Web 2.0 Use and Knowledge Transfer: How Social Media Technologies Can Lead to Organizational Innovation

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Abstract: The concept of Web 2.0 has gained widespread prominence in recent years. The use of Web 2.0 applications on an individual level is currently extensive, and such applications have begun to be implemented by organizations in hopes of boosting collaboration and driving innovation. Despite this growing trend, only a small number of theoretical perspectives are available in the literature that discuss how such applications could be utilized to assist in innovation. In this paper, we propose a theoretical model explicating this phenomenon. We argue that organizational Web 2.0 use fosters the emergence and enhancement of informal networks, weak ties, boundary spanners, organizational absorptive capacity, which are reflected in three dimensions of social capital, structural, relational, and cognitive. The generation of social capital enables organizational knowledge transfer, which in turn leads to organizational innovation. Based on this model, suggestions for organizations to facilitate this process are also provided, and theoretical implications are discussed.

Keywords: innovation, knowledge transfer, social capital, web 2.0

1. Introduction

Over the last several years, Web 2.0 has rapidly become a significant presence in the public sphere. A variety of Web 2.0 applications have been widely adopted on an individual level, and recently such applications have received interest from organizations looking to increase their creativity, knowledge sharing, and collaboration to better innovate in their field (O'Reilly, 2005; Tredinnick, 2006). For example, Blog World Expo, the world's largest Weblog conference, hosts a track called "Business of Blogging." Some highly referred management journals also have published a series of "Enterprise 2.0" articles to guide organizational adoption of Web 2.0 applications (e.g., Brynjolfsson and McAfee, 2007; McAfee, 2006). Due to the increasing use of Web 2.0 applications in organizations and their role in the learning process, some scholars have also advocated for the implementation of Web 2.0 in corporate training programs (e.g., Martínez-Aceituno et al, 2010).

In the era of knowledge economy, knowledge is regarded as an important strategic asset to drive organizational innovation and sustain competitive advantages (Cohen and Levinthal, 1990; Nonaka, 1994; Nonaka and Takeuchi, 1995; Wasko and Faraj, 2000). As pointed out by Reagans and McEvily (2003), the higher an organization's capacity to transfer knowledge, the greater the competitive advantage potential that organization will have over its competitors. This naturally encourages organizations to always be on the lookout for ways to better facilitate their knowledge transfer processes. Regarded as social software, Web 2.0 applications enable the formation of virtual groups that connect users with different backgrounds beyond formal and physical boundaries (Shirky, 2003; Swisher, 2004). In the organizational context, the use of Web 2.0 applications can expedite knowledge transfer. Their utilization is expected to lead to the emergence of informal networks among organizational units. The emergent informal networks involve the enactment of boundary spanners who maintain weak ties and facilitate the enhancement of organizational absorptive capacity. In this study, we argue that these emergent and facilitated characteristics through Web 2.0 use comprise the dimensions of organizational social capital. Interactions through these social capital dimensions are then expected to facilitate knowledge transfer across organizational units. When knowledge is freely transferred within an organization, it is more likely to drive organizational innovations.

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The objective of this paper is to detail the phenomenon of Web 2.0 use as a catalyst for organizational innovation. We will first discuss enablers of knowledge transfer (i.e., information networks, boundary spanners, weak ties, absorptive capacity, and social capital). A theoretical model depicting organizations' use of Web 2.0 leading to these knowledge transfer enablers, ultimately driving innovation, will then be presented. We will conclude with suggestions on how organizations can best implement Web 2.0 to expedite organizational innovation, as well as proposed directions for future research.

