Ann Majchrzak
Elizabeth Fife
Qingfei Min
Francis Pereira

Activating the Tools of Social Media for Innovative Collaboration in the Enterprise

Fondation
CiGREF
SOUS L'ÉGIDE DE LA FONDATION SOPHIA ANTIPOLIS

Springer

SpringerBriefs in Digital Spaces

Series editor

Ahmed Bounfour, Orsay, France

Ann Majchrzak · Elizabeth Fife
Qingfei Min · Francis Pereira

Activating the Tools of Social Media for Innovative Collaboration in the Enterprise

Springer

Ann Majchrzak
Elizabeth Fife
Francis Pereira
Marshall School of Business
University of Southern California
Los Angeles, CA
USA

Qingfei Min
Dalian University of Technology
Dalian
People's Republic of China

Executive Summary

As enterprises become increasingly distributed, employees are less likely to be personally familiar with the people with whom they are collaborating. Past research has repeatedly demonstrated that lack of familiarity decreases the likelihood that employees will collaborate with other employees. However, the use of social media—especially wikis which we focus on—has the potential to change past traditions.

Wikis offer the possibility of employees not only adding their own content, as they would with any knowledge management system, but also integrating their content with other content in a process called "shaping." When diverse content is integrated, the possibility of innovation increases, especially when the process is a collaborative one. Therefore, wikis as a social media tool offer the opportunity of supporting collaborative innovation among employees.

Despite the opportunity, most wikis in today's enterprises are used for knowledge capture and knowledge transfer, and not for collaborative innovation. In this report, we examine the opportunity provided by wikis, based on the current literature. We then examine the reasons why this opportunity may not be currently filled, based on the results of field research of four case studies and interviews with representatives at 12 companies known for their innovativeness.

The findings of our field research led us to the development of two new instruments for the 2020 enterprise: (1) a Capability Maturity Model for the use of Enterprise Social Media for Collaborative Innovation and (2) a Readiness Checklist of Social Media Use For Collaborative Innovation.

Contents

Chapter 1
Introduction: Background Literature Review

1.1 A Description of Wikis as a Knowledge Management Tool

Wikis are defined as "collaboratively created and iteratively improved set of web pages" (Wagner 2004). Wiki technology allows multiple people to work on the same document without overwriting each other's changes, and has the advantage of keeping track of each person's contributions. A recent publication by Majchrzak et al. (2012) provides a detailed discussion of wikis as a knowledge management tool. First, wikis make possible a model of conversational knowledge management not based on chronological order, but based instead on importance and organization of content. Second, because wikis maintain complete version control, participants can roll back to any previous version regardless of who made the changes. Third, any participant is able to access a Wiki page or subset thereof and edit it, changing the existing knowledge or adding new knowledge with a click of a button. Fourth, once changes are completed, the page is released for others to see and further modify. Fifth, the content orientation provided by Wikis enable a better structuring of the efforts of many by organizing knowledge around content areas and encouraging individuals to just contribute to that content about which they have expertise. Consequently, individual contributors can now add small knowledge components on a single sub-issue.

1.2 What is Collaborative Innovation?

Collaborative innovation refers to the interaction among individuals as they integrate their knowledge in ways that lead to ideas that they did not have independently. Knowledge integration refers to the recombination of knowledge by merging, categorizing, reclassifying and synthesizing existing knowledge (Alavi and Leidner 2001; Grant 1996a). Knowledge integration for innovation refers to

recombination for the purposes of generating new knowledge (Grant 1996a). Research in this area commonly has argued that knowledge integration is a key intermediate process between knowledge capture and personal knowledge reuse (Garud and Kumaraswamy 2005; Postrel 2002), as well as between knowledge capture and reuse for process improvements in an organization (Hollingshead et al. 2002).

How knowledge integration occurs was initially postulated to involve a complex set of activities carried out by privileged individuals such as managers or explicitly through centralized and formal organizational structures (e.g., Grant 1996a, b; Moran and Ghoshal 1999). This view is held by researchers examining knowledge reuse of Knowledge Management Systems (KMS) and organizational Intranets (e.g., Fulk et al. 2004). It is argued that integration takes place either through directives and organizational routines (Mitchell 2006), knowledge stewards and librarians (Kankanhalli et al. 2005), or FAQs created by discussion forum administrators (Butler et al. 2007).

More recently, knowledge integration and innovation has been studied not as a function of structures, but as a function of interaction. During the interaction, the difficult process of integrating across diverse individuals working on novel problems without familiarity with each other must be worked out. The nature of this difficult interaction has been examined from two different viewpoints. The prevailing approach in the literature for overcoming these difficulties (e.g., Carlile 2002; Tsoukas 2010) is one referred to as the *traverse* approach in which team members identify, elaborate, and then explicitly confront the differences and dependencies across knowledge boundaries. This approach emphasizes deep dialogue. A significant barrier to using this approach is the time required. Additionally, it requires substantial engagement among the parties, activities that are counter-productive to an innovation challenge where participants may be relative strangers, even if they are in the same company.

An alternative approach to the prevailing view has been recently suggested, and referred to as the *transcend* approach. Contrary to conventional wisdom suggesting the diverse groups require fairly intensive effort to overcome differences that impede collaboration, recent research finds that among those teams that successfully co-generated an innovative solution, they did not in fact need to employ an intensive dialogic process to overcome differences, rather they were able to co-generate a solution without needing to identify, elaborate, and confront differences and dependencies between the specialty areas (Majchrzak et al. 2011). Such an approach allowed team members to minimize their differences during the problem-solving process. This has been referred to as a practice that facilitates transcending knowledge differences, rather than traversing them. Characteristic of these practices is that they avoided interpersonal conflict, fostered the rapid co-creation of intermediate scaffolds, encouraged continued creative engagement and flexibility to repeatedly modify solution ideas, and fostered personal responsibility for translating personal knowledge into collective knowledge.

1.3 How Wikis Can Help Foster Collaborative Innovation

Wikis are the focus of attention in this study because of their possibilities as facilitators of a new kind of mode of collaboration that can enhance innovation. Unlike many other knowledge management technologies, wikis enable collaborative publication to a common website. Ordering of information and knowledge follows the logic of the evolving document rather than chronological order (Majchrzak et al. 2012). Contributors can change their own content or that of others; changes are imminently possible, and the history of alterations can be seen. Authors of each change are identifiable so that everyone knows who has made revisions and the context in which they were made. (Cress and Kimmerle 2008; Kane and Fichman 2009; Wagner and Bolloju 2005). These wiki attributes provide collaborative possibilities and conditions that are not matched in other realms; thus its value as a tool for a new kind of innovation process requires exploration.

