# Factors affecting the use of wiki to manage knowledge in a small company

Ettore Bolisani and Enrico Scarso



Ettore Bolisani and Enrico Scarso are Associate Professors at the Department of Management and Engineering, University of Padua, Vicenza, Italy.

**Abstract**

**Purpose** – *This paper intends to present and discuss the findings of a case study analysis of the adoption and use of a wiki system by a small enterprise that is intended as a tool for managing the knowledge needed to successfully perform its business activities. The study aims at contributing to the still insufficient research on the factors influencing the use of new Web 2.0 technologies in small organisations to support internal knowledge management.*

**Design/methodology/approach** – *The study combines a qualitative and quantitative approach. The main unit of analysis is the wiki system of a small company, particularly its implementation and usage by the company's employees. Relevant information about the wiki was collected through six interviews to different company members, and by means of an online survey submitted to almost all employees. Interviews involved the CEO of the company, the system developers and two typical users. The survey was made through a questionnaire of 19 questions online administered by means of a popular free-access online poll website (freeonlinesurveys.com).*

**Findings** – *Through the reconstruction of the history of the system, the study allowed to understand how the wiki has been introduced and is effectively used inside the case company. The findings of the study highlight that the wiki technology, being light and user-friendly, can be particularly suited for small companies. At the same time, they reveal that the successful implementation of such a system is not a spontaneous and automatic result, but requires a resolute support by top management, a good motivation of participating employees and a clear definition of purposes and ways of use.*

**Practical implications** – *The findings of the study contribute both to the academic research, by making available to scholars further empirical evidence about the use of Web 2.0 technologies in small organisations, and to the practice, by providing some guidelines to managers of small companies who are attempting to adopt and use wikis to effectively manage their knowledge assets.*

**Originality/value** – *The paper contributes to the limited research about the adoption and use of wikis as knowledge management system, both in general and in the particular case of a SME. Furthermore, by investigating the behaviours and opinions of individual knowledge workers, it takes into account a perspective that the literature has so far neglected.*

**Keywords** *Wiki, Knowledge management, Web 2.0, SME*

**Paper type** *Case study*

## 1. Introduction

Wikis, a promising and widely used tool in the Web 2.0 arena (Andriole, 2010; Milovanović *et al.*, 2012), can be defined as web sites collaboratively created and developed by multiple users on a common platform and accessed through a web browser (Wagner and Majchrzak, 2007). They enable the collaborative publication of content: any user can create a new page but also add, edit or delete content uploaded by others. Commonly organized by topics and subtopics, where each topic is a different webpage (i.e. a "namespace") of the wiki website (Majchrzak *et al.*, 2013b), wikis are made of two components, namely, the wiki technology and the social norms or principles enabled by the technology that are also referred to as the "wiki way" (Leuf and Cunningham, 2001). This latter is partly represented by technology itself and partly a shared code of conduct of the community of wiki users

Received 29 May 2015
Revised 12 October 2015
Accepted 23 November 2015

This paper contributes to the Ateneo 2012 Project "Developing organizational ambidexterity to foster the competitiveness of the Italian machinery industry" (funded by the University of Padova).

**"In a wiki, immediate and joint authorship becomes easy; it is also possible to track changes made by others by means of a 'versioning' system."**

(Standing and Kiniti, 2011). Different from other repositories and document management systems, wikis have some peculiarities (Yeo and Arazy, 2012):

- openness to contributing and editing;
- flexibility of content;
- online access; and
- "communitarian" consensus.

In a wiki, immediate and joint authorship becomes easy; it is also possible to track changes made by others by means of a "versioning" system. All this offers opportunities for collaborative knowledge creation. This is why they have immediately attracted the interest of Knowledge Management (KM) scholars (Wagner, 2004; Grace, 2009; Meloche *et al.*, 2009). In particular, peer-based production over the Internet is viewed as an alternative model of KM that emphasises principles such as open access and, as has been defined by some scholar, a "communitarian governance" (Yeo and Arazy, 2012). Accordingly, wikis have been proposed as a sort of social and "conversational" KM system that allows light and flexible interactions between "experts" and "learners" in a dynamic and self-service learning environment at a low cost (Gonzalez-Reinhart, 2005).

Many types of wikis exist (Grace, 2009). In this paper, we focus on "corporate (or enterprise) wikis", i.e. systems that are used inside a company for business purposes. The literature reports an increasing use of internal wikis for effective KM (Hasan and Pfaff, 2006; Grace, 2009; Almeida and Rocha, 2011; Razmerita and Kirchner, 2011; Singh *et al.*, 2013). However, adoption experience strongly depends on the organizational context (Jackson and Klobas, 2013) and poses specific challenges (Kiniti and Standing, 2013). In fact, together with cases of success, there are situations where wikis have failed to fulfil their potential. It is therefore necessary to better understand the benefits and disadvantages of this KM technology as they emerge in the real life of companies (Pfaff and Hasan, 2011).

It is crucial to improve our comprehension of wiki usage in small- and medium-sized enterprises (SMEs). Even though it is widely acknowledged that the characteristics of wikis (e.g. flexibility, cost efficiency, openness and anti-hierarchic nature) make them particularly suitable for SMEs, studies on the factors that influence the adoption of wiki systems as KM tools by small companies are scarce (Stieglitz and Dan Xuan, 2011; Lykourentzou *et al.*, 2012; Meske and Stieglitz, 2013; Soto-Acosta *et al.*, 2014; Palacios-Marqués *et al.*, 2015). As a matter of fact, many studies of wiki have been focused on larger enterprises, while the usage of enterprise wiki in SMEs is still little investigated.

This paper aims at contributing to the insufficient research on the pros and cons of wikis in small businesses, and especially on the factors that may influence their successful introduction and use. In particular, it illustrates a real-life case study of a small project-based company that has implemented an internal wiki to boost collaboration, knowledge sharing, and self-service learning by employees involved in distinct but related activities (i.e. sales, service delivery, and post-sale assistance). The reconstruction of the history of the system and the analysis of its actual use by employees highlight that wiki technology, being light and user-friendly, can be particularly suited for small organisations. At the same time, it reveals that the successful implementation of such a system is not a

spontaneous and automatic result, but requires a resolute support by top management, a good motivation of participating people and a clear definition of purposes and ways of use.