2. Enablers of knowledge transfer

Resource theory posits that in order to sustain a competitive advantage, organizations are required to be in control of resources that are valuable, rare, imperfectly imitable, and of low substitutability (Barney, 1991; Grant, 1996; Penrose, 1959). Recognizing that knowledge is a resource demonstrating these characteristics, organizations seek to "know more" and differentiate their knowledge from their competitors in order to make correct decisions, provide better services, and innovate to sustain a competitive advantage (Davenport and Prusak, 1998). To achieve this goal, organizations need to acquire the ability to efficiently and effectively manage organizational knowledge (Alavi and Leidner, 2001). Managing efficient knowledge transfer has been a critical issue in the study of knowledge management (Alavi and Leidner, 2001; Ko et al., 2005). In this section, studies on enablers of knowledge transfer will be discussed, specifically on the existence of informal networks, weak ties, boundary spanners, absorptive capacity, and social capital.

2.1 Informal networks

Informal networks are defined as "networks where individuals are connected based on their social or personal relationships rather than work or task related relationships" (Awazu, 2004: 63). Informal networks play a crucial role in organizations; as Cross and Prusak (2002: 105) pointed out, "the real work in most companies is done informally, through personal contacts." Informal social relationships supplement formal networks by exposing the participants in the relationship to individuals with different knowledge than themselves (whereas in a work- or task-based relationship, all members have the similar type of specialized knowledge). Desouza (2003) found that informal networks foster the exchange of tacit knowledge – knowledge that is highly practical and personalized, difficult to codify and plays a critical role in organizational innovation (Alavi and Leidner, 2001; Grant, 1996; Nonaka, 1994; Polanyi 1967). This informal transmission "accelerate[s] and broaden[s]…knowledge sharing" (Davenport et al., 1998: 45).

Informal networks can also contribute to knowledge transfer by making this process easier. Focusing on the relationships between the structure of informal networks and knowledge transfer, Reagans and McEvily (2003) suggested that the informal network range (i.e. the extent to which an informal network crosses different communities) is positively associated with the ease of knowledge transfer and found that the more diverse the knowledge and one's informal network span, the easier it was for them to interpret transferred knowledge. In such an environment, one is more likely to acquire useful knowledge when needed, and knowledge transfer becomes more efficient (Tushman and Scanlan, 1981).

2.2 Boundary spanners

Boundary spanners are members of a community who connect to an external environment (Awazu, 2004; Cross and Prusak, 2002; Tushman and Scanlan, 1981). Within a boundary, members share similar characteristics in terms of culture, language, norms, values, and knowledge. This differentiates them from other communities, but also limits their ability to transfer knowledge between their community and the external environment, as well as their ability to adapt to environmental changes (Aldrich and Herker, 1977; Tushman and Scanlan, 1981). In the organizational context, this issue is exacerbated by the fact that the competitive environment faced by most organizations is, by its very nature, prone to rapid changes over a short span of time. An organization that cannot acquire knowledge from outside its community, and capitalize on that knowledge to stay abreast of current trends in its field, runs the risk of falling behind its competitors. Through boundary spanners, knowledge outside the community can be identified, collected, filtered, and disseminated to the members (Aldrich and Herker, 1977). Cross and Prusak (2002: 109) put it simply and effectively: boundary spanners "serve as the group's eyes and ears in the wider world." Boundary spanners thus contribute to "viable organizations" (Aldrich and Herker, 1977: 218), which are characterized by "an increase in the ability to learn and to perform according to changing contingencies in the environment" (Terryberry, 1968: 660).

2.3 Weak ties

The concepts of strong and weak ties were proposed by Granovetter (1973). Strong tie relationships connect those who communicate frequently, express higher emotional intensity and mutual confidence, and share a norm of reciprocity. Strong ties are normally found in intimate relationships, such as those between family members, close friends, and co-workers on the same project. Weak ties, on the other hand, are maintained by those who communicate less frequently, with low emotional intensity and mutual confidence, and do not share the norm of reciprocity. While strong ties are good at providing social and emotional support and solving conflict (Hansen, 1999), the benefit of weak ties to organizations lies in their ability to facilitate information transfer (Granovetter, 1973).

