

Knowledge entrepreneurship: institutionalising wiki-based knowledge- management processes in competitive and hierarchical organisations

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Abstract

Social media in general and wikis in particular offer unique opportunities for knowledge management. Despite widely publicised successes in public settings, wikis in businesses evince mixed results; enterprises struggle to apply wikis to institutionalise knowledge-management practices. We investigate the inherent tensions underlying knowledge-sharing in competitive and hierarchical organisations. Our application of the multi-level organisational learning framework demonstrates that, although wikis facilitate some important learning stages, other critical challenges remain. A unique blend of project leadership can facilitate the institutionalisation of wiki-based knowledge-management processes. To observe the leadership archetype, we use a longitudinal case study of wiki use within a division of NBC Universal. On the basis of our observations, we propose a new archetype of project leadership called Knowledge Entrepreneurship that integrates managerial skills, technology affordances, and critical factors in knowledge-management processes.

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Introduction

The importance of, yet challenges in, managing knowledge in organisations has been a topic for a myriad of research. Despite the advantages that properly managed institutional knowledge brings to organisations, impediments lie in the knowledge supply. Employees persistently demonstrate limited inclination to share their knowledge they see as exclusive personal property (Long and Fahey, 2000). In competitive and hierarchical settings where organisations bestow constrained resources (e.g., raise and promotion) upon individual performers rather than team efforts, this reticence can be substantial.

The information systems (IS) community has investigated how computerised systems can resolve this well-known problem. Recent attention focuses on enterprise social systems in general and wikis in particular because of their affordances that are expected to aid organisations in knowledge

management. In particular, wikis allow users to craft and re-craft content, to build on others' contributions, to try out new ideas, to make knowledge visible, and to preserve content in ways that were difficult, if not impossible, in prior knowledge-management systems (KMS) (Faraj *et al.*, 2011; Treem and Leonardi, 2012).

However, there is a conflict between the potential of wiki approaches and empirical observations in the corporate world. Wiki affordances do not translate to organisational knowledge processes as organically as expected (Grudin and Poole, 2010). Instead, the case studies that report ineffective wiki knowledge projects routinely indicate two inhibitors in organisational settings that impede the wiki affordances: A lack of user motivation and organisational tension. In hierarchical organisations, employees may be reticent to revise others' posts publicly, especially their superiors' posts, because a revision

can be perceived judgemental or evaluative (Barry, 2009; Beylier *et al.*, 2009; Grudin and Poole, 2010). Also, the open culture associated with wikis conflicts with hierarchical organisational structure (Faraj *et al.*, 2011). Owing to the two inhibitors, many organisations fail to integrate exploratory initiatives for wiki-based knowledge processes into the organisational norms, standards, and culture to an exploitation point where the knowledge assets increase flexibility, productivity, and innovation.

A leadership archetype may mitigate these two inhibitors, while enabling the wiki affordances, thereby being indispensable to the institutionalisation of wiki-based knowledge processes. Our suggestion of a dedicated leader as a solution comes from both practice and theory. Practically, several case studies in which wikis facilitated knowledge processes attribute their successes to charismatic project leaders (Stocker *et al.*, 2012). Theoretically, strong leadership assuages difficulties in the institutionalisation processes (Crossan *et al.*, 1999). By suggesting dedicated leadership to bridge the potential of the wiki affordances to the contrasting empirical findings, we address the conflict in the literature on social media and knowledge management.

In our search for a leadership archetype, we use multi-level organisational learning processes that lead to institutionalisation as an overarching theory (Crossan *et al.*, 1999). This theory identifies how innovations, such as wiki-based knowledge processes, are intuited by an individual, interpreted and integrated by a group, and finally institutionalised by the entire organisation, overcoming impediments that arise in the processes. Along this multi-level learning processes, we identify a set of management skills necessary for each phase, integrating (i) the wiki affordances, (ii) managerial skills, and (iii) factors pertinent to knowledge management in a competitive and hierarchical organisation. These qualities of leaders to mobilise not only technological, but also managerial and knowledge-specific resources and strategies, help wiki-based knowledge processes withstand tensions that arise during the institutionalisation processes.

A longitudinal case study of wiki use within a division of NBC Universal, one of the largest media and entertainment companies in the United States, offers an empirical example of this leadership archetype. At NBC Universal, a wiki successfully fostered wiki-based knowledge processes in a hierarchical organisational structure. At the core of the wiki's success was a dedicated leader. We collected data over 15 months, observing the wiki project on site, interviewing the leader, key contributors, organisational head, and users. By iterative analysing the results and grounding them in theory, we refined an archetype of leadership, namely, knowledge entrepreneurship. We conceptualise the newly observed leadership type by grounding it in the sociology theory of institutional entrepreneurs (IEs), because of their commonalities in applying social skills rather than managerial edicts to encourage user participation.

The remainder of this paper is organised as follows. The next section reviews previous studies on knowledge management, social media affordances, and empirical case studies that attest to the hindrances to social media affordances. From this hindrance, we detail our research objective and contribution. Next, we propose our overarching theory, the multi-level organisational learning processes, and then analyse the learning processes that wikis do and do not afford. From the

unsupported processes, we derive the need for a dedicated leader who attends to these overlooked processes. We describe the NBC Universal case where we empirically observe and identify this leadership type. Then, we conceptualise the observed leadership in the theory of institutional entrepreneurship to propose knowledge entrepreneurship. Finally we conclude by discussing limitation and contributions of this study.

Literature review

Knowledge management in business organisations

Knowledge is a valuable resource for organisations (Kogut and Zander, 1992); a key function of a firm is its unique ability to integrate the knowledge of its employees and create new knowledge (Grant, 1996). As a result, many organisations spend considerable time, effort, and money attempting to create and manage knowledge more effectively (e.g., Nonaka, 1994). One of the topics of particular interest to the IS community is whether and how computerised software applications, called KMS, assist knowledge processes (Alavi and Leidner, 2001).

Historically, KMS evince mixed results (Alavi and Leidner, 2001). Tensions develop primarily for reasons of knowledge supply, not knowledge demand; expert employees are reluctant to share their knowledge with others. Employees equate the sharing of their knowledge as surrendering wisdom to the group that they see as their exclusive personal property (Long and Fahey, 2000). Another reason lies in the difficulty of explicitly codifying tacit knowledge (Kreiner, 2002). Tacit knowledge is undocumented and available only in the minds of employees; thus, externalising it into explicit documents is a substantial challenge (Nonaka and Takeuchi, 1995). Consequently, KMS have not completely resolved knowledge-management challenges.

Using social media for organisational knowledge management

Recently, the emergence of social media offers renewed hope for greater success. Social media refers to platforms that enable 'people to connect, communicate, and collaborate' (Jue *et al.*, 2009). The unprecedented speed and reach of communication via social media combined with reductions in costs and effort enable organisations to gather contextualised information from a large voluntary crowd, thereby reducing the challenges encountered by KMSs (Hemsley and Mason, 2012; Jalonon, 2014). Social media-enabled knowledge processes lead to increased productivity and innovation in the user organisations (Kane *et al.*, 2014).