The paper articulates as follows. The next section discusses how wikis can be seen as KM systems, and what factors can influence their successful adoption and use especially in the case of SMEs. The third section states the research questions and methodology. Section four describes the company and the wiki system, while in section five, the main results of the investigation are presented. The sixth section proposes a brief discussion of what emerged from the analysis, and the last one makes conclusive remarks on the contribution of the study and on its limitations.

## 2. Success factors of wikis as Knowledge Management systems

This section proposes a review of the current literature with the purpose to identify the main factors that can influence the successful implementation of wikis as KM systems. Several studies underline that Web 2.0 technologies are deeply affecting the way KM can be approached (Levy, 2009; von Krogh, 2012; Gardner, 2013; Majchrzak *et al.*, 2013b). Various scholars argue that, thanks to the advancements in the so-called social media, KM systems and practices are speeding up their evolution from the "traditional" model of KM (i.e. monolithic, hierarchical, centralized and controlled) to new implementations based on collaborative sharing (Mujadi *et al.*, 2006). In this respect, Levy (2009) affirms that social media are close to some "ideal principles" that represent the real nature of KM, i.e. free sharing of knowledge, information and data. The wave of change brought to KM by Web 2.0 technologies has induced scholars to coin terms as "KM 2.0" (Levy, 2009; Razmerita and Kirchner, 2011) or "conversational KM" (Wagner, 2004; Gonzalez-Reinhart, 2005; Kiniti and Standing, 2013; Majchrzak *et al.*, 2013a). In a conversational knowledge creation, people generate and share knowledge through dialog with questions and answers (Hester, 2010).

Thanks to its unique features, the wiki technology is one of the main enablers of this new KM model (Majchrzak *et al.*, 2013b). This is the reason why they have been designated as the "next generation" KM systems, and are deemed able to overcome the limitations of traditional IT-based systems (Hasan and Pfaff, 2006). As a KM tool, wikis can provide several benefits, as underlined by Grace (2009):

- they are easy to be used;
- they serve as a central and coherent repository for information;
- they provide tracking and revision functions;
- they favour collaboration between organizations;
- they limit the negative effects of information overload produced, for instance, by e-mails; and
- they contribute to the building of a trustworthy culture.

In addition, wikis have been proposed as a way to effectively address the well-known problem of sharing tacit knowledge in organizations by providing a space for collaboration (Sousa *et al.*, 2010a; Standing and Kiniti, 2011; Panahi *et al.*, 2013).

Despite this potential, the current experience shows that the successful adoption and use of wikis can be challenging for companies (Standing *et al.*, 2013). Research, which is

**"What emerges from the literature suggests that several factors contribute to the successful adoption and use of a wiki as a KM tool by a company."**

**"The study confirms that wikis can be very useful tools for supporting KM processes of small organizations."**

largely based on case studies, shows that the implementation of wikis can raise issues and difficulties so that their success cannot be taken for granted. Typical problems include data security, difficult data migration, user training and categorization of information (Grace, 2009). Furthermore, the open nature of wikis can make it difficult for organizations to manage their content (Mansour *et al.*, 2011), which may produce chaos, inconsistency and difficult navigation. Vandalism and malicious edits of content can be other negative effects of openness. The key obstacles to a successful implementation of wiki are summarised in a recent literature review by Kiniti and Standing (2013), as follows: lack of clear purpose of the wiki itself, which may give rise to an ill-defined solution; low usability of the system, where usability issues concern both technical and information-related aspects; need of integrating it into established work practices; role of management in promoting the wiki use, which implies training, motivating and rewarding users; and reaching a critical mass of "active and passive" users by means of an organizational culture that supports collaboration and knowledge sharing.

Other scholars have analysed the factors that can influence the successful adoption of a wiki in business. Meloche *et al.* (2009), by extending the results of previous investigations on critical success factors of Knowledge Management systems (Jennex *et al.*, 2007), indicate the following aspects:

- existence of a clear knowledge strategy;
- motivation and commitment of users;
- integrated technical infrastructure;
- supportive organisational culture;
- propensity of the organisation to learning;
- senior management support;
- clear goal and purpose;
- measures to assess the wiki's impact;
- good usability;
- work processes that incorporate knowledge capture and use; and
- knowledge security and protection.

Moreover, they note that the different factors influence the employees' attitude to wikis in different ways in relation to their role and task. Similarly, Almeida and Rocha (2011) point out that a successful implementation may require:

- making the system open and easy to use;
- showing connections between content and people;
- connecting the wiki to the e-mail system;
- identifying the right context;
- focusing on people;
- providing an initial structure (e.g. template and guidelines); and
- leading by examples.

Mühleisen *et al.* (2013) also provide their list of recommendations for a successful wiki introduction as follows:

- keep content up to date;
- care about clear content structure and navigation;
- moderate the wiki;
- set up minimal guidelines;
- consider monetary reward;
- provide technical support; and
- improve content finding.

As regards the adoption of wikis by SMEs, the literature emphasizes some specific factors (Stieglitz and Dan Xuan, 2011; Borchardt, 2013; Dotsika and Patrick, 2013; Meske and Stieglitz, 2013; Soto-Acosta *et al.*, 2014), namely, the presence of clear, measurable and short-term goals/benefits; the personality of firm owners and their attitude towards social media; the organisational structure; and the information technology (IT) expertise of employees.

Organizational aspects play a key part in the literature. Holtzblatt *et al.* (2010) suggest that three main organizational factors may impede a broader usage of wikis in a firm. The first is the reluctance to share knowledge by employees, which can be because of social and cultural factors, e.g. the extra cost of sharing; the nature (highly sensitive) of the involved information; the unwillingness to share unfinished work; and the fear to disclose information. The second concerns the higher reliance of employees on other communication channels, including emails, shared document repositories, intranet portals, and similar: wikis are sometimes considered to be difficult to integrate in the current work practice and clear guidelines or standards of how to use them are needed. The third factor regards the fear of losing control over what individuals perceive to be their "private" content.