Weak ties are often found between different communities within an organization (Granovetter, 1973). When these communities are connected in such a way, any information transferred between them will be more diverse, useful, and less redundant, due to the variety of specialized knowledge across the different task-based groups that tend to comprise organizational communities (Hansen, 1999). Burt (1992) came to similar conclusions, asserting that social networks characterized by weak ties are particularly effective at increasing the efficiency of information diffusion by minimizing redundancy. Wellman (1992) also indicated that weak ties are more instrumental than strong ties in terms of providing useful information. With weak ties, socially distant ideas, influences, or information become more reachable, and those who maintain weak ties will be more likely to acquire new information (Ganovetter 1973).

2.4 Absorptive capacity

As already mentioned above, the diverse knowledge residing outside of a community has been considered critical for generating new ideas (March and Simon, 1958; von Hippel, 1988). However, the mere existence of informal networks, boundary spanners, and weak-tie connections does not guarantee successful knowledge transfer. Tsai (2001) argued that even if external knowledge is accessible, a community may not have the capacity to absorb it. It is only when the value of external knowledge is both recognized and able to be commuted between connected peers that it will be transferred and acquired by the community. This idea of an organization's capability to identify and communicate external knowledge is part of the theory of "absorptive capacity" (Cohen and Levinthal, 1990; Zahra and George, 2002). Cohen and Levinthal (1990: 128) argued that absorptive capacity, "the ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends," is critical to organizational innovation.

The key to organizational absorptive capacity, as emphasized by Cohen and Levinthal (1990), is diverse, prior knowledge. Tsai (2001) argues that organizational units that possess relevant prior knowledge are more likely to have a better understanding of external knowledge. Szulanski (1996) also shows that the lack of prior knowledge impedes the inter-unit knowledge transfer. Without absorptive capacity, an organization will fail to transfer knowledge from one unit to another and will not learn. With prior knowledge, individuals are more likely to identify the value of external knowledge when needed and are able to communicate with knowledge sources using shared knowledge-specific language.

3. Social capital

When people start to interact with each other, social capital is developed and increased among them (Nahapiet and Ghoshal, 1998). Bourdieu (1985: 248) defines social capital as "the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition." To Nahapiet and Ghoshal (1998: 243), social capital is "the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit." By treating knowledge as a strategic organizational resource, Nahapiet and Ghoshal (1998) claimed that with social capital embedded in social networks within an organization, knowledge creation is facilitated through the transfer and integration process. They identify three dimensions of social capital, structural, relational, and cognitive, that are conducive to the creation of organizational intellectual capital: "the knowledge and knowing capability of a social collectivity" (Nahapiet and Goshal, 1998: 245). Chiu et al. (2006), by developing a theoretical model based on Nahapiet and Goshal's (1998) work, demonstrated that certain facets of social capital increase the quality and quantity of knowledge transfer. They identified these facets as social interaction ties, trust, norm of reciprocity, identification, shared language, and shared vision. Inkpen and Tsang (2005), also drawing from Nahapiet and Goshal's (1998) work, argued that in an organization, the benefits of social capital can include privileged access to knowledge and information. Through constant interaction, social capital can be acquired and enhanced among members of social networks, and knowledge embedded in these social networks will become readily available with increasing quality and quantity.

When it comes to the issue of knowledge transfer, these five concepts (i.e., informal networks, boundary spanners, weak ties, absorptive capacity, and social capital) are highly interrelated. Nahapiet and Goshal's (1998) three dimensions of social capital and the ways they are reflected in the above enablers of knowledge transfer shed light on the convergence among these concepts. The structural dimension of social capital concerns the existence and patterns of social connections among social actors. This idea can be seen in the existence of *boundary spanners*, which form social connections between communities through *informal networks.* The relational dimension, which concerns the quality of social connections (i.e., the trust, norms, or identity present in a connection), is found in the presence of the *weak-tie* relationships that tend to characterize such connections across separate organizational units. The cognitive dimension concerns the "shared representations, interpretations, and systems of meaning among parties" (Nahapiet and Ghoshal, 1998: 244), manifested as shared mental models, language, narratives, and vision (Chiu et al., 2006). This can be seen in the accumulation of *absorptive capabilities,* which result in the increased common language and knowledge overlapping across multiple communities.