To explain how social media improve knowledge processes, many previous researchers argue that social media provides five affordances not found in traditional KMS (Kane *et al.*, 2009; Faraj *et al.*, 2011; Treem and Leonardi, 2012; Wagner *et al.*, 2014). Social media provides a publication outlet where users' knowledge – once invisible – becomes visible to others in the organisation (i.e., *visibility*) and preserves the original posts for later reference (i.e., *persistence*). Social media also allows contributors to refine posts by crafting and re-crafting them (i.e., *editability*) and to build connections with other users and with the content shared on the wikis

(i.e., *association*). Lastly, social media encourages individuals to try out novel ideas (i.e., *experimentation*).

These five affordances are believed to enhance knowledge processes (Faraj *et al.*, 2011; Treem and Leonardi, 2012). For example, *visibility* and *editability* make it easier for users to codify their tacit knowledge into explicit forms; *association* enables users to collaborate with others (Majchrzak *et al.*, 2009; Steinfield *et al.*, 2009). While sharing knowledge with others, users *experiment* with new ideas, creating new knowledge. Users internalise knowledge, taking advantage of *persistence* of the preserved content on social media sites (Majchrzak *et al.*, 2009).

Using wiki in the corporate world

One form of social media is a wiki, a 'freely expandable collection of interlinked Web pages, a hypertext system for storing and modifying information – a database, where each page is easily editable by any user with a ... Web browser client' (Leuf and Cunningham, 2001: 14). A large number of social media applications exist, but each serves a different purpose (Argyris and Monu, 2015). Firms frequently employ wikis specifically for knowledge management (Kane and Fichman, 2009; Treem and Leonardi, 2012; Argyris and Monu, 2015). Other social media applications provide assistance to one or more aspects of knowledge processes: for example, social networking sites help identify experts, who in turn may be elected to share knowledge with others (Steinfield *et al.*, 2009). However, wiki's freely editable pages and conversational nature are particularly useful for internal knowledge-management processes (Wagner, 2004; Majchrzak *et al.*, 2006; Kane and Fichman, 2009; Treem and Leonardi, 2012; Argyris and Monu, 2015).

This section reviews previous empirical studies that provide real-world evidences to benefit of wikis to organisational knowledge-management processes. Searching for such empirical support is important because many of the previous studies that advocate the benefits of wikis are conceptual (Wagner, 2004; Jarvenpaa and Majchrzak, 2010; Faraj *et al.*, 2011; Treem and Leonardi, 2012). Yet, although empirical, some studies in this context primarily investigate related, yet different topics, such as external communication with customers (Jeppesen and Frederiksen, 2006; Wagner and Majchrzak, 2006; Meyer, 2010; Bayus, 2012), social capital building (Ellison *et al.*, 2007; Gray, 2011; Bharati *et al.*, 2015), or contributors' motivations to share (Wasko and Faraj, 2005; Bateman *et al.*, 2011; Yates *et al.*, 2010).

We focus on case studies that involve on-site observations in the corporate world, rather than user surveys and secondary/historic data analyses (e.g., social network analyses). Since case studies investigate complex topics in real-world contexts in which pertinent events occur and evolve, case studies identify first-hand instances (Walsham, 1995; Cavaye, 1996). Tables 1 and 2 summarise case studies of wiki-based knowledge processes.

In aggregate, wiki's affordances do *not* translate into benefits in organisational knowledge processes as easily as the conceptual studies have argued. There are two groups of case studies that clearly contrast each other: One group reports successes (Table 1), while the other group shows ineffective cases (Table 2).

Success cases on wiki use

The success cases show wikis that captured employees' knowledge, encouraged them to share and exchange ideas, and

finally led to flexibility and innovation in the user organisations (Table 1). Notably, the majority of these cases, except for Arazy *et al.* (2009), report a commonality that is not found in the conceptual studies. While the conceptual studies argue that the wiki affordances *emerge* in the user organisations, the case studies report that the wiki affordances were rather *made available* by dedicated leaders' initiatives (Table 1). In other words, previous conceptual studies rarely mention leadership as a necessary condition for the wiki affordances, but the success cases note that leadership was a necessity. Specific examples are: (1) One employee volunteered to lead the wiki project and made sure that the wiki was used in such ways that it improved knowledge processes (Kosonen and Kianto, 2009); (2) a dedicated project leader oversaw the entire project and drove its success (Raman, 2006); and (3) a project leader built an initial knowledge base in the wiki and encouraged other employees to chime in their knowledge in the wiki (Stocker *et al.*, 2012). In sum, the majority of success cases attest to the necessity of leaders who exploited the wiki affordances for wiki-based knowledge processes.

Ineffective cases on wiki use

Ineffective cases show that few of the wiki affordances emerged, and subsequently, wikis did not facilitate knowledge processes (Table 2). Like in the success cases, two common inhibitors pertinent to organisational settings were found: (1) A lack of user motivation and (2) tension in the organisation. The conceptual studies have not specified these inhibitors. In competitive business organisations, users are not strongly motivated to share their knowledge voluntarily with others without receiving tangible incentives (Arazy *et al.*, 2009; Arazy *et al.*, 2010; Arazy and Gellatly, 2012). Employees are extrinsically motivated to advance their careers, increase their professional profiles in the enterprise, and earn financial incentives (Arazy *et al.*, 2010). This orientation towards tangible benefits becomes stronger in a competitive environment in which employees contend for limited resources against other employees. As a result, employees are reluctant to share their knowledge with other members with whom they compete (Arazy *et al.*, 2010). In addition, a lack of anonymity in enterprise wikis contributes to low user motivation; enterprise wikis reside within the corporate firewall, so one can easily track who adds, modifies, and corrects content (Grudin and Poole, 2010; Arazy and Gellatly, 2012). This lack of anonymity hampers users' desire to correct and revise others' postings (Grudin and Poole, 2010; Arazy and Gellatly, 2012). Employees in a hierarchical enterprise often find it inappropriate to publicly correct others' contributions, especially their superiors' (Payne, 2008; Kosonen and Kianto, 2009) as doing so might appear judgmental or evaluative (Beylier *et al.*, 2009; Grudin and Poole, 2010).