The impact of wikis on knowledge sharing and, more generally, KM practices of people can be decisive for their success. An interesting hint is given by Yeo and Arazy (2012), who argue that a wiki project requires reducing the inherent tension between the fundamental nature of these technologies (i.e. open access) and the nature of the cognitive work of the organization, which is usually tightly controlled. Similarly, Mansour *et al.* (2011) affirm that the openness of the wiki can have a dual (both positive and negative) impact on people's attitude to wiki usage in business, which leads to suggest a "controlled openness approach", namely, finding a proper balance between openness and sharing on the one hand, and protection of personal content on the other hand. Wikis can therefore have both positive effects and undesired consequences on how people engage in KM (Majchrzak *et al.*, 2013b; Standing *et al.*, 2013), and their success may depend on their "sustainable impact" on the so-called "lifeworld of employees", a concept introduced to describe shared beliefs, values, practices and structures of communication in a group, community or family.

To sum up, it is not only a question of technical or economic issues: emotion, motivation and other social issues can influence the successful implementation of wikis in business, such as (Gears, 2012):

- reducing anxiety;
- balancing egalitarian and traditional culture;
- extrinsic and intrinsic motivations; and
- corporate environment (e.g. treatment of time, management attitude and information sensitivity).

A debated issue is whether the design and development of a wiki should follow a top-down or a bottom-up approach. Here, it is possible to detect different positions in the literature. Pfaff and Hasan (2011) affirm that a bottom-up approach contributes to the wiki success, while Standing and Kiniti (2011) exactly the opposite. Baxter and Connolly (2014) believe that both approaches have their specific advantages and disadvantages, and there is no best way to proceed. In any case, there is general agreement that the presence of "wiki champions" – i.e. some employees particularly motivated that boost and promote its use – is often a key to success (Kosonen and Kianto, 2009; Hester, 2010; Standing and Kiniti, 2011). More broadly, there can be different levels of involvement and contribution by employees (ranging from simply reading content to adding new pages, making comments or reorganising existing items). Consequently, different profiles of contributors can be functional to a successful project (Majchrzak *et al.*, 2006; Yates *et al.*, 2010; Sousa *et al.*, 2010b).

In short, the different factors affecting a successful wiki implementation can be grouped into five categories, as follows (Table I):

1. technical factors, referring to the way the system is designed, configured and connected to other KM applications;
2. economic factors, related to the business goals and their measurement;
3. process/operational factors, pertaining to the way a wiki system affects the day-by-day business practices;

**Table I** Factors affecting the successful introduction and use of an enterprise wiki

| *Factors* | *Authors* |
|---|---|
| *Technical factors* | |
| Integrated technical infrastructure | Meloche *et al.* (2009) |
| Connection with e-mail system | Almeida and Rocha (2011) |
| Degree of openness | Almeida and Rocha (2011) |
| Security | Grace (2009), Meloche *et al.* (2009) |
| Reliance on other communication channels | Holtzblatt *et al.* (2010) |
| *Economic factors* | |
| Clear purposes/benefits | Meloche *et al.* (2009), Kiniti and Standing (2013) |
| Achieving critical mass of users | Kiniti and Standing (2013) |
| Rewarding/motivating | Meloche *et al.* (2009), Kiniti and Standing (2013), Gears (2012), Mühleisen *et al.* (2013) |
| Cost of sharing (time availability) | Holtzblatt *et al.* (2010), Gears (2012) |
| Measures to assess the wiki's impact | Meloche *et al.* (2009) |
| *Process/operational factors* | |
| Integration with established work practice | Holtzblatt *et al.* (2010), Meloche *et al.* (2009), Kiniti and Standing (2013) |
| Providing initial guidelines and templates | Holtzblatt *et al.* (2010), Almeida and Rocha (2011), Mühleisen *et al.* (2013) |
| Technical support | Mühleisen *et al.* (2013) |
| Usability | Meloche *et al.* (2009), Almeida and Rocha (2011), Kiniti and Standing (2013), Mühleisen *et al.* (2013) |
| Leading by examples | Almeida and Rocha (2011) |
| Content quality and update | Mühleisen *et al.* (2013) |
| *Organisational factors* | |
| Training | Grace (2009), Kiniti and Standing (2013) |
| Presence of a wiki champion | Kosonen and Kianto (2009), Hester (2010), Standing and Kiniti (2011) |
| Bottom-up/top-down balanced approach | Baxter and Connolly (2014) |
| Managerial support/attitude | Meloche *et al.* (2009), Kiniti and Standing (2013), Gears (2012) |
| Presence of a moderator | Mühleisen *et al.* (2013) |
| Employees IT expertise | Dotsika and Patrick (2013), Soto-Acosta *et al.* (2014) |
| *Cultural factors* | |
| Supportive organisational culture | Meloche *et al.* (2009), Gears (2012) |
| Willingness to share unfinished work | Holtzblatt *et al.* (2010) |
| Identifying the right context | Almeida and Rocha (2011) |
| Fear to disclose information/information sensitivity | Holtzblatt *et al.* (2010), Gears (2012) |

4. organizational factors, referring to the way wikis can fit the particular organizational features of a company; and
5. cultural factors, including personal values, feelings and attitudes of employees.

What emerges from the literature suggests that several factors contribute to the successful adoption and use of a wiki as a KM tool by a company. Furthermore, these do not only concern technical aspects. It is therefore important to analyse how the different elements come into play in the specific experience of companies, especially in the case of the small ones where the literature is still scarce.

In light of this, our study aims to identify useful lessons that can help to better understand the actual potential and problems of wikis as KM system in the case of SMEs. Our purpose is to provide insights and inspire executives and experts who are willing to explore the use of this technology in KM processes of small businesses. Specifically, the paper focuses on the perspective of *knowledge workers*, i.e. employees in the company whose knowledge processes largely influence business performances. As these workers are the actual users and the first beneficiaries of a KM system, their adoption behaviour can determine the success of the wiki itself. On the other hand, the literature has rarely investigated the point of view of these workers explicitly (Stocker *et al.*, 2012).

