

Assemblage of Social Technologies and Informal Knowledge Sharing

Mohammad Hossein Jarrahi

Syracuse University, School of Information Studies, Syracuse NY 13244, USA
mhjarrah@syr.edu

Abstract

This study focuses on the ways in which social technologies as a whole facilitate informal knowledge sharing in the workplace. Social technologies include both common technologies such as email, phone and instant messenger and emerging social networking technologies, often known as social media or Web 2.0, such as blogs, wikis, public social networking sites (i.e., Facebook, Twitter, and LinkedIn), enterprise social networking technologies, etc. To understand the role of social technologies in informal knowledge practices, we pursue a field study of knowledge workers in consulting firms to investigate the role of social technologies in their informal knowledge sharing practices. Findings highlight five knowledge practices motivated by different knowledge problems and supported by the use of multiple social technologies.

Introduction

With the profusion of information and communication technologies (ICT) in the workplace, knowledge sharing practices are increasingly digital: largely mediated and supported by an ever-widening array of “social technologies.” Organizations have long benefited from traditional, and now commonplace, social technologies such as phone and email, so it follows that they are likely to benefit from newer social technologies. Certainly, social media (which we characterize as a subset of social technologies) have encouraged new possibilities for organizational knowledge sharing. Social media uses offer opportunities for collaboration and social exchange, and are well positioned (in fact, designed) to augment and extend interpersonal social ties (Skeels and Grudin 2009).

While the evidence is clear that (1) social media have permeated most organizational settings, (2) most workers value its presence and use, and (3) most organizations realize their potential value (Bughin, Byers et al. 2011), our knowledge of these tools and their possible roles in

these contexts is remarkably limited (Richter and Riemer 2009; Skeels and Grudin 2009). The literature on organizational impacts of social media uses to date has been primarily speculation in the professional business literature.

What we do know about social media uses in workplaces is based on studies of organizational uses of social media which have primarily focused on a single social technology, often in isolation (e.g., Efimova and Grudin 2007; Skeels and Grudin 2009).

We also know people often use combinations of ICTs such as email, smartphones, instant messengers, and more recently social media, to pursue goals. This suggests we should be focusing scholarly attention towards how people combine multiple ICT to meet their goals, moving beyond studying the adoption of a single ICT in isolation (Bélanger and Watson-Manheim 2006). Doing so is the primary objective of the research reported here: to better understand and theorize how social technologies as a whole (or in combination) are used for informal knowledge sharing in organizational contexts.

Research design and methodology

This exploratory effort is a field-based study focusing on the ways in which knowledge workers use social technologies to advance their work. The main source of data is interviews. The interview informants are a purposive sample of 58 people who hold knowledge-intensive roles in a few large management consulting firms in the US. The sampling approach focused on recruiting informants with 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 us to create a diverse group of knowledge workers to share attitudes and experiences in using social technologies for informal knowledge sharing.

The organizational settings are also considered extreme contexts as archetypes of knowledge-intensive

environments which allow a better understanding of the use of social technologies in informal knowledge sharing.

Through the interviews, the role and value of social technologies for knowledge sharing were examined by focusing on the ways they may augment or extend organizational members' access to various sources of knowledge. We also conducted micro-studies to better understand daily practices of consultants and their uses of social technologies. To do this, we shadowed several participants by spending multiple hours observing them do their work. Our observations focused on their knowledge sharing activities and the use of social technologies in their work.

We supplemented these with secondary data collection that includes trace data of social technologies uses and relevant organizational and personal documents. The system level analysis allowed us to observe the way consultants employ public social technologies such as Twitter and LinkedIn in their knowledge practices. The analysis of personal and organizational documents also offered an understanding about the way consulting firms regulate the use of social technologies, and relevant rules and policies.

Data analysis is ongoing and inductive as we look for interesting concepts, leads, and issues. As these themes take shape, it will also be informed by the concept of knowledge practice as the unit of analysis (Orlikowski 2002), providing us with a basis for capturing the informal knowledge practice enabled by the use of social technologies.