Second, tension between the fluid nature of knowledge sharing in wikis and the existing traditional organisational structure impedes the wiki affordances. The dynamic and fluid culture for knowledge-sharing in wikis can conflict with the standardised procedures of the organisation (Faraj *et al.*, 2011). Middle managers felt threatened by the possible flattening of organisational hierarchy and intentionally avoid contributing to wikis (Hasan and Pfaff, 2006). Indeed, middle managers who received conflicting demands from senior managers and staffers withdrew the resources necessary to

Table 1 Case studies of wiki successes

<i>Author</i>	<i>Site</i>	<i>Primary reason for success</i>
Kosonen and Kianto (2009)	Engineering firm	<ul style="list-style-type: none"> ● Committed project leader ● Construction of an initial knowledge base ● A supportive organisational culture
McKelvie <i>et al.</i> (2007)	Market research consulting company	<ul style="list-style-type: none"> ● Management efforts to help employees learn the wiki's technical features.
Raman (2006)	Claremont University Consortium	<ul style="list-style-type: none"> ● A dedicated project leader ● Collaborative organisational culture ● Sufficient user training, information consolidation and integration
Grace (2009)	Mapa, eBay, and Ingenta	<ul style="list-style-type: none"> ● Management of the quality of content shared on the wikis
Stocker <i>et al.</i> , 2012)	Microelectronics company, and an engineering services company	<ul style="list-style-type: none"> ● A dedicated leader ● Supportive team performed editorial duties ● Construction of an initial knowledge base ● Collaborative organisational culture
Arazy <i>et al.</i> (2009)	IBM	<ul style="list-style-type: none"> ● Fit with user needs ● Enjoyment of using wikis. ● High technology proficiency among employees ● User autonomy without censorship
Chau and Maurer (2005)	Software development company	<ul style="list-style-type: none"> ● Availability of information ● Ease of use ● Motivation to help others ● Support from management

Table 2 Case studies of wiki failures

<i>Author</i>	<i>Site</i>	<i>Primary reason for failure</i>
Jackson (2010)	Construction materials manufacturer	<ul style="list-style-type: none"> ● Low contribution
Trkman and Trkman (2009)	Software development department	<ul style="list-style-type: none"> ● Low contribution ● Absence of a formal editorial staff or moderators to maintain the wiki
Garcia-Perez and Ayres (2010)	Research division of a large technology company	<ul style="list-style-type: none"> ● Low contribution
Grudin and Poole (2010)	Three large companies and three small technology start-ups	<ul style="list-style-type: none"> ● Content disorganisation and inflexibility of the wiki ● Poor integration of the wikis into the existing corporate culture
Hasan and Pfaff (2006)	Educational institution	<ul style="list-style-type: none"> ● Middle managers' reluctance to share knowledge and fear for flattening of the organisation hierarchy. ● Possible vandalism, missing recognition for authorship, and poor quality assurance in wikis
Stocker <i>et al.</i> , 2012)	IT services company	<ul style="list-style-type: none"> ● Uncomfortable editing tools ● Low relevance of the wiki content to daily functions
Holtzblatt <i>et al.</i> (2010)	Not-for-profit organisation	<ul style="list-style-type: none"> ● Employees' reluctance to share knowledge ● Employees' unwillingness to share 'unfinished' work ● Lack of guidelines and standards

maintain the wiki; others hid important documents in order to hinder users from contributing to the wiki (Grudin and Poole, 2010). In addition, employees are concerned that the content they share publicly might be used against them (Holtzblatt *et al.*, 2010); such risk-avoidance impedes contribution (Arazy and Gellatly, 2012).

These two factors diminish potential benefits from wiki affordances; subsequently, contributions to wikis wither away. In one case, employees hardly used the wiki and the initial

enthusiasm for the new technology quickly waned (Trkman and Trkman, 2009; Garcia-Perez and Ayres, 2010). In another case, explicit rewards had only a temporary effect and did not necessarily sustain user contribution (Garcia-Perez and Ayres, 2010). In yet another case, user contribution peaked temporarily, but declined sharply when management cancelled the incentives for their contributions (Jackson, 2010).

In summary, unless the user organisation addresses the lack of user motivation and structural tension, the effectiveness of

wiki affordances are reduced, and wiki-based knowledge processes dwindle before they become fully engrained in the organisational routines, standards, and culture (Kane and Alavi, 2007). The institutionalisation of wiki-based knowledge processes is essential for the viability, effectiveness, and success of organisational knowledge management because it takes time to create, store, transfer, and apply knowledge to a point where knowledge management can realise its intended goals, such as increased productivity, flexibility, and innovation (Alavi and Leidner, 2001; Rémy and Dai, 2010; Kane *et al.*, 2014).

Research questions derived from the literature review

Our literature review isolates two missing pieces in the conceptual studies on the benefits of wiki to knowledge processes: An *enabler* and *inhibitors* of wiki-based knowledge processes. Leadership *enables* the wiki affordances to emerge, while the lack of user motivation and organisational tension *inhibit* the organisations from fully utilising the wiki affordances, subsequently hindering the institutionalisation of wiki-based knowledge processes.

To supply these two important missing pieces to the literature, we suggest a dedicated leader as an enabler who can exploit the wiki affordances and simultaneously address the two inhibitors, thereby being indispensable to the institutionalisation of wiki-based knowledge processes. A rationale for our suggestion comes from both our review of the case studies and the theory on the institutionalisation. First, the majority of success cases attribute their successes to dedicated leaders; none of the ineffective cases report existence of leaders for the wiki projects. In particular, two ineffective cases specifically attribute the failures to the absence of leadership (see Trkman and Trkman, 2009 and Holtzblatt *et al.*, 2010). One case identified middle managers' sabotage as a critical reason for failure (Hasan and Pfaff, 2006). Also, the theory of multi-level organisational learning process, which describes how an organisation learns a new practice to the point of institutionalisation, suggests that leaders provide traction to overcome challenges in the institutionalisation processes. Towards this end, we identify an archetype of leadership that can nourish the wiki affordances and overcome the challenges in the institutionalisation of wiki-based knowledge processes.

Conceptual framework

In our search for a leadership archetype, we use the multi-level organisational learning process (Crossan *et al.*, 1999) as a theoretical base. This theory explains how organisations overcome tensions resulting from experimentation with a novel practise (such as wiki-based knowledge processes), diffusion throughout the entire organisation, and finally institutionalisation into standard routines, procedures, and organisational norms. Below, we first describe the multi-level organisational learning processes, and then apply this theory to wiki-based knowledge processes, in order to establish a conceptual framework for the analysis of our case study soon to follow.

Multi-Level organisational learning processes

In order to better understand how an organisation overcomes tension and learns a new practise to the point of institutionalisation, Crossan *et al.* (1999) suggest that researchers should

recognise an organisation as a multi-level entity that consists of individuals, groups, and the entire organisation (Crossan *et al.*, 1999). Each level conducts different processes; yet spillover occurs across the levels. Learning occurs across these three levels through 4I processes – intuiting, interpreting, integrating, and institutionalising (see Figure 1 and Table 3). An innovative idea is conceived by an individual (*intuiting*), is developed through conversation with a group (*interpreting*), mobilises coherent and collective action in the group (*integrating*), and then expands to the entire organisation (*institutionalising*). The transition from one process to another does not occur automatically. Many novel ideas do not proceed to the next level while organisations do institutionalise others; leadership can promote this progression of learning from one level to the next (Crossan *et al.*, 1999).

Applying the theory to wiki-based knowledge processes

An individual *intuits* the idea of improving internal knowledge process using a wiki. The individual shares this intuition with a core group of supporters. The individual and the support group *interpret* the idea together; in so doing, the individual alone or with the group develops a cognitive map illuminating the domains of relevant knowledge to share via a wiki.

Subsequently, the support group members begin to *integrate* knowledge-sharing into their daily functions. They initially enter content into the wiki, experiment with ideas and opinions, codify their tacit knowledge, and build on content from others. For the integrating processes, two of the affordances of wikis help – experimentation and visibility. Users can easily express, develop, and refine ideas and thoughts (Faraj *et al.*, 2011), and make their knowledge observable (Treem and Leonardi, 2012). These two abilities help contributions flourish.