Despite the possibilities, most social media use inside companies is still focused primarily on knowledge-sharing and incremental knowledge creation, rather than breakthrough thinking. Excellent reviews and papers about social media use within companies are provided by Turban et al. (2011), a 2010 special issue in MISQ Executive on corporate use of Web 2.0 (edited by Kane and Majchrzak), a range of individual case studies on individual companies' use of social media (e.g., Majchrzak, Cherbakov, and Ives), and recurrent analyst reports by Gartner, Forrester, and other IT analyst firms. For example, as reported by Turban et al. (2011), Northrop has a large wiki-based encyclopedia developed by thousands of workers; however, the encyclopedia is focused not on new ideas, but on sharing of current practices and knowledge about corporate-related products and processes.

The possibility of online knowledge integration leads to the inference that contributing knowledge to a Wiki involves not only contributing the content of one's domain expertise (referred to as "adding"), but also integrating knowledge already contributed to the Wiki to make it more logically organized (referred to as "shaping" or "integrating"). This activity is referred to as 'shaping' the Wiki, reflects the iterative, cumulative, and organic nature of the activity (Korfiatis and Naeve 2005; Reinhold 2006; Yates et al. 2010). Shaping behavior involves publicly modifying others' contributions as well as one's own, and entails reorganizing content, removing redundancies or inconsistencies, and making the content more meaningful, usable, and maintainable (Wagner and Bolloju 2005). Shaping, then, is a synthesis and organizing activity. Wiki shaping does not require explicit organizational routines or management directives (e.g., Kogut and Zander 1992; Moran and Ghoshal 1999), nor is it limited to only privileged individuals; instead it allows anyone to engage as self-directed agents integrating contributions enabled by their own knowledge, their willingness to act, and the technology affordance of shaping.[1]

---

[1] An affordance is the design aspect of an object which suggest how the object should be used; a visual clue to its function and use (Norman 1988).

Theoretical discussion about knowledge reuse has been based on the assumption that collaboration and integration are not extensively performed by contributors (Alavi and Leidner 2001; Grant 1996a). More recently, however the affordance of "shaping" in the wiki environment has been identified as a new form of knowledge integration that provides broad opportunity for a range of participants to interact with each other's ideas (Reinhold 2006; Yates et al. 2010). Majchrzak et al. (2012), in a study of wiki users, found shaping to be a significant factor in knowledge reuse for organizational productivity improvements. The value of shaping for innovation is just beginning to be explored.

Employees using a Wiki can infer knowledge reuse when the pages on which they have contributed have been accessed and referenced by others. They can observe additions or modifications of their contributed knowledge made by other employees using the Wiki, enabling them to draw conclusions about how their contributed knowledge is reused within the Wiki. References made to their contributed knowledge on the Wiki's discussion pages, in links to other websites, and in face-to-face meetings further indicate how the knowledge they contributed to the Wiki is reused for organizational process improvement. Therefore, in a Wiki-based knowledge-sharing context, knowledge reuse can often be visibly observed, promoting individual beliefs that they are influencing others with their ideas.

Wiki use that facilitates innovation must start with a problem or need statement that focuses the dialogue. Adders then contribute their knowledge about the problem. Collaborative editing norms, and the possibilities provided by hypertext-linked web pages with wikis facilitate integration of ideas (Leuf and Cunningham 2001). Those taking on the role of shaper look at the contributions, reorganizing them into common solutions and highlighting open questions and disagreements that may foster further innovation. Overall, the wiki space provides a user-friendly means for communication, cooperation and interaction.

In an early review, Wagner and Majchrzak (2006) proposed that wiki use is more likely to lead to collaborative innovation when several conditions are met. These include stakeholder engagement, integration of the wiki into the work processes, adders contributing only small informal knowledge chunks, and a space and time dispersion that forces using a computer-mediated communication channel (rather than face-to-face). Since that review, we have identified additional requirements (Majchrzak and Malhotra in press). These include: participants taking on different roles during the collaborative innovative dialogue additional to shaping, incentives for taking on these roles, a problem-statement that is so challenging that it requires innovation from multiple diverse perspectives, and evolutionary idea evolution.

With respect to incentives, current research on open innovation challenges has found that one of the reasons why participants rarely collaboratively engage online in innovative idea sharing is the rivalry that is created by competitive incentive structures in challenges (Boudreau et al. 2011). Most challenges employ extrinsic incentives such as monetary rewards and reputation that is allocated to a small set of winners based on community votes and solution criteria established at the outset (e.g., creativity, feasibility, comprehensiveness, etc.). While these incentives have

been demonstrated to ensure higher participation (Antikainen et al. 2010), they create a tension between cooperation and competition (Bullinger et al. 2010). When participants cooperate with a larger number of other online participants that they have not previously worked with, they gain a smaller reward if they win, and they experience two different types of risks. First, there is the risk of opportunistic harm, in which their ideas are stolen by others (Jarvenpaa and Majchrzak 2007; Menon et al. 2006). Second, there is the risk of opportunity cost, in which the time spent cooperating with others seeking a creative outcome takes valuable time away from individually producing a creative outcome with known others (Bullinger et al. 2010). These negative consequences of cooperating often lead to a reluctance to share knowledge generally and participate in a public idea-building process more specifically (Majchrzak et al. 2011).

Recent research on the use of wikis for innovation has found the important role of shaping as well as other roles in that process (Kane et al. 2009; Yates et al. 2010; Majchrzak et al. 2012). While results in the form of the solution or idea are usually what is rewarded, Majchrzak and Malhotra (2013) have argued that it is the *process* that facilitates collaborative outcomes which determines whether the end result has effectively incorporated the best elements of the participants ideas, as well as the quality of the discussion that generated the ideas that are eventually synthesized into the solution. Thus, the process should be one that is the focus with incentives provided to individuals for adhering to a collaborative innovative process.

1.4 Implications of Wikis for Design of a 2020 Enterprise

Mass collaboration, originally derived from the wiki-way of Leuf and Cunningham (2001), and made popular through such management books as *Wikinomics* (Tapscott and Williams 2006) and *Groundswell* (Li and Bernoff 2008) consist of a number of principles, which we have augmented below:

- Focus on an interest area where collaboration can grow organically as a "pull".
- Ideas benefit when everyone generates, and integrates rather than being led.
- Broader inclusion of diverse ecosystem of participants yields unexpected relationships.
- Allow participants to emerge and recede with variety of changing roles.
- Outcomes are intentionally not pre-defined so that innovation may occur.
- Unexploited relationships between people and between data should be pursued.