When an informal network is formed connecting different communities, when weak tie relationships are established, when boundary spanners emerge and expose a diverse knowledge base, and absorptive capacities are enhanced, the entire social network is brought to a state that facilitates knowledge transfer. These features constitute dimensions of social capital. Through social interaction among network members, social capital is gradually expanded, increased, and embedded, which supports and increases the transfer of quality, diverse knowledge. Organizations encouraging and supporting this environment become "innovation ready" (Fichman and Kemerer, 1997), meaning they will ultimately be more likely to engage in innovative practices.

In the next section, a theoretical model depicting how organizational use of Web 2.0 has the potential to drive innovation will be proposed. It is argued that organizational use of Web 2.0 applications will foster and support the aforementioned "innovation ready" environment. By facilitating the emergence of cross-boundary informal networks, weak ties, boundary spanners, and absorptive capacity, which in turn facilitate the emergence of social capital through interaction, organizational use of Web 2.0 applications will foster knowledge transfer among organizational units and lead to the readiness of innovation.

4. Web 2.0 use and organizational innovation

Web 2.0, operating on principles such as "the web as platform", "harnessing collective intelligence", and "rich user experiences" (O'Reilly, 2005), is by nature a primarily social concept. Tredinnick (2006) indicates that Web 2.0 is a "process of ceding control over applications to users, enabling users to extract information and data and reuse that information and data in a flexible way." Alexander (2007: 33) points out "the label 'Web 2.0' is far less important than the concepts, projects, and practices included in the scope." Web 2.0 therefore is not just an application type or a collection of tools, but also a concept, a perspective, a paradigm, or an attitude (Davis, 2005). Generally speaking, Web 2.0 can be thought of as virtual communities that facilitate the sharing of information and knowledge with the web as a platform, and with users creating the majority of the content.

Applications commonly associated with Web 2.0 include blogs (a subject-oriented or personal web page characterized by continuous, dated publishing), social tagging or bookmarking applications (sites that allow users to apply personalized tags to content), and social networking sites (applications that foster the creation and maintenance of social networks and relationships) (Levy, 2007). The unique features of these applications play a crucial role in the ability of Web 2.0 to foster knowledge transfer. For example, Farell et al. (as cited in Treem and Leonardi, 2012), found that the ability of users to leave comments on blogs could engender conversations between employees that spanned organizational boundaries, and John and Seligman (as cited in Treem and Leonardi, 2012) showed that social tagging could be used to identify experts within organizations, as tags were presumed to be indicative of a user's interests and areas of expertise. In addition, Thom-Santelli et al. (2011) suggested that due to their informal nature and frequent content updates, internal social networking sites could be effective in building social capital within an organization.

Organizational Web 2.0 use is quickly becoming widespread. In Levine (2008), it was reported that 32% of companies surveyed said they are currently using Web 2.0 applications, or that they will be using them within the next 12 months, and a later survey conducted by Bughin et al. (2011) shows a steady increase in organizational use of four web 2.0 technologies (social networking sites, blogs, video sharing sites, and microblogging) from 2008 to 2011. In this paper, we argue that organizational use of Web 2.0 applications increases diverse knowledge transfer among social networks spanning multiple organizational units. Concepts such as weak ties and social capital enabled through Web

2.0 use are also highlighted. By identifying these key benefits of the organizational use of Web 2.0 from the literature, a theoretical model depicting organizational use of Web 2.0 driving innovation is proposed (see Figure 1).