Finally, the wiki-based knowledge processes expands to the entire organisation, becoming routine. These *institutionalising* processes find support in the wikis' affordance to help users to connect separate pieces of content together as well as to connect with other contributors to craft and re-craft their thoughts (Treem and Leonardi, 2012). Taking advantage of these abilities, a large number of organisational members begin making contributions, recombining their ideas with others, editing, revising, and correcting others' postings, leading to the construction of the wisdom of crowd (Leuf and Cunningham, 2001). In addition, wikis facilitate the institutionalisation process by preserving content posted on wikis so that users can review content as needed, aiding in the formation of a new routine.

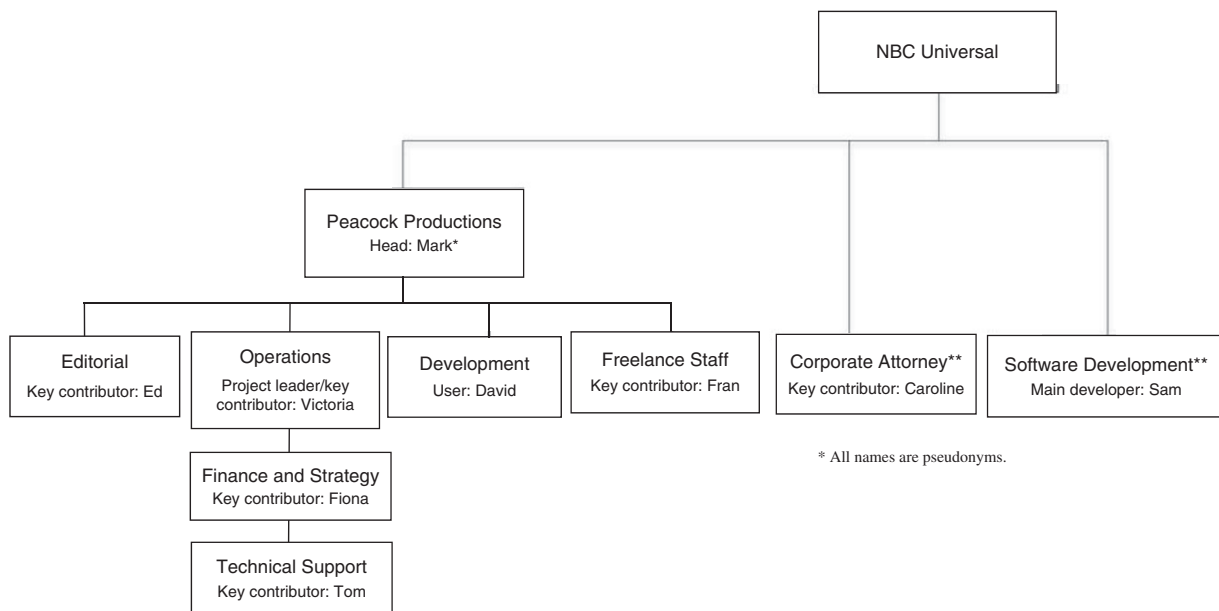


Figure 1 Multi-level organisational learning processes.

Table 3 Multi-level organisational learning processes aided or less aided by wikis

Levels	4I Processes	Inputs/outcomes	Wikis' abilities
Individual	Intuiting	Experience	Not applicable
Group	Interpreting (Social activity)	Language (developed through an interactive conversational processes)	Not applicable
		Cognitive map	Not applicable
Organisation	Integrating (Coherent, collective action)	Dialogue (evolved from the language to collective thinking)	Not applicable
		Shared understanding/Mutual adjustments	Experimentation, Visibility
		Routines	Persistence, Association, Editability
	Institutionalising	Diagnostics system (to ensure that the routines are carried out continuously)	Not applicable
		Rules and procedures	Not applicable

Note: Shaded cells are the 4I processes unattended by wikis' abilities.

**Figure 2** Organisation chart and interviewees.

Needs for leadership

Wikis facilitate two important learning processes: initiating the integration process and establishing routines in the process of institutionalising. Yet, wikis offer less support to other processes (Table 3). For instance, wikis offer less support to the interpreting process and the dialogue part of the integrating process where the entrepreneur shares his/her ideas with a core group to mobilise support. Sharing the idea with key constituents of the organisation is one of the most crucial parts because ideas need strong advocates to withstand tension during the 4I processes (Crossan *et al.*, 1999). However, wiki technology alone does not aid in these processes. Leadership can support the learning processes unattended by wikis (Crossan *et al.*, 1999).

In the next case, we propose a new leadership type that complements the wiki affordances by supporting the learning processes not attended by wikis, such as interpretation and some parts of integration. Combined with the wiki affordances, this leadership archetype can smooth transitions in the institutionalisation of knowledge collaboration.

Case: an enterprise wiki implementation within NBC Universal

Peacock Productions (Peacock henceforth), a division of NBC Universal, produces long-form documentaries, live specials, event coverage, and reality/docu-soap series for network and cable channels, such as MSNBC, A&E, Discovery, and The Weather Channel. Peacock, like any other NBC Universal divisions, was

owned by the joint venture between General Electric (49% share) and Comcast (51% share) at the time of the wiki launch. Thus, Peacock had access to various software applications and IT infrastructure owned by General Electric and Comcast.

The media/entertainment industry is volatile and fiercely competitive. The recent surge of new media outlets, such as Internet TV and streaming videos, has increased demand for programs. Simultaneously, the advance of personal filming devices has allowed small-cap, independent content providers to emerge, increasing competition. In this volatile and competitive landscape, user ratings and viewership changes immediately gauge each producer's performance. Highly rated programs continue while lower rated ones are terminated quickly.

To adapt to the fluctuations in demand for programs, Peacock initiated efforts to restructure itself into an agile organisation. Previously a small unit with a full-time, long-term staff, Peacock expanded its size by adding short-term contractors and freelancers to its full-time staff. Peacock consists of three internal divisions – Editorial, Operations, and Development – and two support divisions – Software Development and Legal that are under direct control of NBC Universal (Figure 2). The Operations division provides assistance to the Editorial division, which is in charge of producing programs. The Operations division consists of Finance and Strategy and Technical Operations. The Development division identifies new scripts, locations, and talent for Editorial. Software Development and Legal reside in NBC Universal and support Peacock. Each internal division consists of a dozen long-term core staff members, including the director and the managers, with freelance staff and short-term contractors hired as needed. Peacock had 40 core staff members, while 100–200 people could be working at any given moment, resulting in a constant in- and out-flux of new hires and contractors. This competitive business landscape and volatile organisational structure require effective knowledge management. Because employees frequently join and leave Peacock, Peacock must share information with new hires to make them effective quickly and prevent knowledge loss because of employee attrition.

Despite such necessity, organisational conflicts and lack of appropriate systems critically challenged knowledge management at Peacock. First, reflecting the competitive industry, the core employees lacked sufficient time to educate new hires; urgent demands precluded investing in new hires. New hires – that is, freelancers and short-term contractors – did not seek knowledge about Peacock either because they expected to leave the company soon. To make matters worse, Peacock did not have an appropriate KMS that fit its organisational structure and needs.