## 3. Research questions and methodology

The paper presents the results of an in-depth case study analysis of a wiki project in a small knowledge-intensive company: an information communication technology (ICT) services provider based in the Northeast of Italy. In detail, the study addressed the following research questions:

*RQ1*. Why and how the wiki was designed and introduced in the company?

*RQ2*. How much, in what way and by whom is it currently used?

*RQ3*. What factors influence its use and can therefore lead to its success or failure?

To answer the above questions, the research combines a qualitative and quantitative approach. The main unit of analysis is the wiki system of the company, particularly its implementation and usage by employees. Relevant information about the wiki was collected through six interviews to different company members and by means of an online survey submitted to employees. Specifically, the interviews involved the CEO of the company (two interviews at different times), the system developers (two interviews at different times) and two key users (one employee working in the commercial department and the other working in after-sales support). These interviews concerned:

- the company and its business and knowledge strategy;
- the story of the wiki project and its development; and
- the usage of the system.

In total, the interviews took several hours; they were recorded, transcribed and analysed. The initial interview was unstructured and free, while the others followed a script made of a list of questions concerning the specific issues under examination. A particular emphasis was put on aspects such as: the knowledge needs of employees for their day-by-day tasks and how these are being met by means of the wiki.

After the interviews, a survey of all potential users of the system was conducted, aimed at understanding who the current users of wiki are, what kind of information they need, how often and in what way they use the wiki, what reasons induce them to use the system, what technical and organizational obstacles hinder the wiki usage, what is the usability and potential usefulness of content and function of the current system and what they suggest for promoting the usage. Based on the factors identified by the literature (Table I), a questionnaire of 19 questions was developed, tested and then administered online by

means of a popular free-access online poll website (freeonlinesurveys.com). In all, 28 members of the company (including the CEO and three shareholders, who also perform operational and managerial tasks in the company) responded. Only two recently hired people, who work in a new branch and do not have enough knowledge of the company, were not involved in the survey. The interviews were conducted between December 2013 and March 2014, and the survey was administrated during the second decade of March 2014.

## 4. The case study

### *4.1 Company background*

Infonet Solutions is a small ICT company located in the North East of Italy with 30 employees and 5 external collaborators; the turnover is about €5m. Infonet provides solutions to optimize the ICT platforms of clients, which are mostly medium-sized private companies and public organizations. The main services offered include: cloud computing, data centres, virtualization and business continuity. The company, initially a reseller of telecommunications components, was taken over about 20 years ago by three young computer technicians who have progressively turned it into what it is today. It is now organized into five departments: management, accounting, commercial (i.e. sales/marketing), delivery and after-sales support. The last two are the "technical heart" of the company: the "delivery" department deals with the design, development and implementation of new brand solutions, while the "after-sales support" provides technical assistance and maintenance of installed systems. Being an ICT company, Infonet Solutions owns the peculiar features of a knowledge-intensive business services firm as described by Muller and Doloreux (2009), i.e. a firm where knowledge is the key competitive asset.

Figure 1 describes the typical process that denotes the delivery of a new solution by Infonet. It consists of several phases which involve people from different departments. These phases imply a continuous exchange of knowledge and information, externally with the end client and internally between the various departments. The process can last a long time, even years, as it ends with the start of a new project aimed at substituting or completely renovating the installed system.

**Figure 1** The different phases of service delivery and post-sale assistance process at Infonet

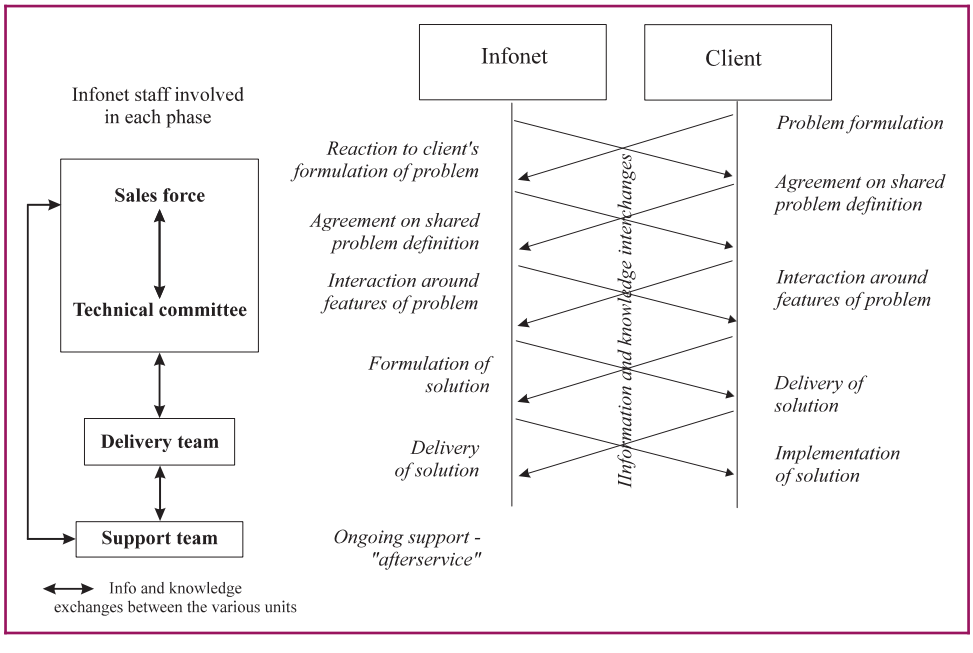


Figure 1 highlights that a successful delivery and post-sale assistance (i.e. able to solve the clients' problems in a way that they will continue to resort to Infonet) require that all the involved employees have a quick and good understanding of the system that is installed at the customer's site, which is not as simple as it seems, given the long duration of the project and the variety of players involved. An employee that is called to assist a customer (e.g. in case of maintenance or system breakdown) must handle both explicit components of knowledge (system configurations, network structures, functioning details) and tacit components (detailed explanations of the reasons for some specific configuration). The case is particularly interesting because the employees that perform the post-sale functions are generally not those that designed or installed the system. Therefore, there is need of a complex and postponed transfer of knowledge between different employees. Similarly, the sales agents who want to offer a new solution to old or new clients may need to exploit the knowledge of previous projects and their characteristics. Again, this knowledge consists of explicit (i.e. technical data) and tacit (perceptions of user needs, possible market value of a particular system, etc.) components that have to be transferred between different people at different times.