Findings

Analysis highlights five knowledge practices which enable knowledge sharing. Each practice was identified based on an underlying knowledge problem, which leads knowledge workers to seek out advice or input. The identified practices are neither exhaustive nor exclusive.

Expertise Locating

This knowledge practice is motivated by the worker's lack of critical knowledge to complete or advance a task-at-hand. This approach allows knowledge workers to search for and retrieve codified knowledge without having to contact the person who originally developed it.

The practice of expertise locating is often supported by the use of formal knowledge repositories and wikis. By most accounts, knowledge repositories are not considered social technologies; however, they appear to be the most critical ICT supporting expertise locating. Knowledge repositories and wikis often serve as an organization's memory, embodying past experiences and engagements (Ackerman 1998). In many projects, a common practice is

to write a summary of the project work, and deposit it to a shared repository or a wiki so that other consultants can draw from it.

Expert Locating

The situations driving this practice involve questions or problems that are often seen as too complex or nuanced to be articulated for searching in knowledge repositories. In these situations, the appraisal of the knowledge problem often also reveals that the immediate social contacts of a knowledge worker (strong ties) are less likely to have the required knowledge. This combination of need and lack drives the worker to reach out to other people in their extended social network.

A key resource for locating relevant experts is the seeker's personal social network. The starting points are people whom the knowledge worker has come to know. And, while these contacts may not be able to help, they often point out others in the broader social network who may possess the relevant knowledge. In this regard, multiple social technologies prove useful. Email often acts as an introductory means to connect people. People also come up with improvisational uses of email for extending weak ties. For example, they can learn about new people with similar professional interests and areas of expertise when the name keeps showing up in email distribution list threads

Many consulting firms have also deployed internal forums. Via forums, knowledge workers are enabled to tap into a large pool of expertise and find expert regarding a knowledge problem. Much like forums, Yammer, an enterprise social networking tool, is considered effective for posting short questions in a high visibility venue.

Informants who used Twitter reported that it could help find experts in their field through the process of following people who they may not necessarily have met in person but who broadcast interesting insights. Sometimes tweets addressed to a general inter-organizational audience from the same industry can result in identification of experts.

LinkedIn supports expert locating practices though its communities and profile search. In particular, for people with technical roles, LinkedIn communities offer forum-like capabilities where a question can be brought to the attention of members of a large community who share interests in and expertise about the same topic. Many profiles on LinkedIn present detailed and up-to-date information about people's area of expertise and previous experiences.

Reaching-out

The knowledge problems which motivate reaching-out practices overlap with those involved in expert locating. However, here the knowledge seekers' immediate social

contacts (strong ties) possess the required knowledge. Based on previous interactions, this practice reflects a level of social awareness about the members in their social network. Knowledge workers get to know their contacts through previous projects and may stay in touch with them beyond a project. Network-driven resources often provide people with confidence that there is an expert around who can be consulted for many work-related issues.

Sometimes people in a worker's social network work outside their organization (e.g., people who used to work for the same organization but have left). In this case, the links with outsiders are independent of the organization's formal structure.

For reaching out practices, traditional social technologies, such as phone or email, or IM systems prove more useful. Our informants often find it easy to pick up the phone and reach out to a colleague for a question. The use of email in reaching out practices spans both temporal and spatial boundaries. For the most part, IM allow quick communications and avoids numerous iterations through emails or other communication means. The use of IM in reaching out practices also allows knowledge workers to conduct instantaneous and simultaneous communications.

Instrumental Socializing

This practice is motivated by the natural need of individuals to generate, learn about, and maintain social contacts rather than resolve an immediate work problem. Through this practice, people extend or augment their personal network, making it more useful for more directed and targeted knowledge sharing in future. These social ties serve as infrastructure for most other knowledge practices that underlie knowledge sharing within and across organizations.