Two KMS before the wiki failed to meet these needs. One system, originally designed for General Electric as the backbone for workflow management, had limited functionality, rigid search features, and a cumbersome user interface incapable of supporting content-sharing across diverse crucial formats (text, images, PDFs, uploaded files, video, etc.) necessary for an entertainment/media company. The second was a newsroom computer system that was designed for NBC Universal to display breaking news in real time; hence was not geared for long-form documentary programming – Peacock's primary genre.

Data collection and analysis

Our data collection started one month before the wiki launch and continued for the next 15 months. During the data

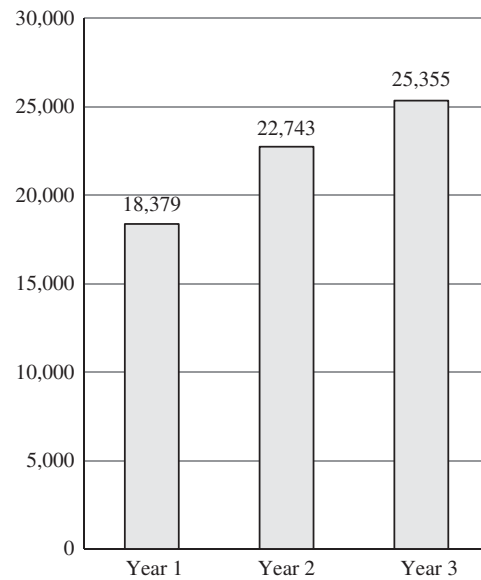


Figure 3 Page views (Google analytics).

collection, we iteratively analysed the data, refined our theories, and then re-designed data collection and iterated these processes (Corbin and Strauss, 1990). After the completion of the initial 15-month observation period, we continued to track the institutionalisation of knowledge collaboration over 2 years by following up with the project team.

The 15-month data collection involved two phases. The primary goal for the first phase was to observe how the organisation institutionalised knowledge collaboration. Hence, we conducted three rounds of less-structured, open-ended interviews and observations on site. Also, we collected usage statistics (Figures 3 and 4) and documentation used for the wiki implementation.

As our analyses of the data collected from the first phase showed firm institutionalisation of knowledge collaboration, we proceeded to the second phase of data collection. The second phase involved two sets of structured interviews. The first set of the two structured interviews was conducted with the organisational head, the project leader, four key contributors, and four users (all individually interviewed). These interviewees represent three important groups: management, key contributors, and users. We interviewed four of the six key contributors who primarily added content to the wiki; examples of the questions for these contributors included: 'Please describe what motivated you to contribute to the wiki' and 'Please describe how posting on wiki affected your job performance before, during, and after the launch of wiki'. The four users we interviewed were not involved in the wiki development and hence offered relatively objective assessments of it. To properly represent the entire user pool at NBC Universal, we selected one user from each of the three divisions at NBC Universal – Operations, Editorial, Development – and a freelancer to represent short-term contractors. Examples of the questions for the users included: 'Do you review content posted on wiki?' 'Do you edit/reply/revise some of the content?' and 'How does it affect your daily functions?'

After analysing the first set of interviews, we conducted the second set of interviews with all six key contributors, including

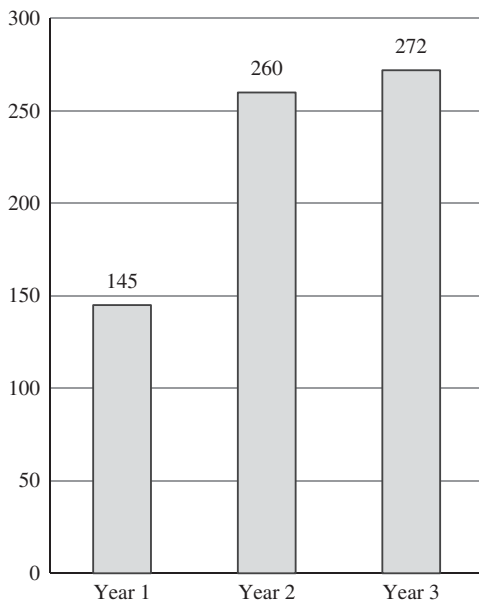


Figure 4 Number of user-contributed pages (Google analytics).

the two who were not available at the first-round interviews. The questions were more specific to the organisational learning processes and the leadership style: ‘Was entering content into the wiki time-consuming? What did the project leader do to encourage you to continue to contribute?’ After analysing the second-round interviews, we interviewed the project leader again to verify the strategies she used. Examples of the questions include: ‘How did you motivate the key contributors to enter content into the wiki? Did you experience any resistance from the key contributors? How did you resolve the resistance?’

All of the interviewees who participated in the three structured interviews were guaranteed anonymity and confidentiality; all names are pseudonyms. Each interview session took 30–90 min and was professionally transcribed.

The knowledge-management predicament at Peacock productions

As described in the *Site Description* section, before the adoption of the wiki, Peacock needed a KMS to respond to the frequent influx of temporary employees. Tom, a key contributor, explained ‘Our business model had changed a little bit; we used to be a smaller unit with all staff people and, as we grew, we started using more and more freelancers on a project-by-project [basis]. So we were bringing a lot of people in for single projects. And coming into our group, they needed to learn all the things you need to [know] to work at [Peacock]’.

Rise of an IE

The absence of a KMS resulted in significant wasted productivity for new freelancer contractors and for core staff. The time that core staff members were supposed to invest in developing and producing programs was instead devoted to answering repeated, mundane questions. Victoria, the director of operations, realized that knowledge management at Peacock had become chaotic and saw the need for an effective KMS. She noted, ‘A big chunk of my day, every day was spent telling people how to do things around the office. And I said to

myself, “This is killing me.” I’m ending up having to stay late to finish my normal work because [for] all these people, I’m their go-to person and they’re all coming to me to ask the same questions over and over’.

Victoria was well aware of the capabilities of social media and ready to embrace it. She formed a task force and initiated a search for potential KMS. Peacock had access to many applications and technologies through General Electric, which was then a parent company. One option was an enterprise wiki (Confluence, produced by the Australia-based company Atlassian.com). Victoria decided to adopt this wiki because it was easy to use, inexpensive, readily available, and the wiki platform installation was effortless and instantaneous. Victoria described the process: ‘General Electric is such a large company and we have systems within the company that nobody knows about. And soon enough it was [Steven, an assistant wiki developer] who said, “You know, we have a wiki.” And we said “Hmm, a wiki. That sounds like it might be something interesting that we could use”’.

Victoria suggested to Mark, the organisation’s head, that Peacock establish a wiki to allow any employee to document and access knowledge. Victoria explained to Mark that a wiki was readily available and that the implementation cost would be minimal. Mark approved her idea instantly because poor information flow had been a common complaint. Victoria recalled: ‘It didn’t take much to convince him. I said, “I feel like we need this.” And he said, “Okay, go for it.” I think that if I came back to him two weeks later and said, “It’ll cost \$200,000 and take two years to develop,” he may have said, “Okay, hold on, let’s re-evaluate.” But because it ended up being such an easy solution, he was quite fine with just allowing me to do it, make it happen’.