To overcome these difficulties and especially those related with the exchange of knowledge between the delivery and the support people, several years ago the company started to collect information about every new installation and to compile a written report for each. The resulting document (called "libretto di impianto" – book of the system) was intended to support knowledge exchanges between the different parts of the company. It was the first step towards a KM system that finally became the wiki. It should be noted that Infonet, as generally occurs in most SMEs, has not a formal and planned KM strategy, even though they are aware that knowledge, especially that owned by employees, is their core competitive asset.

### *4.2 The wiki project*

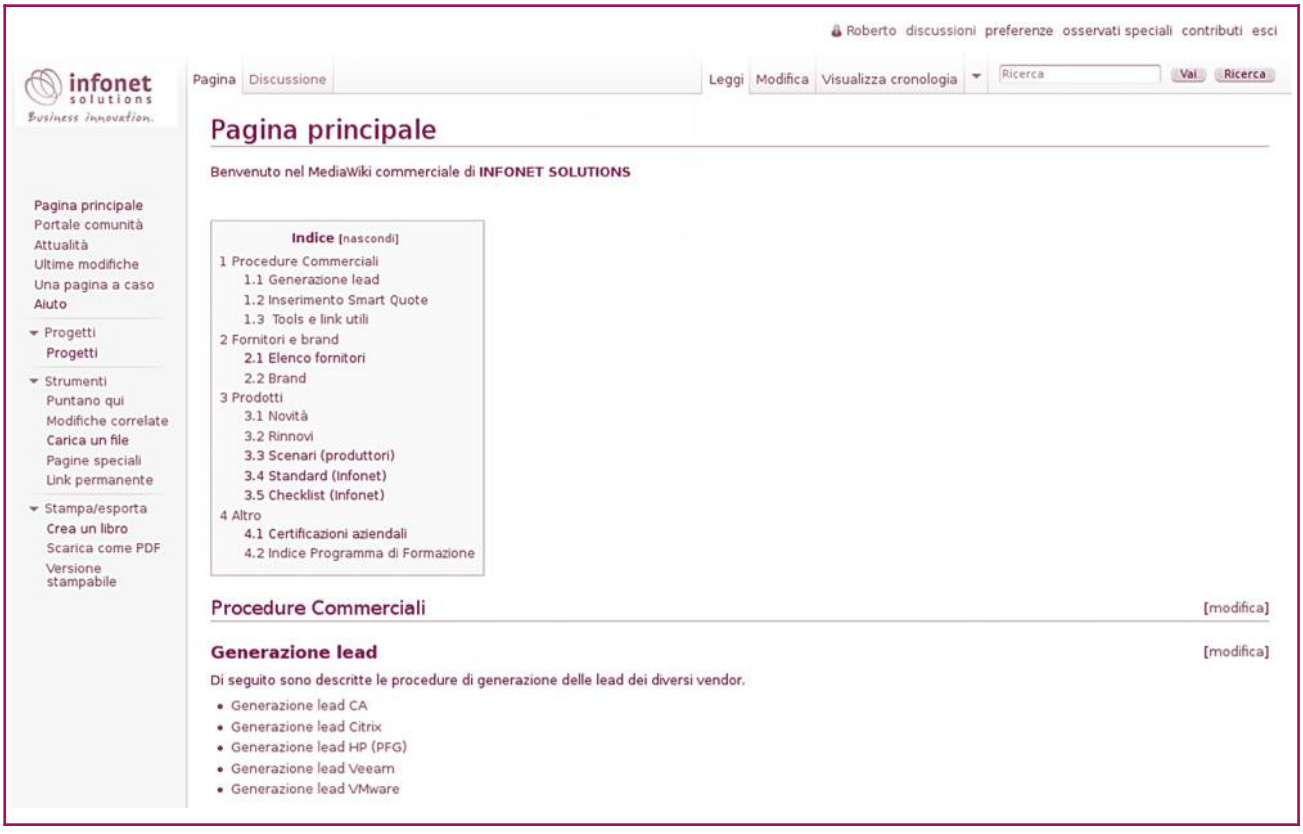
The first important step towards a KM system to improve the management of all the technical knowledge about a delivered system dates back to around 2003 when the company started to use Microsoft Exchange Server to share public folders and e-mails about new installations. This tool had some limits: it was difficult to classify, locate and acquire a specific piece of knowledge. To overcome these limitations, the company adopted another software (Owl Intranet Engine) that, however, didn't result in significant improvements. The "public folders" system was appropriate as a repository, but was too rigid considering the actual knowledge flows that the company needed to manage. These first experiments showed that developing a KM system focused on a particular technology and then fitting it to the flows of knowledge in the organizational processes may not provide results. After several reflections, the company eventually decided to adopt a wiki system, whose current version is based on MediaWiki, a free open source wiki software. It was introduced in 2009 by the support department, and was implemented thanks to the collaborative efforts of two members of this department: its head (who is also one of the company's shareholders) and a young new employee. It was configured by reflecting on the knowledge content that is "really" needed by the different people that collaborate in a project with a client, and on its usability. The first version was totally devoted to technical people and was focused on technical problems. Later on, in 2013 it was extended to the commercial staff.

### *4.3 Structure and functions*

The system has the form of a portal (Figure 2) that can be easily accessed through a standard browser in any device connected to the Internet. This is an important feature, given that employees may need to log in from different places (i.e. from their offices, from a customer site, even from home).

While the wiki can be accessed by all employees, it is however targeted to specific users:

**Figure 2** Index page of Infonet's wiki




- the commercial department, i.e. employees that contact clients, receive requests, propose commercial offers and keep the relationships with external vendors. They use the wiki for two main reasons: for getting information about the past installations, from which they can get inspiration for formulating new offers, and for retrieving access data to log in into vendors' websites and request offers;
- the technical committee, which validates the commercial offers to clients and may need to get information about past projects and standard solutions already adopted by a client;
- the delivery department, i.e. the people who design a new system; they can retrieve information about past installations, and they are specifically asked to insert new documents about the installations they do for the clients; and
- the support department, i.e. the people that assist the clients and solve functioning problems. To act effectively and promptly, they need to get all the knowledge of a particular configuration of a client installation.

