be incorporated into the worker's daily practices.

Third, what the use of public social media may offer over the use of corporate email may be the creation of inter-organizational communities of practice that provide value for both the network and market place beyond any single firm. For example, professional communities enabled by the use of LinkedIn offer both informational and professional benefits to their network members from a diversity of organizations.

Implications

By focusing on the structural properties of organizations, this research advances the empirical and conceptual understanding regarding contextual influences, which is a pressing concern in information science (Courtright, 2008; Rosenbaum, 1996). Using notions of social structures and duality of structure and practice, the paper critically examines the organizational context in which knowledge practices are conducted and social technologies are used.

This analysis of the uses of social technologies by consultants gives rise to two implications for research. First, additional empirical research is required to theorize recurrent and enduring knowledge practices, as knowledge work is increasingly distributed, mobile and digitally mediated. As such, organizational researchers should direct attention to the way knowledge practices are entwined with the use of different forms of social technologies. Second, the research's findings highlight that knowledge practices are not performed in an operational vacuum. They are both shaped by, as well as shape, social structures. Further research is needed to advance our understanding on these mechanisms for structural influence, and their influence on the way workers interact with each other and use different social technologies in their knowledge practices. Doing so advances the empirical and conceptual understanding about how organizational structures and policies can be reshaped to guide change.

By focusing on the notion of social structures, our findings uncover some of the contingencies of knowledge work within consulting firms. To be successful and effective, any policy-making or design initiative relative to the

use of social technologies in knowledge-intensive organizations should pay close attention to this set of social structures. For example, one of the most salient aspects of consultant work lies in extensive interactions with clients. Social networking platforms and collaborative systems are more beneficial if they enable consultants to embrace these interactions on some level: in our observations, the corporate and organizational approach to social technology remains defensive and not strategic, thus shortchanging them in possible opportunities of interest. None of the enterprise social networking systems we studied in this research addressed this need. On the contrary, enterprise social platform deployed in MITRE Corporation (called *Handshake*) facilitate the social relationships across organizational boundaries, enabling multi-organizational collaboration and knowledge sharing between MITRE and its partners (Holtzblatt, Drury, Weiss, Damianos, & Cuomo, 2012).

In another example, a consulting firm uses consultants' LinkedIn profiles as a means for locating expertise and communicating with customers. Previously, consultants were expected to maintain a biography in the form of a Microsoft Word document on a central resource management system, and update it after each project. When a consultant is assigned to a project, the LinkedIn profile is now sent to the customer and the customer can review consultant's areas of expertise, as well as professional and educational background.

Furthermore, appreciation of existing social structures allows organizations to design and implement social technologies such that can synergistically complement existing social structures and mechanisms, while supporting the core knowledge practices. Our examination of select influential social structures indicates where enterprise social networking technologies can be useful.

Traditional networking mechanisms are dominant within consulting firms, and underlie their knowledge sharing practices. However, there are certain limitations and functionality for knowledge sharing. First, at times, consultants may need to turn to numerous adjacent people in their personal networks to eventually obtain critical information necessary solve a work problem. Dunbar (1993) famously argues that the social circle individuals maintain is limited to about 150 people. Locating people outside of this tightly knit circle of co-workers and friends through traditional mechanisms is often daunting, particularly in the context of a large consulting firm. These organizations are geographically dispersed, and traditional networking mechanisms and social events do not normally extend beyond the geographic area within which each individual is located. Informant 7 described this limitation:

"I've been working in the Northeast for most of my time here, and so I know some southern people 'because I've worked there a little bit, and I know a bunch of people in the Northeast. Um, I don't know that many people in the West Coast, and, never really gotten a chance to get to know them, because there's no real companywide way of getting to know those people."

Enterprise social networking technologies, such as Yammer or Socialtext, offer affordances that enable employees to overcome some of the limitations of traditional social networks. Recent research proves enterprise social networking technologies support new forms of informal, network-centric interactions between employees, and allow facilitating their access to informal and distributed stocks of organizational knowledge (McAfee, 2009).

Findings reported in this paper are geared toward the context of management consulting firms. However, insight about the reciprocal relationship between social structures and technology-mediated knowledge practices is not entirely idiosyncratic and can be seen in many knowledge-intensive organizational contexts where knowledge is the key asset. These knowledge-intensive environments are similar to one another in many respects, and collectively constitute the "intellect industry" (M. C. Scott, 1998). In all of these organizations – norms, structure and expectations – broaden or narrow the space within which knowledge workers are able to maneuver, conduct knowledge practices, and use social technologies.

On the one hand, general flexibility in terms of technology adoption provides a broad space for the enactment of knowledge practices in consulting firms. On the other hand, rules ensuring the protection of proprietary information restrict knowledge sharing and the respective use of social technologies. In this context, what managers must accomplish is the formulation of a pragmatic and perceptive set of policies that serve the interest of both the employees and organization. No firm can entirely control the informal communications ensuing over phone calls or on the Internet (Bouty, 2000). Managers first must recognize the benefits of informal knowledge practices that may take place independent of the organization's formal chart. It is especially critical in knowledge-intensive contexts where there are fewer formal processes in place dictating how work should be accomplished, and how communication and knowledge sharing should be conducted (Greenwood et al., 1990). A Deloitte Chief Learning Officer asserts ninety percent of learning and knowledge sharing, in these contexts, are conducted informally based on interpersonal relationships (Carr, 2011).

Simultaneously, managers can attend to organizational boundaries by putting into place policies that positively shape knowledge practices and the use of supportive social technologies. Strict policies may not stop employees

from using public social media or other social technologies. The evidence of this study's findings show employees can, and do still, access public social media on their mobile devices. Empirical research indicates knowledge workers also have strong preference for autonomy. Therefore, formal organizational pressure in directive policies are bound to be unsuccessful for overly-managing knowledge and technology in knowledge intensive contexts (e.g., Lorsch & Tierney, 2002; Winch & Schneider, 1993). As a result, to address the subtle sociotechnical dynamics of work practices, managers must carefully update their existing policies and define acceptable and unacceptable knowledge practices and uses of social technologies.

These policies should also recognize the nature of social technologies and the organic knowledge sharing taking place around these technologies. If the organizational norms and policies are not congruent with the collaborative and bottom-up nature of social technologies, the real benefits of these technologies are not realized in practice. In conversations among management, it is common to hear familiar phrases such as: "The tools were great, but we just don't have the culture" (Idinopulos, 2010).

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