Mass collaboration does not require innovation as an outcome; it depends on the objectives for mass collaboration. Thus, two firms may both claim they are engaged in "open" mass collaboration, but one accomplishes innovation only because it is desired and thus encourages participants to re-conceptualize, rewrite, and creatively challenge other participants openly so that new ideas are stimulated.

As corporations have increased their focus on open innovation, and the use of "Open" Innovation Challenges to support innovation-production and capture of

external sources of ideas, how the sources of the ideas are integrated into a collaborative innovative process requires attention. Open innovation is one of the fastest growing methods for organizations to develop innovative solutions to complex problems (Boudreau and Lakhani 2009; Chesbrough et al. 2006; Fredberg et al. 2008; West and Gallagher 2006). Using a variety of methods, from individual competitions for prizes to community collaborations, organizations are increasingly engaging in these open innovation challenges in which an organization starts an online community for the sole purpose of having the community use publicly available data to design and develop software applications or solutions to organizational problems (Chesbrough et al. 2006). For example, firms like Proctor and Gamble have made it their focus to leverage these non-traditional resources for the purpose of innovation, targeting 50 % or more new ideas to come from these sources (Huston and Sakkab 2006). Similarly, cities are increasingly turning to this approach to solve their more complex problems. The growing trend of both external and internal innovation challenges further illustrates the current relevancy of our research agenda and future directions.

References

Alavi M, Leidner DE (2001) Review: knowledge management and knowledge management systems: conceptual foundations and research issues. MIS Quart 25(1):107–136

Antikainen M, Mäkipää M, Ahonen M (2010) Motivating and supporting collaboration in open innovation. Eur J Innov Manage 13(1):100–119

Boudreau K, Lakhani K (2009) How to manage outside innovation. MIT Sloan Manage Rev 50(4):69–76

Boudreau K, Lacetera N, Lakhani K (2011) Incentives and problem uncertainty in innovation contests: An empirical analysis. Management Science 57(5):843–863

Bullinger AC, Neyer AK, Rass M, Moeslein KM (2010) Community based innovation contests: where competition meets cooperation. Creativity Innov 19(3):290–303

Butler BS, Sproull L, Kiesler S, Kraut RE (2007) Community effort in online groups: who does the work and why. In: Weisband S, Atwater L (eds) Leadership at a distance. Erlbaum, Mahwah

Carlile PR (2002) A programmatic view of knowledge and boundaries. Organ Sci 13(4):442–455

Chesbrough H, Vanhaverbeke W, West J (2006) Open innovation: a new paradigm for understanding industrial innovation. Oxford University Press, Oxford

Cress U, Kimmerle J (2008) A systematic and cognitive view on collaborative knowledge building with wikis. Int J Comput Support Collab Learn 3(2):105–122

Fredberg T, Elmquist M, Ollila S (2008) Managing open innovation—present findings and future directions. VINNOVA—Verket för Innovationssystem/Swedish Governmental Agency for Innovation Systems, Stockholm

Garud & Kumaraswamy (2005) Vicious and Virtuous Circles. MIS Quarterly 29(1):9–33

Grant R (1996a) Prospering in dynamically-competitive environments: organizational capability as knowledge integration. Organ Sci 7(4):375–387

Grant RM (1996b) Toward a knowledge-based theory of the firm. Strateg Manag J 17:109–122

Hollingshead A, Fulk J, Monge P (2002) Applying the theories of transactive memory and public goods to intranets and knowledge management in organizations. In: Hinds P, Kiesler S (eds) Distributed work: New research on working across distance using technology. MIT Press, Cambridge, pp 335–355

Huston L, Sakkab N (2006) Connect and develop: inside proctor and gamble's new model for innovation. Harvard Business Review

Jarvenpaa S, Majchrzak A (2007) Cross-organizational knowledge sharing: protection or sharing? Unpublished paper, University of Texas at Austin

Kane GC, Fichman RG (2009) The shoemaker's children: using wikis for information systems teaching, research, and publication. MIS Quart 33(1):1–17

Kane GC, Majchrzak A, Johnson J, Chen G (2009) A longitudinal model of perspective making and perspective taking within fluid online collectives. In: Proceedings of the international conference on information systems (ICIS), AIS Electronic Library, Phoenix, p. 10

Kankanhalli A, Tan BCY, Wei K-K (2005) Contributing knowledge to electronic knowledge repositories: an empirical investigation. MIS Quart 29(1):113–143

Kogut B, Zander U (1992) Knowledge of the firm, combinative capabilities, and the replication of technology. Organ Sci 3(3):383–397

Korfiatis N, Naeve A (2005) Evaluating wiki contributions using social networks: a case study on wikipedia. In: Proceedings of the first on-line conference on metadata and semantics research (MTSR'05)

Leuf B, Cunningham W (2001) The wiki way: quick collaboration on the web. Addison Wesley, Amsterdam

Li C, Bernoff J (2008) Groundswell: winning in a world transformed by social technologies. Harvard Business Press, Boston

Majchrzak A, Malhotra A (2013) Towards an information systems perspective and research agenda on crowdsourcing for innovation. J Strateg Inf Syst

Majchrzak A, More P, Faraj S (2011) Transcending knowledge differences in cross-functional teams. Organ Sci Orsc 1110(0677):v1111

Majchrzak A, Wagner C, Yates D (2012) The impact of shaping on knowledge reuse for organizational improvement with wikis. MISQ 37(2):A1–A12

Menon T, Thompson L, Cho H-S (2006) Tainted knowledge vs. tempting knowledge: people avoid knowledge from internal rivals and seek knowledge from external rivals. Manage Sci 52:1129–1144

Mitchell VL (2006) Knowledge integration and information technology project performance. MIS Quart 30(4):919–939

Moran P, Ghoshal S (1999) Markets, firms, and the process of economic development. Acad Manag Rev 24(3):390–412

Norman D (1988) The psychology of everyday things. Basic Books, USA

Postrel S (2002) Islands of shared knowledge: specialization and mutual understanding in problem solving teams. Organ Sci 13(3):303–320

Reinhold S (2006) Wikitrails: augmenting wiki structure for collaborative, interdisciplinary learning. In: Proceedings of WikiSym'06-2006 international symposium on wikis, pp. 47–57

Tapscott D, Williams AD (2006) Wikinomics: how mass collaboration changes everything. Tantor Media, New York

Tsoukas H (2010) Organization as chaosmos. What is an Organization? Materiality, Action and Discourse