Mark later recounted: ‘I pretty much delegated it and gave her autonomy. I depended on [Victoria] and the people that she recruited to develop it and come to it’. Victoria’s position as project leader for the wiki project was not an official one; however, because Mark delegated the project to her, she was perceived as the *de facto* project leader. In addition, she was committed to improving the poor information flow at Peacock. Fran, a key contributor, explained that ‘[Victoria] was the driving force. She’s very innovative and creative, and she’s a whiz at organisation’.

Inducing cooperation among middle managers

Victoria’s task force decided to seed initial content before launching the wiki. An initial knowledge base that contains a sufficient amount of useful information attracts and persuades employees to use it (Farenhorst and Vliet, 2008). Tom, a key contributor, explained the decision: ‘It doesn’t make sense to release the wiki unless it has a certain critical mass of information. Otherwise people will go to it and maybe they won’t find what they want, or they will poke around and see that it has just a few things and think it’s not as useful as they would want. There has to be a certain amount of stuff in there to just get people started and show them it’s a good resource’.

To build the initial knowledge base, Victoria needed expert employees to contribute their knowledge. To elicit cooperation, Victoria carefully selected key employees with expertise on a wide range of topics that would enhance the perceived usefulness of the wiki. First, she contacted the director or manager of each division. For divisions with more than one

director, Victoria contacted the one with whom she had worked closely in the past and thus could convince more easily. These six managers, including Victoria, represented the majority of the departments (see Figure 2): Ed (senior producer in Editorial), Fiona (manager in Finance & Strategy), Tom (manager in Technical Support), Fran (director of freelance staff), and Caroline (corporate attorney in Legal). Victoria explained her choices: 'They all have key expertise. So Tom is our kind of technical guy. Fran is our staffing person, so she deals with a lot of the human resources elements of the job. And Ed is in production, he's a senior producer, and he deals with a lot of the on-the-ground stuff, the actual producing'.

Victoria used a discursive strategy to encourage these managers to cooperate. She developed the catchphrase 'It's in the wiki', which incorporated two meanings: (1) the wiki is the comprehensive information repository for all employees (i.e., 'If you need to know something, it's in there.'), and (2) the wiki can increase contributors' efficiency because contributors can redirect the repetitive questions from freelancer contractors to the wiki (i.e., 'It' = efficiency: *Efficiency* is in the wiki). The latter point emphasises that contributing to the wiki benefits the contributors themselves as the contributors will be able to focus on their core tasks, train freelance contractors easily, and subsequently increase their own productivity. In short, Victoria provided a convincing reason to cooperate: The completed wiki would create a common good and benefit the contributors in particular.

Victoria used her social skills by demonstrating an understanding of potential contributors' problems and by empathizing with them. She recalled: 'We were all struggling with the same issue So when I came to them and said, "Are you guys interested in something like this?" they felt the same way I did. If they could input some time now up front, it would save them a massive amount of time on the backend. And the reason why I picked those people was interesting because, really, they're a lot like me'. Tom, a key contributor, mirrored Victoria's outlook on the project: 'If anybody asks me "How do I fix this?" I can just say, "It's in the wiki" '.

Although Victoria earned the key contributors' support and their agreements to contribute, getting them to write was difficult. Victoria explained: 'All of us had very busy schedules and had a lot on their plate. So it did take some cajoling and a little bit of pushing to get them up and rolling'. At first, few contributed content as Victoria had asked; the senior managers she chose as key contributors had busy schedules and did not see immediate benefits of contributing to wiki at the expense of their limited time. Six months passed with little content entered. Victoria needed to devise a plan to get them started. To give each contributor a sense of responsibility, she built a map of needed topics and assigned managers to each. 'I wasn't getting a ton of responses, so I ... wrote a table of contents and I assigned people to each item. I sent that around to them, because I thought that we needed a starting point. I said "Here is a first draft and here are the assignments" '.

Once the key contributors had their assignments, they took ownership and began contributing. The contributors quickly learned that a wiki is customisable, flexible, easy-to-use, and most of all, enjoyable. Experimentation with the wiki began. They noticed that contributing helped polish their knowledge because the wiki visualised their knowledge. Ed, a key contributor, said: 'Because we have been down the road, you

know every project has its thing where [an issue] comes up and yet you can't predict it How you do that is a very good thing to [know]. I remember re-writing [these] things What do I do from beginning to end? What do I need to know? What are the expectations of a producer who walks in? As I'm writing these things up it's really actually helping me because it's refreshing my memory on how to do some of this stuff'. Victoria added: 'I think for a lot of people who used the wiki, it was a refresher course. It gave out a lot of knowledge, as well. That was one of the benefits All of us who made it, it made us better at our job'. As the contributors recognised how enjoyable and helpful it was to contribute, they started voluntarily adding content on their own. Tom noted that, 'at this point, it's sort of taken on a life of its own. It's at a point where we don't feel we need to go through [Victoria] to update the wiki. Really, it's sort of become its own master'.

Launch and promotion of the wiki throughout the organisation

Victoria's task force solicited 145 pages covering 240 topics over 9 months; they then launched the wiki. Next, she promoted the wiki to the entire staff to institutionalise knowledge collaboration. Victoria presented the wiki at a monthly staff meeting and reached those who were unable to attend the meeting via other channels such as email.

Within days the wiki gained momentum (see Figures 3 and 4). Just 1 month after the launch, the system had more than 1300 visits. After its launch in 2010, page views increased continuously: 18,379 page views in 2010, 22,743 page views in 2011, and 25,355 page views in 2012. The continually increasing page views indicated that interest in the wiki persisted long after the honeymoon period, and the system became integrated into staff members' routines.

Institutionalisation of wiki-based knowledge processes

The deployment of the wiki led to the institutionalisation of wiki-based knowledge processes. The wiki enables small contributions from a broad community of users. When employees do not find the information they have in the wiki, they either enter it into the wiki or inform Victoria's task force, which enters the content without delay. Ellen, a user, said, 'There are instances where I thought other people might be interested in information that I had, so I added it to the wiki. Also, I've made suggestions about information that's come my way so that I could share it with the rest of the staff'. Mark, an organisation head, added that the wiki is 'the culture we want to create. It's the type of thing that people come in and embrace and that's the kind of people we want here'.

Continuous effort

Victoria's task force continues to ensure that wiki-based knowledge processes become part of the organisation's routine. Using her position as a legitimate leader, Victoria periodically encourages the key contributors to keep posting content and other employees to bring to her attention any newly created content they believe worth sharing. Victoria convinced the top management to make wiki contributions as an acceptable service item in their annual performance review. Victoria periodically announces the newly created to the entire staff, raising visibility of the ongoing collaborative efforts.

In addition, Victoria educates new staff members about the wiki at their orientation so they utilise the wiki on a daily basis.