The primary knowing implicated in socializing practices is a heightened awareness about social contacts. This social awareness indirectly supports: 1) Expert locating practices by raising the knowledge worker's understanding of weak ties and their expertise and interests. 2) Reaching out practices by helping knowledge workers transform their weak ties into strong ties to bolster future collaborations.

Social technologies offer affordances which extend the reach of socializing practices, permitting knowledge workers to cultivate and harness social ties. The informal nature of blog postings and resulting interactions such as people's commenting activities can create and foster informal links between different groups of knowledge workers, helping individuals with their socializing practices.

Unsurprisingly, we also found knowledge workers tended to connect with family and friends on Facebook. Their network on Facebook may or may not include

coworkers. Some organizational members "friend" close coworkers with whom they have already developed rapport outside the virtual world. As such, the use of Facebook allows knowledge workers to keep abreast of what's happening in their personal networks. Even though it may not be directly related to their work, it still helped them when they need to reach out to these social ties for work-related knowledge problem. More understanding about people's personal interests always help informal discussions, supporting social ties that serve expert locating and reaching out social practices.

Unlike Facebook, LinkedIn is primarily used for maintaining (and sometimes generating) professional ties. LinkedIn is useful for keeping organizational members updated about colleagues' current positions and engagements as they move among jobs and companies, which is quite common in the US job market. In addition to these uses, some people also employ LinkedIn as a networking and community building tools. Some informants noted that active participation in the LinkedIn communities may lead to professional face-to-face meetings, consequently bringing about more networking opportunities.

Since connections on Twitter revolve primarily around shared interests, people are presented with the opportunity to open up relationship with like-interested individuals through replies or "retweets." In addition, for younger workers, the use of Twitter scaffolds their community building.

Although internal social networking technologies are designed and intended to support socializing practices and informal knowledge sharing among employees, our data showed little success in this regard. On the contrary, public social media are more promising and instrumental for supporting socializing practices.

Horizon Broadening

Horizon broadening practices are rarely motivated by an immediate knowledge problem. More often, this practice reflects a personal desire to learn about things beyond the immediate demands of work-at-hand. What comes from this practice may be directly related to work, though it is rarely immediately applicable. Because market, technological and business landscapes keep shifting, knowledge workers feel the need to keep updated and social channels serve as a valuable means for doing this.

Our analysis reveals that Twitter, LinkedIn, Facebook, and blogs more effectively support horizon broadening practices. For many people, Twitter serves as a news aggregator. Twitter's interactivity allows users to contribute to discussions, "retweet" others' posts, and learn about new ideas and new people. We found knowledge

workers often use Twitter for keeping up with technology and business trends.

LinkedIn communities as well as profile information create avenues for monitoring and learning about broader trends happening outside the organization. Profiles of people working in other organizations can be equally illuminating.

Blogs were a particularly useful social technology for horizon broadening. In the companies from which our informants were selected, internal blogs were not considered a primary source: most used external blogs to receive updates about these trends as this enabled them to prepare for future knowledge problem:

The use of public social media such as Twitter, LinkedIn and Blogs creates an infrastructure through which knowledge workers pull information, extending their ability for staying in touch with trends that in long term influence their work.

Discussion

Studying the uses of social technologies provides us with the opportunity to understand how they are related in practice. We call the relationships among these the “relational affordances” of social technologies. Our analysis of the relational affordances of multiple social technologies and the ways they are used in combination highlights two important dimensions of these relationships: competition and interoperability among social technologies. These two dimensions help us understand how relative affordances of social tools are enacted in practice.

Competition among Social Technologies

Our analysis leads us to conclude that social technologies “compete” with one another for the attention of the worker. That is, knowledge workers constantly compare the functional capabilities of available social technologies and perceive one more effective than others in supporting knowledge practices. A social technology “wins” the competition (is used) only if its inscribed material properties prove more relevant to certain knowledge practices. It is noteworthy that these properties do not determine social practices but prove useful only when they translate into effective material scaffoldings in practice.