Turban E, Bolloju N, Liang T-P (2011) Enterprise social networking: opportunities, adoption, and risk mitigation. J Organ Comput Electron Commer 21(3):202–220

Wagner C (2004) Wiki: a technology for conversational knowledge management and group collaboration. Commun AIS 13:256–289

Wagner C, Bolloju N (2005) Supporting Knowledge Management in Organizations with Conversational Technologies: Discussion Forums, Weblogs and Wikis. J Database Manage 16(2):i–viii

Wagner C, Majchrzak A (Winter 2006–2007). Enabling customer centricity using wikis and the wiki way. J Manage Inf Syst 23(3):17–43

West J, Gallagher S (2006) Challenges of open innovation: the paradox of firm investment in open-source software. R&D Manage 36(3):319–331

Yates D, Wagner C, Majchrzak A (2010) Factors affecting shapers of organizational wikis. J Am Soc Inform Sci Technol 61(3):543–554

Chapter 2
Field Research Methods

Our field research consisted interviews with 12 companies known for their innovativeness and four case studies.

2.1 Company Interviews

The 12 companies were selected as those most likely to be willing to experiment with a wiki for collaborative innovation since they already used wikis. The company representatives were asked about their willingness to consider using wikis in this matter, the barriers and possible benefits to doing it.

Great interest in participating in the Innovation Challenge experiment was shown by the companies we approached, yet barriers were apparent. One barrier was not having the staff dedicated within the company to improving innovation generation. Consequently, it was no one's responsibility to design a wiki for collaborative innovation. While wikis were often maintained by the IT departments in the company, the IT department cannot take responsibility for corporate-wide innovation. The discussion of barriers with the 12 companies led us to recognize the need for a Readiness Tool to help a company determine when they are adequately prepared to obtain the greatest benefits from their use of social media tools for innovation.

Another issue that was raised repeatedly during these interviews was the need for successful experience using wikis first, before the wikis can be used for collaborative innovation. Some company representatives indicated that they were still struggling with getting sufficient engagement in the use of wikis for purely knowledge capture, and thus it seemed premature to consider wikis for collaborative innovation. Comments such as these led us to recognize the need for a tool similar to a capability maturity model that helps a company assess how well it is moving down a path of using social media for innovation. Simply because it has not completed the journey as yet, doesn't mean that it wouldn't eventually gain the value needed.

2.2 Case Studies

The four cases were selected based on companies willing to experiment with wiki focused exclusively on collaborative innovation and include:

- USA Tech Company
- China MBA
- China D
- European Telecom

2.2.1 Case Study #1: U.S. Tech Company

U.S. Tech Co (a pseudonym) is a privately held company with facilities distributed around the country. The company operates a national portfolio of 17 strategically located interconnection and data co-location facilities. These facilities provides connections in key locations near cable landing, fiber paths, exchanges and media hubs, to enable a network-neutral ecosystem for doing business. Their facilities reduce latency associated with connecting to cloud services, financial exchanges and media providers.

The company had no prior employee experience engaging on a wiki, either sharing or using or refining information. The company was motivated to conduct an experiment on wiki use for collaborative innovation in order to learn more about the process, as well as understand how to focus their distributed and diverse work force on common problems that could benefit from diverse views. The majority of company employees do not come to an office and rarely if ever meet face to face. An independent and distributed workforce has been a strength of this company over the last two decades; giving them coverage and agility in changing strategy and product offerings ahead of the curve. At this point however, there is a realization that employees possess a great deal of expertise and knowledge of their customers that is not diffusing through the company.

Existing software was used for designing the wiki. To motivate employee use of the wiki, a challenging question was carefully developed among company executives to be general enough to encompass a wide variety of expertise levels. The question that was asked was: **WHAT INNOVATIVE CLOUD-BASED SOLUTIONS SHOULD WE PROVIDE OUR CUSTOMERS?** However, as the challenge progressed we determined that the question was so general that it did not seem sufficiently relevant to individual employees and this had an effect on participation.

Company employees were recruited via email for voluntary participation in the wiki to address the question, and were offered incentives (gift cards) for participating according to the guidelines. Since this was intended to be a wiki used for collaborative innovation, the employees were informed on the wiki site of the guidelines for collaborative innovation shown in Textbox 1

#1: DISCUSS AND DEFINE CHALLENGE PROBLEM FIRST including sharing your knowledge about leading solutions that are hosted by our datacenters, why clients choose us, what are our main differentiators from competitors, what is the main challenge we face from competitors, and what you know about cloud computing if anything (see the attachment for more info)

#2: POST BRIEF IDEA "SEEDS" to stimulate others' thinking

#3: CHALLENGE ASSUMPTIONS to spark new ideas

#4: INTEGRATE IDEA SEEDS to form complete solutions

#5: ENCOURAGE OTHERS TO COLLABORATE

#6: VOTE FOR POSTS that follow the above guidelines

THOSE RECEIVING THE MOST VOTES FOR FOLLOWING COLLABORATIVE GUIDELINES RECEIVE GIFT CARDS!!!!!

Company employees were reminded periodically over a 5 week period to post. Outcomes (solutions) at the end of the challenge were to be assessed by stakeholders at the company. During this time, despite reminders to participate, response from the 11 participants was negligible.

2.2.2 Case Study: Chinese MBAs

In this case, an open source wiki technology was used to start a wiki for an MBA class on E-Commerce. Forty-five working (part-time) MBA students from different companies in the ICT industry, attending Dalian University of Technology in China were invited to participate in the innovation challenge which lasted 2 weeks. This was an "in-person" course, but since these students also are employed, they only saw each other during the class time. Their challenge question was: **DESIGN A BUSINESS MODEL BASED ON THE MOBILE INTERNET AND MOBILE DEVICES.**

A few individuals were assigned the role of "idea shaper" and all entries were revised numerous times: six principal ideas were refined a total of 116 times from a total of 1,065 posts. Incentives were given to eight students who contributed the most during the challenge. The incentive was 800 RMB (130 US\$) for participants who were most active and deemed to have contributed the most. Those contributing at the next few tiers (second through fourth place) received 500 RMB (80 US\$), and finally, the fifth through eighth highest contributing individuals were rewarded with 300 RMB (50 US\$). The participants were rewarded independently of the idea that was chosen. In other words, some participants were rewarded for commenting on and improving the winning idea, not for initiating it. At the end of the challenge, the eight winners hosted (paid for) a dinner party for all the other

participants. This gesture is reflective of social norms in China and would not be viewed as unusual. The top idea was a mobile "information intermediary" app called "rental by finger," using smartphone locational capabilities to collect rental data from multiple websites to help users find and locate rental property.