Furthermore, Victoria and her task force focus on content quality. One of the most common complaints about wikis is that content expands in an uncoordinated manner because multiple users add content at their own pace and without considering the overarching structure (Grace, 2009). The media and entertainment industry changes rapidly; therefore, content grows and changes. When it was first launched, the wiki started with 145 pages; in only 6 months, it had grown to 260 pages (Figure 4). Because of the organic proliferation of content shared on the wiki, Victoria's task force continually organises and integrates new content into the existing structure. Sometimes the same content is added repeatedly, and content is added under a wrong category. She explained that, 'When you keep on going in adding and changing things, it's very easy for a document to become incoherent. I noticed this page had gone all over the place, so I found myself going through and editing it myself, reworking the entire page and adding the new info ... At this point it makes sense to go through it and make sure everything looks good'. As a result of her continuous efforts for quality control and maintenance, she managed to prevent wiki content from becoming disorganised, anomalous, and redundant. Figure 4 shows that the number of wiki pages grew rapidly between the first and the second year, but the growth was carefully managed between the second and the third year.

Analysis of the case

Along the 4I processes (Table 3), the leader at NBC Universal utilised the wiki affordances, while providing traction to the processes unattended by the wiki affordances, being indispensable to the institutionalisation. In addition, some observations obtained from the case do not fit into the elements of the 4I processes nor the wiki affordances. Below, we detail these expected and unexpected findings, from which we derive an archetype of leadership.

Leadership roles in the intuiting phase

Victoria conceived the idea of using a wiki to improve knowledge processes because of the unique competitive landscape of Peacock and her knowledge of social media. As Victoria was in charge of Operations, she was cognisant of intense competition and volatile market demands in the media/entertainment industry, organisational restructuring, frequent personnel changes, and an absence of effective KMS. In addition, Victoria knew the social media affordances for knowledge processes. Consequently, she intuited the idea of wiki-based knowledge processes then emerged as the project leader.

Leadership roles in the interpreting and integrating phases

Victoria shared her idea with the organisational head, a group of supporters (who later became the task force), and middle managers (who later became the key contributors). The organisation head approved the wiki implementation partly because Peacock already had a wiki application and the IT infrastructure necessary for wiki implementation, such as an intranet, firewalls, and data centres. This technological foundation was critical for facilitating the interpreting processes at Peacock.

The task force and the key contributors became convinced about the necessity of using wiki for knowledge processes by the discourse that Victoria developed: 'It's in the wiki'. Victoria continued this discourse in the subsequent integration processes in order to engage the key contributors. Simultaneously, Victoria seeded an initial knowledge base with the key contributors' cooperation. The initial knowledge base began from Victoria's cognitive map (a 'the first draft') that she shared with the key contributors, leading them to contribute. Shortly thereafter, the wikis' abilities to facilitate experimentation and visibility emerged as contributors tried out new ideas and codified their tacit knowledge.

Victoria's passion and dedication led others to view her as a legitimate leader, not simply someone appointed by higher management. Being an actual leader is vital for user-driven content creation; a *de facto* leader obtains cooperation more easily than someone who has earned seniority in the hierarchy (Fligstein, 2001). In addition, Victoria empathised with the contributors. Because she managed the Operations division, which the inefficient knowledge-management processes most severely affected, she understood the difficulties that others faced. Victoria used her prior collegial work relationships to mobilise the expertise of contributors.

Leadership roles in the institutionalising phase

After the wiki launch, Victoria continued her effort to institutionalise knowledge collaboration. Victoria created new norms and practices for users to either enter or suggest new topics voluntarily. For instance, she introduced the wiki during the new staffers' orientation programme. The editorial staff and moderators, whom Victoria appointed, control and maintain the quality of content so that the wiki continues to be a valuable source of information.

The persistence affordance enables employees to review content at any time and helps the wiki become part of daily routines. Contrary to the expectations, the two affordances of wikis – association and editability – did not emerge clearly in the case context. Staff users entered new content into the wiki and built on others' content, but the majority of them still preferred to bring new content to the editorial staff's attention. This might reflect employees' reluctance to revise others' postings publicly – one of the two previously discussed inhibitors of wiki-based knowledge processes. Likewise, the contributors tended to craft content before entering it instead of editing and revising repeatedly as inaccurate content could mislead their associates; an absence of information was better than incorrect information.

Conceptualization of the new leadership type

We conceptualise the newly observed leadership type by grounding it in the existing perspectives on leadership. This conceptualization enables us to validate our findings by triangulation with the previous findings and to articulate the leadership archetype so that future researchers can expand it and managers can easily apply it to their projects. Among many perspectives on leadership, we find that a sociology theory of IEs shares many commonalities with the case.

IEs are organisational members who catalyse structural change, provide momentum, and guide direction (Battilana *et al.*, 2009). Unlike technology champions who apply mandates, authoritative control, and regulations (Howell and

Higgins, 1990), IEs use soft social skills and mobilise voluntary participation among stakeholders. In so doing, they develop a *discourse* that appeals to diverse stakeholders. The discursive strategy refers to phrases, texts, and dialogues that IEs prepare to convince stakeholders of the social construction of new orders (Jarzabkowski and Sillince, 2007). A second strategy used by IEs is to *induce cooperation* from dominant organisational constituents to promote their projects (Fligstein, 2001). To do so, IEs utilise *social capital* – their social relations that provide informational and political support for influencing others (Fligstein, 1997). IEs also use previously earned *positions that are perceived as legitimate* by diverse stakeholders. This legitimacy allows IEs to lead projects and coordinate collective actions among stakeholders. IEs also *empathise* with allies by relating to them through focusing on common problems. After the project is complete, IEs introduce *new standards and norms* to sustain the changes (Fligstein, 2001), including developing shared identity and membership, and establishing new standards (Fligstein, 2001).

IEs and the project leader in our case have commonalities, but also important differences. Both rely on soft social strategies, such as the use of discourse, social capital, legitimate position, and empathy, and establish new standards and norms to sustain changes once made. Unlike IEs, the project leader in our case understood the wiki affordances to foster knowledge collaboration. She integrated both soft social skills (used by IEs) and technology affordances appropriately along the 4I processes, knowing that social skills, which IEs employ, were not enough for the institutionalisation of wiki-based knowledge processes. In addition, she applied strategies specific to knowledge management – such as providing a cognitive map in the form of a table of contents to garner contributions, built an initial knowledge base to showcase the benefits of knowledge collaboration, and focused on content management, among others.

As such, we propose a leadership archetype appropriate for the institutionalisation of wiki-based knowledge processes – ‘knowledge entrepreneurship’ (Table 4). Unlike IEs, knowledge entrepreneurs apply a set of management skills, integrating (i) the wiki affordances, (ii) IE strategies, and (iii) factors pertinent to wiki-based knowledge processes (findings from the case). The ability to mobilise these diverse sets of resources and strategies helps wiki-based knowledge processes withstand the tensions that arise during the institutionalisation processes.

Intuiting

External factors, organisation-specific factors, and an individual’s knowledge in social media facilitate the person’s intuiting the idea of wiki-based knowledge processes and emerging as a leader. A project leader is aware that successful institutionalisation of knowledge collaboration requires both the wiki affordances and users’ cooperation.