For reasons of clarity, the portal is split into two different "sub-portals": one for the technical staff (delivery, technical committee and support) and the other for the commercial staff (sales force). The technical part has, mainly, knowledge content related to the existing applications and past installations. The "commercial" part contains log-in data for accessing vendors' websites and for processing requests for quotations. Both portals are, however, accessible by all company users.

The wiki is flexible and allows uploading different kinds of content. This is crucial, because the users need to transfer and retrieve knowledge that can have different forms: technical data, but also pictures, explanations, codes and so on. It is therefore difficult to use a pre-defined format for all the potential content that must be uploaded. It was decided,

however, to pre-define some templates that people can use to upload new content. This allows some flexibility in the way people insert their content and quicker retrieval. A pre-defined classification into different sections is also used. This derives from the experience of the employees and reflects their way of working. Another important feature of the wiki is that it allows edits to the content inserted by others and to track all the changes made. At present, Infonet is exploring the use of the wiki by means of mobile devices.

## 5. The perspective of users

As said, the factors influencing the adoption and use of the wiki at the company were investigated from the perspective of knowledge workers, whose opinions were collected by means of interviews to different key users and through of a questionnaire submitted to all employees. In the following pages, a summary of the main results is presented.

### *5.1 Key users: roles, knowledge exchanges and use of wiki*

This section reports the information collected by means of interviews to key informants working in two different areas: the support department and the commercial department. The two interviews allowed understanding how the system is used and perceived in the two different contexts.

*5.1.1 Support (post-sales services).* This function is activated on demand by customers when they experience problems with the use of their installation. For this department, reactivity is essential. When a customer calls, employees must be able to retrieve every piece of useful information about the installation as quickly as they can. Here, the wiki proves to be an essential working tool: employees just give a quick glance at the portal and can easily get all the useful knowledge to understand the problem. It is important to note that the support department is generally not involved in the design of an installation, so they may not be aware of how a particular system was configured. This knowledge, however, represents just a starting point (a picture of the "state of the art"): other sources (i.e. discussion forums, knowledge base of vendors, colleagues and personal experience) are then necessary to solve that maintenance problem. After the repairing action, a report is produced: this is generally not archived in the wiki, but in another repository (a specific "knowledge base" of adopted solutions).

*5.1.2 Commercial.* This area handles the relationship with customers. The use of the wiki by the sales people has started recently. The application is generally used to retrieve the configuration adopted in past projects so that the sales agents can formulate a proper offer to new clients that want to buy similar systems. This assessment of the company's "standard approach" to a particular kind of system allows the sales agent to promptly provide updated information to customers. The sales agents also use the wiki to insert and retrieve knowledge about the procedures to request offers to the vendors. This can be seen as a marginal use of the system, but has two significant implications: first, this is a time-spending activity that must be done efficiently; second, the sales agents get more and more accustomed to using the wiki. It is however important to note that not all the knowledge that the sales forces use or produce is exchanged by means of the wiki. In particular, all the economic data about customers, past projects, previous offers, etc., are archived in another repository (a file server). Sales agents think that, at least now, this second system is more user-friendly for storing commercial knowledge.

### *5.2 Survey of users' perceptions*

All Infonet employees (with the exception of two newly recruited people) completed the questionnaire on the wiki usage: two people of the management team, four accountants, five in the commercial department, nine in the after-sales support department and eight in the delivery department. As expected, the accounting team does not use the wiki, because the current system does not contain administrative and accounting information.

Consequently, their answers were excluded from further analysis. In total, 24 questionnaires were taken into account.

The average seniority of Infonet staff is about eight years. Eleven people have a university degree. The two shareholders, with both a managerial and an operational role, are included in the department where they work.

As clearly appears in Table II, it is possible to affirm that, after five years from its introduction, the wiki turns out to be a useful and used tool: indeed, all the people for whom the wiki was firstly conceived (i.e. the support and delivery departments) are using it at least once a day. Even the sales forces are using it, although less frequently.

Table III confirms that the wiki is considered to be very useful (on a scale from 1 to 7) especially for the technical areas, while it is deemed of limited use for managerial and accounting activities; accordingly, the technical staff (support and delivery) is also the most intense user of the wiki: these employees visit more than five pages per access (Table IV).

The success of the system is confirmed by the fact that, in general, more than 83 per cent of the respondents consider the wiki as the most relevant information source for their job, as showed in Table V. It should be noted that people at Infonet tend to give value to both the sources of explicit knowledge (intended as written documents, web pages, internal DB, etc.) and those of tacit/implicit knowledge (e-mails, phone calls and informal talks). This may depend on the fact that ICT services providers make use of a large amount of technical knowledge that has a significant explicit component.

**Table II** Frequency of use (number of responses)

| | *How often do you use the wiki?* | | | | | |
|---|---|---|---|---|---|---|
| *Department* | *More times per day* | *Once a day* | *Few times a week* | *Weekly* | *Rarely* | *Never* |
| Management | 0 | 1 | 0 | 0 | 1 | 0 |
| Commercial | 2 | 1 | 2 | 0 | 0 | 0 |
| Support | 8 | 1 | 0 | 0 | 0 | 0 |
| Delivery | 7 | 1 | 0 | 0 | 0 | 0 |
| *Total* | *17* | *4* | *2* | *0* | *1* | *0* |
| Percentage(%) | 70.8 | 16.7 | 8.3 | 0.0 | 4.2 | 0.0 |

**Table III** Usefulness (average score from 1 to 7)

| *For which business areas is the wiki more useful?* | *Average score* |
|---|---|
| Support | 5.3 |
| Delivery | 5.2 |
| Sales | 4.3 |
| Marketing | 3.4 |
| Management | 3.2 |
| Accounting | 2.5 |