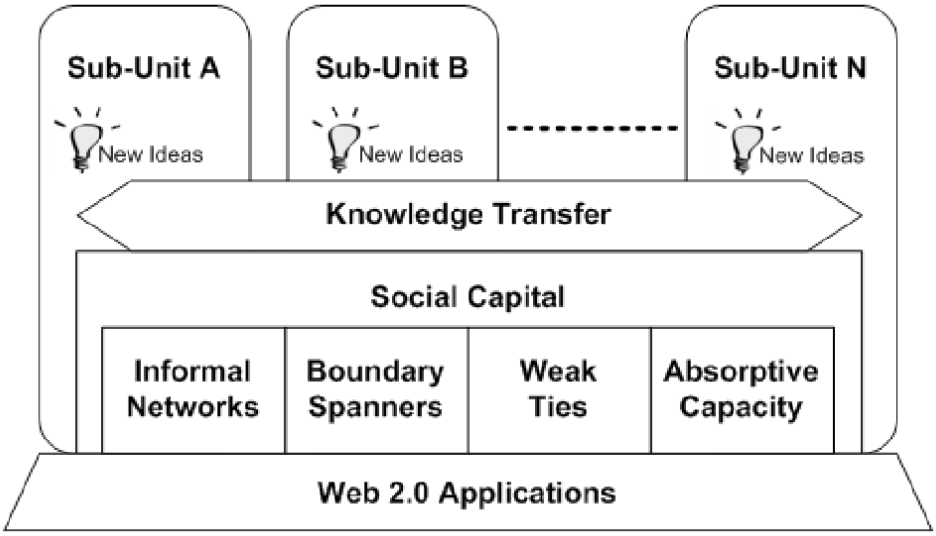

Figure 1: Innovation through Organizational Use of Web 2.0

The model illustrates that Web 2.0 applications as a platform facilitate the building of informal networks among organizational units, the maintenance of weak tie relationships, the enactment of boundary spanning roles, and the enhancement of organizational absorptive capacity. Together, these features comprise dimensions of social capital as an organizational configuration that facilitates knowledge transfer. Such a configuration leads organizations to an innovation-ready state, which ultimately drives organizational innovation. In the following sections, we also describe each concept in the model to explicate how Web 2.0 use contributes to organizational innovation through them.

4.1 Web 2.0 Use Fosters Informal Network Building

As social software aims to connect people informally, Web 2.0 applications make it possible for users to not only connect to those belonging to their own community, but also to communities outside their immediate network, exposing them to different perspectives and knowledge (Chatti et al., 2007). Web 2.0 applications transcend bureaucratic hierarchies and create informal communities to foster communications among employees from different organizational units. This further helps individuals access knowledge sources and identify experts, thus fostering knowledge transfer.

Jackson et al. (2007) conducted a study on corporate blog use in a large scale IT company, analyzing corporate blog users' usage patterns. They found that informal social networks are formed among these users, and that a corporate blog facilitates communication and knowledge transfer among employees from diverse organizational units, including marketing, sales, and engineering. Jarrahi and Sawyer (2013: 118) found that employees use Web 2.0 applications such as email, forums, and social networking sites (SNS) to acquire expert knowledge from individuals outside their immediate work environment, and stated that "[b]y supporting the mechanisms underlying the social practices of expert locating, social technologies serve as a platform for supporting informal networks within and across enterprises." Damianos et al. (2007) studied a high-tech organization's deployment of a social bookmarking system (i.e., Onomi). They showed that employees found it useful for discovering new resources, forming and supporting social networks, and locating relevant experts. Another study conducted by Millen et al. (2006) on Dogear, a social bookmarking system adopted by IBM, found similar results, highlighting that communities created with this system facilitated finding and sharing of information, organizational resources, and the discovery of expert knowledge.