2.2.3 Case Study: China D

The third case is that of China Company D, an online education solutions provider. The company employs 200+ employees located in two cities. Wikis were currently used by 50 of the employees in the technology departments of development, maintenance and quality control, but not within marketing or administration or sales. However, wikis were not widely exploited by the company, although other modes of communication like instant messaging were pervasive. Although the top managers encouraged the usage of wikis in general, marketing and service employees were excluded from making use of them. Thus, the "open" and democratic characteristics of wikis that allow ideas to come from often unexpected sources—e.g. an administrative person who suggests new product design, was not as easily realized in this corporate environment. In addition, the relative lack of protection for intellectual property could be a factor impeding more open systems for innovative activity which can easily move beyond the boundaries of the organization (Wilson 2012).

The challenge question was developed by the vice-president of R&D was: **DESIGN A BUSINESS MODEL (SOLUTION) BASED ON THE MOBILE INTERNET AND MOBILE DEVICES.**

A total of 51 employees registered and participated in the innovation challenge. Participants were IT practitioners, mainly from the R&D, maintenance, and testing departments, but a few individuals from marketing and after-sale departments also voluntarily participated. The 51 employees were provided the same instructions as the US Company to ensure their contributions were directed toward collaborative innovation.

Employees were told that the VP would be the official judge of the participant's quality of posts and each person's individual contribution would be looked at. Nonetheless, the participants realized that this innovation challenge was not an "official" task. The wiki ran for 4 weeks and no incentives were given for participation.

Due to the still persistent hierarchical nature of the Chinese corporate culture, and strict observation of rank, there was less engagement than expected. Corporate culture seemed more important than incentivization—top management buy-in appeared to be an underlying driver for innovative collaboration through the online platform to succeed.

In the first weeks, only two quality ideas were generated. As a result, the VP had to intervene in the challenge to encourage more participation and idea generating. After this point, more quality entries were generated. In the third week there was silence, due to an emergency that involved the attention of all participants. In the last week, the VP pushed for completion rather than shaping and cooperatively developed ideas. It should be noted that the best performing team had a member who played an extremely active "shaping" role, encouraging the other team members to comment and respond quickly. This "champion" pushed along the iterations of the idea, and made some of the revisions himself. Ultimately, the idea that was selected from the wiki challenge was a mobile/online training school focusing on English language and IT skills.

2.2.4 Case Study: European Telecom

This European Telecom company can be considered far-sighted in its recognition of the need for new models of innovation to help them maintain pace with the rapid technological changes in the ICT industry over the last decade. They expect innovation to originate from new sources—small nimble start-ups, individual entrepreneurs and unexpected companies based in emerging economies. Embracing open innovation, the Chief Technology officer has said:

> The world is full of people who are keen to offer their ideas, and firms will need to become exceptional exploiters of this immense pool of talent if they are to survive. For those used to relying on their own resources, it is a tremendous change—both in approach and in outlook. But it is a change that offers big benefits, and not just to firms. By creating opportunities for many more people to participate in the innovation process and share the wealth that is created, open innovation will help overcome the digital divide.

Prior to 2005, the company had developed an innovation program which was managed by an external service provider. A decision was made to develop an innovation initiative from inside and make it a business-driving operation. The objective was to create a process that incorporated the creative ideas of employees as well as customers and push marketable ideas through the company until they reached the group most suited to develop a particular promising idea into something with quantifiable return. The initiative is also used to simply gather ideas, generate suggestions as well as push other programs/campaigns along. This effort entailed a comprehensive effort—which seems to have produced results. At this point they can show demonstrable results from the use of collaborative platforms that were employed in parallel with management support. This top down approach was intended to engage and involve employees at all levels in the process of innovation.

The company's program has evolved over several years as they have learned to calibrate, revise and add new elements to support and motivate participation and innovation. An incentive system has been put in place: if an idea is implemented,

the idea submitter can receive a substantial cash payment. Also, in line with previous academic studies that show the need to assign specific "roles" to individuals so that as collaborative innovation evolves, the company has implemented an extensive process of role-identification and role assignment. Efforts to identify expertise have helped get ideas into the view of appropriate people as well as supporting the assignment of roles including "evaluators," "innovation champions," and "implementers" who drive ideas from the initial stages through management, development, marketing and finally to the customer. It is also possible for idea originators to receive guidance and "ask an expert" when posting their ideas. Importantly, from the initial stages of the company's decision to move forward with online knowledge integration, senior management involvement, starting at the CEO level was visible throughout the company. In addition to socializing the program within the company from top to bottom, importantly, the web-based platform was integrated into the company's other IT systems so that usability and the overall user experience was easy.

The innovation initiative has had visibility on a global basis with employees and senior executives alike submitting ideas and comments as well as voting. Numerous challenge questions with different goals are run through the system. At this point, although the site is open to all, in large part posts have originated from employees that directly face customers, and thus many suggestions are focused on customer satisfaction and new services for customers. Besides customer experience, other major areas of idea generation are cost savings, efficiency improvements with partners and suppliers, and other internal business improvement functions. Business improvement includes network infrastructure, and thousands of engineers have submitted technically oriented ideas in this area. Engineers in the field have suggested ideas such as the special tools that have ended up expediting on premises work. An interesting outcome for the company involved a suggestion for a heart-rate monitor using a mobile phone for mothers to be. The idea had initial enthusiasm. When "expert" employees (mothers) in the company evaluated the idea however, they did not see the value and instead suggested other mobile app possibilities, one of which was successfully developed—a baby naming app. This was vastly different from the initial starting point, and has been held up as an instructive example of online collaboration.

Despite the company's focus on innovation, most ideas have tended to be more incremental than desired. Continued support for higher quality idea generation include a new platform that gives higher internal visibility to ideas and their initiators, additional "roles" for participants in the discussion and idea generation process–some of which are informal, and a focus on reinforcements that include gamification. Badges are also used as a reward to provide visibility to senior management and general satisfaction to people participating in the wiki. To the extent possible, the company tries to codify and measure the effects of the totality of this effort to make the online innovation process better.

Overall, this effort to alter the company mentality towards greater creativity and engagement has not occurred overnight and requires substantial effort from a small dedicated team that read every post and decide on further actions, including

responding to the post and sending it to an appropriate "expert." It is an intensely "hands-on" process. While upwards of 1,000 people evaluate ideas, a group of around 20 people are very active in receiving, evaluating, and then farming out ideas. It has proved difficult to mitigate the labor intensiveness of the evaluation process as automation is a challenge. Online training is provided for participants to learn how to submit, track and evaluate.