**Table IV** Number of visited pages

| | *How many pages do you visit in each access?* | | |
|---|---|---|---|
| *Department* | *1-5* | *5-10* | *>10* |
| Management | 2 | 0 | 0 |
| Commercial | 5 | 0 | 0 |
| Support | 2 | 3 | 4 |
| Delivery | 3 | 3 | 2 |
| *Total* | *12* | *6* | *6* |
| Percentage(%) | 50.0 | 25.0 | 25.0 |

**Table V** Most relevant information sources (maximum four responses)

| *Which are the most relevant information sources for your job?* | *Responses* | *(%)* |
|---|---|---|
| Wiki | 20 | 83.3 |
| E-mails | 15 | 62.5 |
| Website | 14 | 58.3 |
| Written documents | 10 | 41.7 |
| Internal databases | 9 | 37.5 |
| Phone calls | 8 | 33.3 |
| Project designs | 8 | 33.3 |
| Formal meetings | 4 | 16.7 |
| Informal talks | 1 | 4.2 |

All users are very active: as illustrated in Table VI; only 2 users are mere "readers", while 8 are "commenters" and 14 are "adders" of new pages and content: almost all of the latter ones belong to the technical staff.

Those that add or modify content aim to support the exchange of information, to respond to requests from colleagues and to motivate them to use the system (Table VII). This behaviour is mainly diffused in the support department, where the two developers and promoters of the system (the actual "wiki champions") work.

The most important reason that induces employees to use the wiki is the improvement of both individual and company's performance (Table VIII). The answers suggest that the use of the system is closely linked to its capability to provide direct and immediate benefits (i.e. its practical utility), while other reasons seem less important.

**Table VI** Activity performed (number of responses)

| | *Which activity do you perform on the wiki?* | | |
|---|---|---|---|
| *Department* | *Only reading* | *Reading, but also comments and small revisions* | *Reading, adding new content, creating new articles* |
| Management | 1 | 1 | 0 |
| Commercial | 1 | 3 | 1 |
| Support | 0 | 3 | 6 |
| Delivery | 0 | 1 | 7 |
| *Total* | *2* | *8* | *14* |

**Table VII** Reasons for content editing (maximum three responses)

| | *Why do you modify or add content?* | | | | | |
|---|---|---|---|---|---|---|
| *Department* | *Gain career advantages* | *Meet colleagues' needs* | *Motivate colleagues to use* | *Favour information exchanges* | *Increase reputation* | *Meet management requirements* |
| Management | 0 | 1 | 0 | 1 | 0 | 0 |
| Commercial | 0 | 1 | 2 | 4 | 0 | 0 |
| Support | 0 | 4 | 5 | 9 | 0 | 2 |
| Delivery | 1 | 4 | 2 | 8 | 0 | 4 |
| *Total* | *1* | *10* | *9* | *22* | *0* | *6* |

**Table VIII** Reasons to use the wiki (maximum two responses)

| *Which reasons lead people to use the wiki?* | *Responses* | *(%)* |
|---|---|---|
| Improve individual work | 20 | 83.3 |
| Improve the company's performance | 20 | 83.3 |
| Learn new things | 2 | 8.3 |
| Pressure from the top management | 1 | 4.2 |
| Use a cutting-edge technology | 1 | 4.2 |

Table IX illustrates the opinion about the perceived advantages of the wiki for the company and its business in general. The responses show that the wiki is considered to be a tool that promotes knowledge exchanges within the company, rather than the generation of new ideas. This is in line with the goal of its developers, i.e. making the internal exchange of existing knowledge more fluid.

Despite the wiki is responding to the expectations of the company, there are still some obstacles that limit its use, both of technical and organisational nature. Some functions (i.e. editing and adding new content) are not effective yet (Table X). Also, articles are not always updated, and not all the people who are in the position to do that really contribute to improve the wiki. Finally, there is often too little time to use the system (Table XI). Security is not seen as a problem (the website is not open to outside). Interesting to note, users affirm that organizational barriers as a whole are more important than the technical ones. This is in line with the findings of previous investigations (Pfaff and Hasan, 2011; Jackson and Klobas, 2013; Meske and Stieglitz, 2013), although in the case of this company, it should be remembered that users have a technical background and are familiar with web technologies.

The questionnaire also asked an opinion and an assessment about current content and functions. Each respondent was asked to assign a score between 1 (minimum) and 7 (maximum) to the present usability and potential usefulness of each content and each functionality. Tables XII and XIII show the average scores (people without opinion were not included). For all content and functions (excluding the "changes tracking"), the score of

**Table IX** Perceived advantages for the company (maximum two responses)

| *Which are the advantages that the company expects from the wiki?* | *Responses* | *(%)* |
|---|---|---|
| Improve internal knowledge sharing | 20 | 83.3 |
| Enhance internal collaboration | 9 | 37.5 |
| Increase efficacy of business | 8 | 33.3 |
| Improve business processes | 6 | 25.0 |
| Control and store information | 4 | 16.7 |
| Produce new ideas | 0 | 0.0 |

**Table X** Perceived technical obstacles (maximum two responses)

| *Which are the technical obstacles to wiki use?* | *Responses* | *(%)* |
|---|---|---|
| Editing/writing in new content is difficult | 14 | 58.3 |
| The system lacks some functionalities | 5 | 20.8 |
| The system is not compatible with other databases or tools | 5 | 20.8 |
| Retrieving information is difficult | 4 | 16.7 |
| Accessing the system is difficult | 1 | 4.2 |
| Technical support is insufficient | 1 | 4.2 |
| System is not secure | 0 | 0.0 |

**Table XI** Perceived organizational obstacles (maximum three responses)

| *Which are the organizational obstacles to wiki use?* | *Responses* | *(%)* |
|---|---|---|
| Articles are poorly updated | 12 | 50.0 |
| Too few people contribute to the wiki | 11 | 45.8 |
| Lack of time | 8 | 33.3 |
| Articles are little reliable | 6 | 25.0 |
| Feeling to be controlled | 2 | 8.3 |
| Lack of interest by management | 2 | 8.3 |
| Wiki contains too few articles | 1 | 4.2 |
| Fear of revealing personal information | 0 | 0.0 |