4.2 Web 2.0 Use Enacts Boundary Spanning Roles

Employees use Web 2.0 applications to locate knowledge sources and identify experts outside their local communities in order to acquire different perspectives and solve project problems. In addition, such applications can extend an employee's network of connections and contacts within their organization's industry, as well allow them to stay informed on developments in the wider marketplace (Jarrahi and Sawyer, 2013). This is identical to the role of the boundary spanner as defined earlier in this article. As a result, users of Web 2.0 applications will enact boundary

spanning roles to monitor the outside world and ensure that "the required knowledge is able to flow across the boundaries" (Gopal and Gosain, 2009: 5), which leads to what Aldrich and Herker (1977: 218) mentioned as a "viable organization."

4.3 Web 2.0 Use Fosters Weak Tie Building

When Web 2.0 applications connect employees of different units, weak tie relationships emerge. Compared to co-workers of the same unit, employees from different units connected through Web 2.0 applications are less likely to have frequent, emotional intensive, confident communications. It is also more difficult for them to construct the norm of reciprocity, although it can be improved through increasing social capital by constant interactions.
Jackson et al. (2007) showed that weak tie relationships can be formed within organizations through corporate blog use. Ellison et al. (2010) found that Facebook enables its users to maintain a greater number of weak ties, and that the addition of these weak ties into the user's social network makes it more likely that that user will have access to a diverse knowledge base and potential resources for new information. Skeels and Grudin (2009: 102) studied employees' use of SNS, such as Facebook and LinkedIn, at Microsoft and concluded that the main benefit of employees' using SNS is the "creation, maintenance, and strengthening of weak ties among colleagues." Similar findings on the benefits of corporate SNS are also mentioned by DiMicco et al. (2008). In their study of IBM's adoption of SNS, they found that the main motivation of users who used internal SNS was to "build stronger bonds with their weak ties and to reach out to employees they do not know" (DiMicco et al., 2008: 711). Therefore, with Web 2.0 use, weak ties as relationships spanning across organizational units are maintained, aiding in expediting the flow and reach of diverse knowledge (Hansen, 1999; Kavanaugh et al., 2005).

4.4 Web 2.0 Use Enhances Organizational/Individual Absorptive Capacity

Through the use of Web 2.0 applications, informal connections across organizational units are created. Employees of an organizational unit take the role of boundary spanners and can interact not only with those in their unit, but with employees in other units as well, employees with diverse backgrounds and expertise that differs from their own. This increases Web 2.0 users' exposure to various knowledge sources. It also enables these users to have access to various knowledgeable experts when needed. Furthermore, through continuous interaction across units, shared language can be gradually built up, thereby easing the cost of communicating knowledge. When Web 2.0 users are exposed to diverse knowledge and are aware of "who knows what," and when the overlap of these remote users' knowledge increases, the absorptive capacity of an organization increases. This is the case when an organization creates and exposes broad ranges of "receptors" to the environment (Cohen and Levinthal, 1990). Such capability of acquiring external knowledge provides firms with the strategic flexibility in adapting to a changing environment (Zahra and George, 2002).

4.5 Web 2.0 Use Fosters Social Capital Building

When employees start to use Web 2.0 applications to build up social networks, interaction opportunities characterized by informal connections and weak ties are created among different organizational units. Through constant interactions between employee users as boundary spanners of different units, organizational absorptive capacity is enhanced. These knowledge transfer enablers create organizational structural social capital – informal networks and boundary spanners, relational social capital – weak tie connections, and cognitive social capital – absorptive capacity.

Steinfield et al (2009: 246) in their study on Beehive, a SNS used by IBM employees, found that the more heavily employees used, the SNS the higher their social capital levels were, and stated that "social capital is embedded in the informal networks among workers." Kostova and Roth (2003) found that the relationships boundary spanners form not only create social capital, but are important for its maintenance over time. Kavanaugh et al. (2005) found that "the Internet, by providing additional channels for communication among social network members and among the organizations to which they belong, facilitates and supports the formation of social capital in the community." In addition, Blanchard and Horan (1998) mentioned that dispersed social networks are more likely to attract members because it is easier to locate useful information and resources through dispersed weak ties, which would have a positive effect on social capital in virtual communities. Finally, Xiong and Bharadwaj (2011) found that absorptive capacity enhances the social capital benefits of relationships between firms, as well as mitigating any negative effects that might arise. We have seen that Web 2.0 use fosters informal networks, boundary spanners, weak tie relationships, and absorptive capacity. Consequently, by engendering these enablers of knowledge transfer, Web 2.0 use will enhance the building and growth of social capital as well.