A recent view of the site showed nearly 16,000 ideas, 44,000 comments, 2,200 votes and 5,500 users between April and mid-September during a recent year. The internal-only website allows viewing of the most recent posts and ideas that have the most comments, along with a news-feed that shows who is doing what. Idea originators must answer, while posting their ideas, several directed questions such as why they submitted their idea, in what area within the company is the idea likely to have the most impact, the cost required to implement the idea, etc. Other questions are posed to help the individual think through their suggestion or idea. The idea description phase of the process has been recognized as overly lengthy and possibly a barrier to participation and thus it is being simplified to fewer, better questions. The initiator still must justify their idea, understand how it links to key areas and show costs and benefits. This means that ideas that are put forth must be fully formed.

Once an idea has been submitted, it is evaluated by a person assigned the role of "evaluator" and may be sent back to the idea originator for refinement, rejected, or sent further on. The small team within the company charged with managing the process intensively monitors ideas, forwards them and identifies evaluators for ideas.

As an idea progresses, it is assigned to an individual. Ideas are evaluated in terms of detailed financial metrics and ideas that are pursued are carefully measured in terms of revenue saved or produced as a result of implementation. At this point, only ideas are rewarded; shaping activity is not.

While the company is constantly refining their process and seeking ways to integrate innovative practices into their organization, the tension between traditional control and openness are clearly at play.

Despite challenges in balancing collaboration and competition to support creativity, in sum the company sees its efforts paying off. At the time we spoke with them, they calculated that 54 million pounds of revenue could be directly accounted for, originating from 88 ideas. Currently, 51 ideas are in various phases of development. The company feels that they have succeeded in altering the "black box" processes of the past through slow development over time and great attention to their efforts to build innovative thinking and communication from within.

Reference

Wilson S (2012) At the Court of King Henry. Deloitte Review, Issue 10

Chapter 3
Findings

We describe the findings from our four case studies and the interviews with twelve innovative companies. In total, eight findings are identified. In brief, these are:

(1) Momentum around emergent ideas
(2) Cultural differences in need for moderator
(3) Wikis are coupled with other communication tools
(4) Idea quality and participation activity are not necessarily correlated
(5) Challenge question for wiki must be tied to job responsibilities
(6) Organizational readiness for collaborative innovation through wikis must be tied to having a corporate-wide innovation focus
(7) Most corporations with social-media fostered collaborative innovation experience are dissatisfied with outcomes
(8) Individuals rather than communities are rewarded for innovation.

3.1 Finding #1: Momentum Around Emergent Ideas

In the China MBA case, participation in the wiki did not gain momentum until a top idea emerged. At that point, more posts were made (nearly a third of the total number of comments). While the wiki platform provided an egalitarian opportunity for all participants—in fact, the bulk of comments (75 %) were contributed by roughly 20 % of the participants. The group recognized that this idea had advantages in terms of feasibility, flexibility and originality. In the third week one of the idea shapers called on the participants to focus on the best idea to improve and perfect it, and give up other alternatives. This appeal triggered debate which led to consensus. Interestingly, once agreement was achieved, many participants became inactive. Additionally, it seems that the group reached agreement in a short time not only through the wiki but with the support of other communication tools, including instant messaging.

3.2 Finding #2: Cultural Differences in Need
for Moderator

Cultural differences have apparent importance in the use of the wiki. For example, the reluctance to make posts in China appears to be a more significant difficulty in generating wiki-based engagement in China than other environments such as the US. In the Chinese corporate culture, the group is more important than the individual. In business environments, Chinese employees tend to dislike taking responsibility individually and may also be hesitant about giving their opinions in front of their peers, for fear of losing face. Therefore, a significant role in wiki discussions is that of the moderator who seemingly needs a stronger role in the Chinese corporate environment and "coach" participation by others. The field research in China further suggests that this moderator besides leading discussion, probably also needs to be a senior member in the group. It seems that this "strong moderator" is necessary in term of encouraging participants to participate. This role is not however necessarily the same as the "shaper," a role that in fact seems in closer alignment with Chinese culture and thus perhaps requires less cultivation than in the US context. Overall, given the cultural differences presented in China, focus on cooperative rather than competitive elements in innovation challenges would appear to generate greater "buy-in."

3.3 Finding #3: Wikis are Coupled with Other
Communication Tools

In both China cases, the wiki was coupled with the use of other communication channels, often including instant messaging. This allows the participants to have "off-line" discussions to reach consensus, rather than to post their own ideas and disagreements in a forum where they are publicly reviewed by peers.

3.4 Finding #4: Idea Quality and Participation Activity
are not Necessarily Correlated

In the China case study, a total of 286 comments were offered about seven ideas that were later rated by company executives for their quality. The table below indicates the number of comments, revisions to the idea, votes, and judged quality for the idea. Apparent from this table is that the highest quality solutions were not necessarily those that had substantially more votes, comments, and revisions than medium quality solutions. This suggests that, as long as some minimum amount of activity is met—in terms of votes, comments, and revisions—the quality of the solution is based on the content of the activity.

Team	Ideas originated	Comments	Revisions of idea	Votes	Quality of solution
2	2	92	6	16	High
3	2	91	6	15	Medium
1	2	78	4	25	Medium
4	1	25	3	12	Low
Total	7	286	19	68	

3.5 Finding #5: Challenge Question for Wiki Must be Tied to Job Responsibilities

Employees in the U.S. Tech Company were asked about their reactions to the wiki. Apparent from Fig. 3.1 below is that a majority (60 %) of those receiving the initial email decided it was a worthwhile activity for them to engage in, but only 20 % actually proceeded to the wiki at the time of the email, those opening them up for the possibility of other activities getting in the way of returning to the wiki later. Moreover, 20 % of participants stated that they immediately felt that they were not going to take part.