Interpreting and integrating

The individual begins to share his/her idea with the key constituents of the organisation to mobilise their cooperation. For this purpose, the entrepreneur ensures that the organisation has the technological foundation to mitigate vulnerabilities of the wiki platform, such as vandalism, flaming, and unauthorised usage. In this phase, the entrepreneur uses a

discursive strategy and constructs an initial knowledge base, both of which portray immediate and material benefits from contributing to wikis, in order to resolve the lack of user motivation to contribute – one of the two inhibitors. Specifically, the entrepreneur develops a discursive strategy in which he/she describes the wiki as a common good and contributors as beneficiaries. Also, the entrepreneur seeds the initial knowledge base to showcase the benefits of wiki. To construct an initial knowledge base, an entrepreneur creates a cognitive map that lists topics and assigns these topics to selected early contributors. This map first gives a structure of content so that early contributors can easily organise and codify their knowledge, and second becomes a dashboard that shows each contributor’s responsibility and progress. The structure, which a cognitive map provides, helps the entrepreneur present his/her vision to the contributors in a concrete form. Thus, a cognitive map bridges the entrepreneur’s vision and the contributors’ understanding of the wiki project. The dashboard function shows topic assignments, creates a sense of responsibilities among assignees, compelling them to start contributing. Once early contributors begin to enter content, they quickly recognise how easy and enjoyable it is to experiment with their ideas using a wiki and how beneficial it is to visualise their knowledge. Consequently, an entrepreneur and the contributors engage in more orchestrated and coherent actions at this stage, leading to the completion of the knowledge base. To further facilitate this process, an entrepreneur uses (i) previously earned trust and close working relationships to encourage key contributors, (ii) his/her position as legitimate leaders, not simply someone appointed by higher management, and (iii) empathy to relate to key contributors. Using these social skills, an entrepreneur mobilises cooperation among key constituents and resolves tension in the organisation – one of the inhibitors.

Institutionalising

The wiki-based knowledge processes diffuse through the entire organisation. For this purpose, the wiki affordance of persistence helps. In addition, an entrepreneur can establish editorial teams who maintain the quality of content and moderate staff employees’ contributions. Editorial teams are necessary because content on a wiki grows rapidly and chaotically as contributors enter content in rather unsystematic ways. More importantly, editorial teams can bypass users’ reluctance to correct others’ posts – one of the two inhibitors. For staff users who do not wish to correct their superiors publicly, an editorial team can receive their suggestions and post them to the wiki on their behalf.

Conclusion

This research identifies a leadership archetype that can institutionalise wiki-based knowledge processes, overcoming the challenges that occur in the transition from intuition to institution. Like other studies, this study has limitations. One of the primary limitations is that we employed a single case study, which prevents comparison of the findings from this study with other contexts. This limitation is manifested in the part of our observation where the wiki’s editability and association abilities did not surface. We attributed these results to employees’ reluctance to correct others publicly and hesitance to share sensitive information. However, because of

Table 4 Knowledge entrepreneurship and the sources of their leadership qualities

<i>4I Processes</i>	<i>Factors that facilitate the learning process</i>	<i>Wiki affordance</i>	<i>IE strategy</i>	<i>Case observation</i>
Intuiting	External factors: Competitive landscape		✓	
	Organisation-specific factors: Challenges in knowledge-management processes		✓	
	Project leader's knowledge in social media			✓
Interpreting	Technological Foundation: Accessibility of wiki platform and secure network infrastructure			✓
	Discursive strategy: Portrays the wiki as a common good and contributors as beneficiaries → <i>Resolves the lack of user motivation (first inhibitor)</i>		✓	
	Construct an initial knowledge base before launch: Helps employees to recognise the benefits of contributing to wiki → <i>Resolves the lack of user motivation (first inhibitor)</i>			✓
Integrating	Discursive strategy (continued from the interpreting process)		✓	
	Legitimate position, Empathy, and Social Capital: Use of soft social skills rather than managerial edicts and policies → <i>Resolves tension in the organisation (second inhibitor)</i>		✓	
	Wiki affordances of experimentation and visibility: Allow contributors to try out their ideas and codify their tacit knowledge	✓		
Institutionalising	New routine, norms and standards: Sustain the institutionalised wiki-enabled knowledge processes		✓	
	Wiki affordance of persistence: Preserves content	✓		
	Establish formal editing staff and moderators: Maintains content quality and moderates user contributions → <i>Reduces the sensitivity of content, thus, resolving the lack of user motivation (first inhibitor)</i>			✓

the limitation in a single case study, we are unable to rule out an alternative hypothesis that, for instance, a small size and a small number of core employees in our case might have been a hindrance.

This study makes important contributions to our understanding of using social media for knowledge processes and a leadership archetype thereof. Social media are known to foster users' voluntary contributions, and thus to help codification and socialisation of tacit knowledge of employees (Gonzalez-reinhart, 2005; Wagner and Bolloju, 2005). In investigating this topic in an organisational context, we suggest a leader as a necessity for success – the topic largely absent from the literature on social media use for knowledge management. A number of previous conceptual studies propose benefits of social media to organisational knowledge management, but few discuss the importance of a leader and the leader's roles in those successes. Perhaps the lack of research in this area is because of the common beliefs that social media gravitate voluntary contributions and spur grassroots movement, which by definition do not require a leader. However, there is a conflict between this belief and empirical observations in the corporate world (Tables 1 and 2). Many case studies report that leadership was crucial for the success of wikis in organisations (see Table 1). We address this conflict by theorizing that a dedicated leader must *induce* contributions from organisational members until wiki-based knowledge processes are institutionalized; or else, contributions wither away.

In addition, this study contributes to the literature on leadership for IS implementation. There is little to no research about a leadership archetype appropriate for implementing social enterprise systems in organisations. Social media are believed to rely on voluntary movement – thus, not needing a leader – and so the lack of research on this topic is natural. Practitioner-oriented journals, however, recognise the importance of this topic. In a recent article in entitled, 'Why No One Uses the Corporate Social Network', Li calls for leadership that makes corporate social media successful and suggests three qualities of leaders: (1) listen at scale, (2) share to shape, and (3) engage to transform. These skills are akin to what we suggested as soft social skills, such as empathy, mobilising supporter groups, and legitimate leadership. In this sense, our research contributes to the literature on leadership for IS implementation by describing the type of leadership for deploying social media in organisations.

This theoretical contribution leads to direct implications for practitioners. Knowledge entrepreneurship offers guidance on how individuals can appropriate the advantages offered by modern platforms within organisations. To encourage the success of wikis, organisations should encourage project leaders to curate contributions by apply IE's soft social skills and induce cooperation among users rather than using authoritative enforcements. In addition to IE's strategies, we include a manager's ability to benefit fully from IT affordances in a list of attributes that a modern manager must have. In other words, knowledge entrepreneurs must understand and apply both IE's social skills and the social media affordances.

This claim aligns with the debate about the importance of IT in the sense that IT facilitates achievements of organisational goals insofar as managers align IT capabilities with the organisational goals (Carr, 2003). Taken together, we provide a roadmap of the leaders' qualities – both social and technological – in the organisational learning processes, linking these qualities to each organisational learning processes leading to institutionalisation. This roadmap informs managers of the necessary actions for transition from one stage to the next.

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