4.6 Web 2.0 use fosters knowledge transfer

Informal networks, weak ties, boundary spanners, absorptive capacity, and social capital are catalysts of knowledge transfer, and their effects reach the highest when one's network spans multiple communities with diverse knowledge bases. Web 2.0 applications provide the platform for the creation of these knowledge transfer catalysts. It is the interplay and inter-augmenting of these catalysts which fosters organizational knowledge transfer.
A study on the blog use of IBM (Huh et al, 2007) found that blog use makes it easier to access experts, and to transfer tacit knowledge and resources across communities. The National Aeronautics and Space Administration (NASA) recommended in 2009 that Web 2.0 be utilized to facilitate intra-agency and inter-agency communication for this exact reason, stating that "[i]nternal deployments of these tools help the government's best assets -- its people -- interact with one another, exchange information, and transfer knowledge more rapidly and effectively than ever before." They later assert that "Tools which enable the development and maintenance of social networks among employees helps [*sic*] not only to catalog and identify expertise, but can also enable the transfer and capture of critical information and knowledge. Support for social networks allows employees to work together, across organizational boundaries, allowing relationships to flourish that may otherwise have never been discovered. It also enables organizations to more easily search for and align existing talent with strategic goals."

4.7 From Utilizing Web 2.0 to Innovation

Web 2.0 applications facilitate communication channels among organizational units characterized by informal networks, weak ties, and boundary spanners with enhanced absorptive capacity. Knowledge transfer is fostered through these enhanced dimensions of social capital. Fichman and Kemerer (1997) argued that when employees have access to greater, diverse knowledge, the innovation knowledge barrier should be lower. This idea is also mentioned in Leonard and Sensiper (1998). They believe it is more likely that new ideas will be generated and identified out of interactions among diverse knowledge – the so-called "creative abrasion" process.

There is ample evidence supporting the link between social capital and innovation. Cohen and Levinthal (1990) pointed out that the exposure of boundary spanners to diverse knowledge and experts increases organizations' absorptive capacity to make novel linkages and associations among this knowledge, leading to the generation of new ideas. Hauser et al., (2007) found that social capital developed through weak ties had a strong influence on patenting activity among businesses, which they defined as a type of innovation. Jamali et al. (2011: 388), in their study on innovation in business partnerships, found that "[t]he more innovative partnerships seem to have created and successfully exploited different dimensions of social capital, which has increased in turn the efficiency of information diffusion…and facilitated the absorption of knowledge." And finally, Carrasco-Hernandez and Jimenez-Jimenez (2013), in a study of 282 family-run firms, found that social capital has a positive relationship with product innovation.

We have shown that social capital can be produced through the use of Web 2.0 applications, and that the development of social capital among organizations leads to innovation. Organizational use of Web 2.0 applications will thus drive organizational innovation through constant transfer of diverse knowledge facilitated by the interplay of informal networks, weak ties, boundary spanners, absorptive capacity, and social capital. To quote Hemsley and Mason (2013: 157): "Social media enables workers to be immersed in the organization's culture, even during "non-work" periods, simultaneously with cultures and behavioral norms of multiple other networks. Although some companies seek to retain control over the knowledge (a resource view) by attempting attempt [*sic*] to block sites such as Facebook, Twitter, and YouTube (Barzilai-Nahon and Mason 2010), we believe these attempts are likely to inhibit innovation, knowledge seeking, and serendipitous connection that SM make possible."