3.5.1 When you First Read the Email Asking you to Participate in the Innovation Challenge Wiki, What Did you Do?

Below in Fig. 3.2, participants were asked what would have motivated them more to take part. The majority state that the discussion topic needed to have a value proposition and direct relevance for the individual. Further emphasizing the need
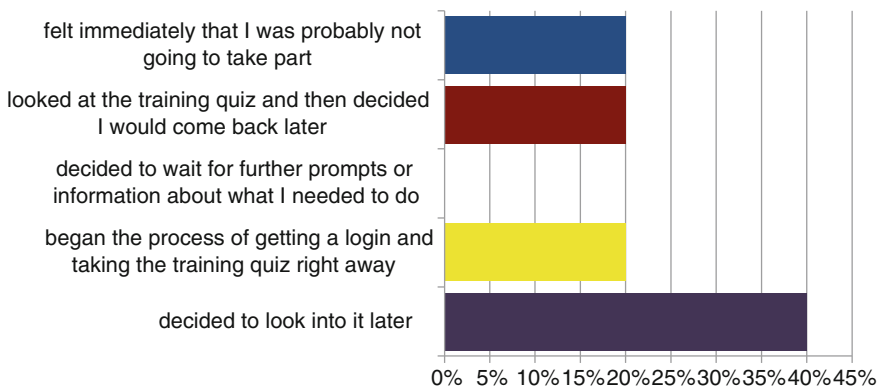

Fig. 3.1 Majority of invited wiki participants decided to put off immediately investigating the innovation challenge. Percentage participants agreeing to a very great extent/to a great extent
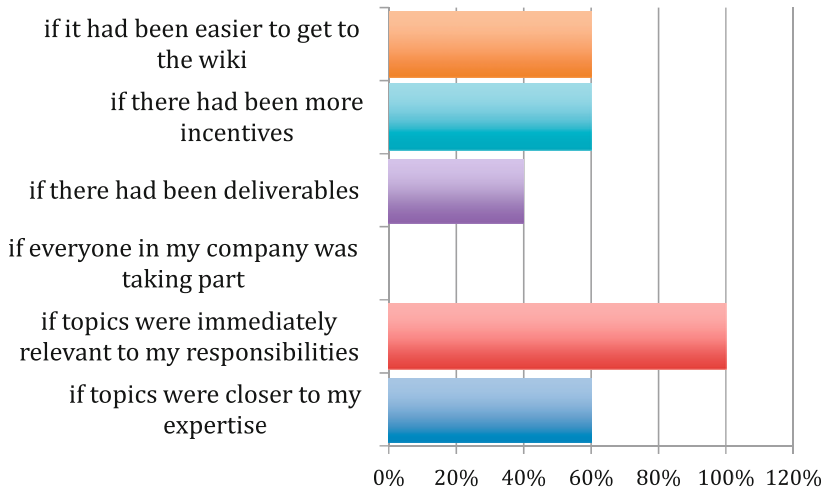
Fig. 3.2 Motivation to participate can be improved if wiki discussion has direct relevance to job responsibilities. Percentage agreeing to a very great extent/to a great extent

to show a direct value to participants (including the centrality of the wiki challenge to overall company goals), the majority of participants stated that they simply didn't have time to participate in the wiki.

3.5.2 Generally Speaking to What Extent Could your Motivation to Participate in the Wiki have Been Increased?

3.6 Finding #6: Organizational Readiness for Collaborative Innovation Through Wikis Must be Tied to Having a Corporate-Wide Innovation Focus

Our field interviews with the 12 firms revealed general familiarity and use of social media for basic knowledge-sharing; but the use of social media for co-creation and innovation, where we focus our attention is a less realized area.

The reasons for this limited use appear to be multi-fold. In our discussions with firm representatives, we heard several organizational and knowledge-based obstacles noted. Interestingly, technology and resource limitations were not a significant in any of the companies we spoke with. In fact, some already had proprietary solutions implemented that were not being used. Rather, a more holistic organizational "readiness" seems to be a recurrent stumbling block. Firms

lacked clear understanding about the logistics and processes to effectively manage the use of social media tools such as wikis to generate collaborative innovation. Thus, appropriate employees were not designated to initiate and manage such an effort.

Secondly, despite being able to clearly identify a need to bring together various parts of the organization to engage collectively, organizationally this was a challenge given existing structures and internal communication challenges. In addition to these reasons the overall experience curve and lack of familiarity with this mode of interaction is a barrier to initiating use. A comfort level with online collaborative innovation as an alternative to usual standard practices has not yet been achieved.

3.7 Finding #7: Corporations with Social-Media Fostered Collaborative Innovation Experience are Dissatisfied with Outcomes

Majchrzak and Malhotra (2013) have described firms as increasingly dissatisfied with the lack of disruptive innovation generated by their social-media-based collaborative innovation experiences. Our European Telecom company as well as conversations with several firms engaged in such experiences similarly indicate that the outcomes are primarily of an incremental nature, with few truly innovative solutions being proposed. While not willing to "go on record" with this tentative conclusion, these informants (from three firms and three vendors) all agreed that, in their experience, the ideas generated were largely in the "known-known" category, rather than the "unknown-known" or "known-unknown" or "unknown-unknown" category.

3.8 Finding #8: Individuals Rather than Communities are Rewarded for Innovation

Corporate Innovation Challenges appear to be following the lead of public innovation challenges, fostered by such public challenges as Top-Coder and Innocentive. Better referred to as Tournaments, these challenges have been inadvertently designed to foster individual behavior. We say "inadvertent" since the firm representatives we have interviewed appeared to have no intent to dampen collaboration, only to encourage participation. However, the manner in which they encouraged participation is one that diminishes rather than fosters collaboration. For example, rewards for the "best idea" have typically been given to the idea initiator as special funds for research and development on the idea, or invitation to engage in a team-effort offline among experts, or winning an iPad, or special

recognition in the company newsletter. Because of the tournament mentality of the challenges, the knowledge that gets shared openly consists primarily of finalized solutions, bypassing the opportunity for initial knowledge to be modified and recombined in novel ways in a strategically critical process referred to as knowledge integration (Grant 1996a, b).

The technology platforms also perpetuate an individual mentality. Votes are not permitted on comments; discussion threads can only be started with ideas, not with discussion of the problem; comments are all with respect to the idea, not the problem; best posters are algorithmically determined by the number of ideas generated, not the number of integrative comments. To encourage integration and the role of the shaper in innovation challenges, we follow recommendations by Majchrzak and Malhotra (2013) that rewards should be provided for integrating ideas of other, not just refining already posted ideas.

References

Grant R (1996a) Prospering in dynamically-competitive environments: organizational capability as knowledge integration. Organ Sci 7(4):375–387

Grant RM (1996b) Toward a knowledge-based theory of the firm. Strateg Manag J 17:109–122

Majchrzak A, Malhotra A (2013) Towards an information systems perspective and research agenda on crowd sourcing for innovation. J Strat Inf Syst 22(4):257–268

Chapter 4
Tools for Use of Social Media for Collaborative Innovation

Based on our eight findings, we developed two tools intended to help companies considering the use of social media for collaborative innovation within their firms. The two tools are:

(1) Checklist for Organizational Readiness for Using Social Media for Innovative Collaboration, and
(2) Capability Maturity Model for the Use of Social Media for innovative Collaboration.