As an example, our findings highlight the use of social media can result in more knowledge about people who are adjacent to knowledge workers’ personal network. One informant indicated how the awareness about professional contacts directly impacted his work:

We were interested in pursuing business with a national lab, and so in that particular case, I was able to leverage LinkedIn, and found some former co-

workers of mine that are currently working there. This is an external person, he did not work for my current company; so somebody I’d worked with previously.

Interoperability among Social Technologies

Different social technologies may be independent and discrete. But, their interoperability in day-to-day use makes such distinctions less meaningful in practice. For many knowledge-sharing problems, people take advantage of the differing capacities and capabilities of various social technologies. In other words, the affordance offered by a single social technology is not likely viable enough to support knowledge practices. In this type of situation, one tool cannot simply win over others, so must forge alliances with other tools.

This combinatory use can be concurrent or sequential. That is, knowledge workers may opt to pair technologies simultaneously or sequentially. In simultaneous pairing, people engage in communication with “nearly synchronous” social technologies of different types (Reinsch, Turner et al. 2008). A common example of concurrent pairing is using IM to share screens while the two people are on the phone at the same time discussing the document. Here the use of phone in this reaching out practice is not sufficient; therefore, it is paired with the use of the instant messenger to effectively enable the entire practice.

In sequential pairing, people choose a social technology for communication at time one, then follow with a second technology, on the same issue, at a later time (Leonardi, Neeley et al. 2011). Our data reveal informants often drew upon different social tools sequentially to conduct their communication and knowledge sharing practices. For example, they found contact names on internal social networking platform or on LinkedIn, but contacted them via email. The first social technology allows them to locate new individuals in the organization or elsewhere, while email provided a private, dyadic channel to convey a specific message or request.

Conclusions

This study makes clear the information ecology around knowledge workers is constituted of several social technologies. These social technologies both mediate social interactions with other people and facilitate knowledge sharing practices within and across organizational boundaries. Data also make clear that social technologies are often used in conjunction with both other social technologies and existing organizational communication and information infrastructures. This

suggests we should conceptualize social technologies and their affordances for knowledge sharing as an assemblage – an evolving collection of specific tools – which embodies interactions among technologies themselves.

References

- Ackerman, M.S., 1998. Augmenting organizational memory: a field study of answer garden. *ACM Transactions on Information Systems (TOIS)* 16, 3: 203-224.
- Bélangier, F. and Watson-Manheim, M.B., 2006. Virtual teams and multiple media: Structuring media use to attain strategic goals. *Group Decision and Negotiation* 15, 4: 299-321.
- Bughin, J., Byers, A.H., and Chui, M., 2011. How social technologies are extending the organization. *McKinsey Quarterly*; November.
- Efimova, L. and Grudin, J., 2007. Crossing boundaries: A case study of employee blogging. In *Proceedings of the HICSS 2007*, IEEE computer Society Press: 86-86.
- Leonardi, P.M., Neeley, T.B., Hall, M., and Gerber, E.M., 2011. How managers use multiple media: Discrepant events, power, and timing in redundant communication. *Organization Science*, Published online before print.
- Orlikowski, W.J., 2002. Knowing in practice: Enacting a collective capability in distributed organizing. *Organization Science* 13, 3: 249-273.
- Reinsch, N.L., Turner, J.W., and Tinsley, C.H., 2008. Multicommunicating: A practice whose time has come? *The Academy of Management Review* 33, 2: 391-403.
- Richter, A. and Riemer, K., 2009. Corporate Social Networking Sites—Modes of Use and Appropriation through Co-Evolution. In *Proceedings of the 20th Australasian Conference on Information Systems*.
- Skeels, M.M. and Grudin, J., 2009. When social networks cross boundaries: a case study of workplace use of facebook and linkedin. In *Proceedings of the GROUP'09*: 95-104