As we can see from the second half of Hemsley and Mason's quote, there is some uncertainty on the part of executives regarding the merits of Web 2.0. Chief concerns include fears that employees may behave inappropriately on social media, that Web 2.0 technology may not provide a good monetary return on the company's investment, and that information disseminated via such technology may prove to be of low quality (McAfee, 2009). Other executives have blocked blogs and instant messaging due to concerns about a lack of focus on work (Barzilai-Nahon and Mason, 2010). However, McAfee (2009) asserts that in many cases, executive fears of the dangers of Web 2.0 are unfounded, and not necessarily reflective of reality.

We are already seeing organizations begin to use Web 2.0 applications to innovate. The MITRE Corporation, an American nonprofit, has developed an open idea management platform called Idea Market to manage submissions during their annual proposal contest. The platform has been successful in not only optimizing their submission and

review process, but due to the transparency of the platform, in facilitating collaboration between staff and providing wider access to fresh ideas as well (Holtzblatt and Tierney, 2011). The implementation of a wiki by Ingenta, a technology firm, consolidated all collected information into one place and provided a helpful reference guide for newcomers during a period of multiple acquisitions, as well as improving interdepartmental communication (Grace, 2009). And the adoption of a wiki by German investment bank, Dresdner Kleinwort Wasserstein, made collaboration between departments easier; due to all parties being able to work on a particular presentation on the wiki, as opposed to being forced to email drafts back and forth and coordinate several in-person meetings, time spent on the presentation was cut from multiple days to three or four hours (Socialtext, 2006).

5. Implications and conclusions

In this article, a model is proposed in order to provide insights of how organizational use of Web 2.0 applications drives organizational innovation. Facilitators of knowledge transfer – informal networks, weak ties, boundary spanners, absorptive capacity, and social capital, are identified as keys to this process. It is through Web 2.0 use that the quality and quantity of diverse knowledge transferred within organizations is enhanced, which in turn stimulates the generation of new ideas and ultimately drives organizational innovation. This model offers organizational managers an impetus to adopt Web 2.0 applications. However, Web 2.0 is not a panacea to drive organizational success; different considerations need to be taken before what this model envisions can be achieved.

5.1 Practical Implications

Managers need to understand that not all Web 2.0 applications are suitable for every organization. Organizations should consider which Web 2.0 applications best fit their strategic requirements. Categorization of Web 2.0 applications by type (communicative, collaborative, documentative, generative or interactive (McGee and Diaz, 2007)) can be a good foundation to make the right choice. Future studies matching business strategies with different Web 2.0 application choices and analyzing the outcomes should also be considered. In addition, managers should understand that the adoption of Web 2.0 applications will not necessarily lead to employee use (Ardichvili et al., 2003; Wasko and Faraj, 2000). Organizations need to support the culture of democratic knowledge sharing via Web 2.0 use, and encourage employee contributions on Web 2.0 applications through external rewards (Davenport et al., 1998), shared organizational vision (Chiu et al., 2006) and promotion of the idea that knowledge is a shared good (Ardichvili, et al., 2003). Only when employees begin to use Web 2.0 applications in their daily practices can benefits of Web 2.0 use given by this model be achieved.

5.2 Theoretical Implications

This model provides a way to explore how Web 2.0 use affects organizational communicative structure, and how that then leads to innovation. However, organizational innovation does not only happen behind a wall, it also happens with the involvement of customers or organizational allies (Chesbrough, 2003). For future study, we should not only conduct research to understand how Web 2.0 users' practices create informal networks, maintain weak ties, enact boundary spanners, enhance absorptive capacity, and generate social capital, but also to discover whether this innovation-driving model still holds true with the involvement of customers and other organizations through Web 2.0 use.

Note : The preliminary version of this paper appeared in the proceedings of the fifteenth Americas conference on information systems (AMICS 2010) (Huang et al 2010)

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