Figure 4.1 shows the Checklist.

It is apparent from this checklist that collaborative innovation requires substantial planning and resources beyond the technology choices. Not only must top

1) Top Management recognition of current SMI-CMM stage for organization	☐
2) Challenge question requires collaborative innovation and is relevant to invited participants' work responsibilities	☐
3) Existence of shapers	☐
4) Jobs require reflection and projection	☐
5) Culture of collaborative idea-sharing (vs.hoarding)	☐
6) Top Management engages in sponsorship activities	☐
7) Strong moderator in "less-direct" cultures	☐
8) Design of platform for collaboration to develop new ideas	☐

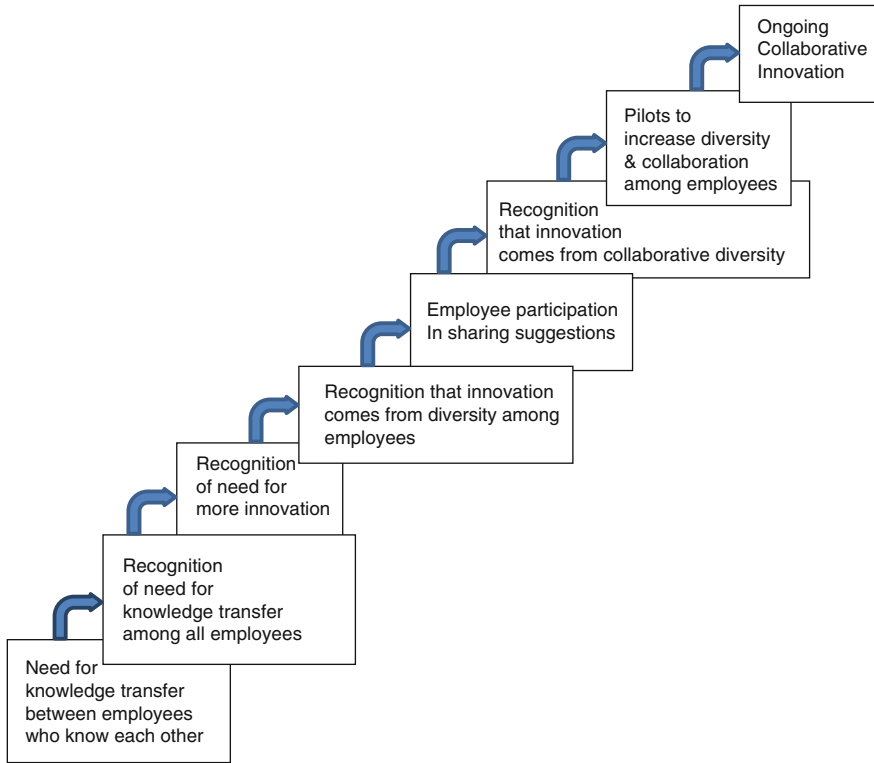**Fig. 4.1** Checklist for collaborative innovation

Fig. 4.2 The social media capability maturity model for innovation (SMI-CMM)

management be involved, but must conduct an array of sponsorship activities, including: marketing the Innovation Challenge and need for the challenge, developing the appropriate question for the challenge, identifying which target populations to invite, and regular reviews of posts to provide positive feedback to employees so that the employees know that senior management cares about what gets posted.

The Social Media Capability Maturity Model for Innovation (SMI-CMM) is shown in Fig. 4.2.

Chapter 5
Contributions

This Brief advances research in the disciplines of Information Systems, Organizational Behaviour and related fields by promoting understanding of the steps needed for expanding the use of online social media tools for innovative collaboration. Beyond understanding how a new process of innovation can be supported in an enterprise setting, this study has implications for other contexts where knowledge is dispersed spatially and temporally. Additionally, this Brief advances our theoretical understanding of social media use in the enterprise setting and how such tools can influence and increase the effectiveness of not only collaborative innovation and building collective intelligence, but also other activities such as knowledge sharing and the management of virtual teams.

Rather than taking a technological deterministic perspective on the use of social media, this brief takes a much more socio-technical perspective by identifying some of the social, organizational and technological barriers within organizations that stymie knowledge sharing and innovation can be overcome. This is a fertile cross-disciplinary research space of growing practical relevance. Innovation Challenges and related activities are growing in popularity on the business and societal level, yet understanding of the dynamics and how to maximize value still remain unclear.

By offering tools and findings, this brief provides practical guidelines as well for how collaborative innovation is best supported in the enterprise through the use of social media tools. The two tools specifically developed as a result of this research are also intended to help practicing managers decide when they should pursue social-media-based collaborative.

As traditional modes of innovative activity come under pressure due to influences from outside the enterprise such as fast-moving, agile players and disruptions from emerging non-traditional companies from the developing world, new organizational patterns and processes will necessarily be needed to compete. The benefits of wiki-like collaborative interactions include new ideas from unexpected sources, instant feedback, and a breakdown in hierarchy and "black-box" solutions that confine idea creation to a few selected experts. These benefits can counter the competitive threat faced by traditional companies across many sectors to come up with innovations that match rapidly shifting markets and sources of demand. This

study thus contributes to an understanding of a rapidly growing activity (use of online tools to support innovation) which is taking several forms: competitions, internal wiki-based discussions, challenges and community collaborations among others. The traditional social activities of innovation that often involve only a small selected group in a closed environment has been criticized as lacking in the speed, flexibility and inclusiveness needed for the future enterprise to both effectively respond to new sources of ideas and to respond to complex problems. The cases highlighted in this study help demonstrate the need for organizational design within the enterprise to facilitate the collaborative generation of ideas generated internally and externally.

It can be anticipated that the corporation of the future will be highly distributed with sources of knowledge and expertise spread throughout the world. The growing use of information technology to support a distributed work force will intensify in the next decade, and the scope and depth of IS driven interaction will expand. Higher level engagement beyond knowledge management and transactional communication necessitates a studied approach for best results. The process of idea generation requires cultivation in the face of numerous obstacles: cultural, internal corporate-driven barriers, leadership and dedicated management. Our study has illuminated barriers and also has offered a means for companies to self-learn with the tools of conscious assessment. Our study thus far demonstrates the distance between the ideal and current practices, and thus the need for new organizational structures to harness and cultivate innovation—not only within the enterprise, but in societal institutions as well. The optimum qualities of such organizations are not yet clear, but our study indicates that a top-down appreciation of open innovation at least makes possible the comprehensive shifts in thinking and working that are needed.