**Table XII** Perceived usability and usefulness of each wiki content (average scores from 1 to 7)

| *How do you consider each wiki content?* | *Usable* | *Useful* |
|---|---|---|
| Scenarios | 4.8 | 6.0 |
| Standards | 5.3 | 6.0 |
| Checklists | 4.4 | 6.0 |
| Designs | 5.3 | 6.1 |
| Configurations | 5.0 | 6.5 |
| Conventions | 5.0 | 6.1 |
| Login to vendors' websites | 5.6 | 6.0 |
| RFQ procedures | 4.6 | 5.5 |

**Table XIII** Perceived usability and usefulness of wiki functions (average scores from 1 to 7)

| *How do you consider each wiki function?* | *Usable* | *Useful* |
|---|---|---|
| Reading | 6.2 | 6.4 |
| Searching | 4.2 | 6.4 |
| Printing | 4.2 | 5.2 |
| Editing | 4.5 | 6.3 |
| Changes notification | 3.3 | 5.3 |
| Changes tracking | 5.9 | 5.8 |

usefulness is higher than that of usability: this suggests that there is room to improve the system on both aspects, particularly searching, changes tracking and editing functions.

As said in section three, several authors state that the adoption and use of an enterprise wiki is affected by the organisational climate that exists inside the company. To investigate this, employees were asked to indicate what main features denote their company (Table XIV). Tolerance to errors, and flexibility and innovativeness are the most cited, while process efficiency, clear and well-defined tasks, and speed and accuracy in the achievement of objectives are the less indicated. These perceptions denote that at Infonet the organisational climate is substantially favourable to the experimentation of the new Web 2.0 tools.

A last question related the suggestions to promote the usage is given in Table XV. The need to make the use of the wiki more intuitive, to better classify the information and to provide training are the most cited responses. Other points (i.e. economic rewards, adding other content or functions) have obtained no indication. These responses remark what has emerged from Table V, i.e. that the wiki is considered a familiar working tool, and, hence, economic rewards to encourage its uses are not needed. Rather, it has to be made as helpful and user-friendly as possible. It should also be noted that the purpose of the system appears to be clear to the large majority of its users.

**Table XIV** Perceived organizational context (maximum three responses)

| *Which are the main features of the company?* | *Responses* | *(%)* |
|---|---|---|
| Efficiency | 2 | 8.3 |
| Speed and accuracy | 0 | 0.0 |
| Clear tasks | 2 | 8.3 |
| Mutual trust | 5 | 20.8 |
| Collaboration | 6 | 25.0 |
| Transparency | 3 | 12.5 |
| Tolerance | 10 | 41.7 |
| Flexibility | 9 | 37.5 |
| Openness | 5 | 20.8 |

**Table XV** Ways to promote the wiki usage (maximum three responses)

| *What do you suggest to promote the wiki usage?* | *Management* | *Sales* | *Support* | *Delivery* | *Total* |
|---|---|---|---|---|---|
| Make the use more intuitive | 2 | 5 | 8 | 5 | 20 |
| Better classify information | 0 | 1 | 6 | 8 | 15 |
| Provide training | 1 | 3 | 2 | 4 | 10 |
| Integrate with other systems | 2 | 2 | 3 | 3 | 9 |
| Better explain its purposes | 1 | 1 | 1 | 1 | 4 |
| Include it in job description | 0 | 1 | 1 | 1 | 3 |
| Provide a supporting staff | 0 | 0 | 0 | 0 | 0 |

## 6. Discussion

What emerged from this empirical analysis provides an answer to the questions of section three. In particular, from the reconstruction of the history of the system, it was possible to understand why and how the wiki was designed and introduced in the company, while the interviews to two end-users and the survey allowed us to understand how much, in what way and by whom it is currently used, and what motivations and obstacles influence its use.

These findings provide useful indications about the factors that can influence the use of wikis as a KM tool, especially in the case of a small company like the analysed one. In the specific case, results show that some factors played a decisive role, while others were less relevant, as illustrated in Table XVI. Some of them deserve further discussion as follows.

**Table XVI** Role played by different factors in the successful adoption of wiki by Infonet

| *Factors* | *Role played* |
|---|---|
| *Technical factors* | |
| Integrated technical infrastructure | Marginal |
| Connection with the email system | Marginal |
| Degree of openness | Marginal |
| Security | Marginal |
| Reliance on other communication channels | Marginal |
| *Economic factors* | |
| Clear purposes/benefits | Decisive |
| Achieving critical mass of users | Marginal |
| Rewarding/motivating | Marginal |
| Cost of sharing (time availability) | Decisive |
| Measures to assess the wiki's impact | Marginal |
| *Process/operational factors* | |
| Integration with established work practice | Decisive |
| Providing initial guidelines and templates | Decisive |
| Technical support | Marginal |
| Usability | Decisive |
| Leading by examples | Decisive |
| Content quality and update | Decisive |
| *Organizational factors* | |
| Training | Marginal |
| Presence of a wiki champion | Decisive |
| Bottom-up/top-down balanced approach | Decisive |
| Managerial support/attitude | Decisive |
| Presence of a moderator | Marginal |
| Employees IT expertise | Decisive |
| *Cultural factors* | |
| Supportive organisational culture | Decisive |
| Willingness to share unfinished work | Marginal |
| Identifying the right context | Decisive |
| Fear to disclose information/information sensitivity | Marginal |

### 6.1 Capability to acquire and install the software

As in this case study, the availability of open source wiki software can be important for a small company (which can be unable to pay for costly licences and software provisions), but this requires IT competencies to implement and run it. As ICT services provider, Infonet, had enough skilled people to do that. Other small businesses, however, might not have these competencies, which may make implementation harder. In this case, an external IT services provider, who is able to fully understand their knowledge requirements and translate them into the wiki, may be required.

### 6.2 Balanced approach, wiki champion and managerial support

As mentioned before, a debated factor influencing the success of wikis (and more generally other KM systems) is the adopted approach. In this company, the wiki system has been designed and developed by two internal end-users, and this has guaranteed better fit between the features of the individuals' cognitive tasks and the characteristics of the system. At the same time, as one of the developers was one of the owners, this has ensured a stronger support. In this case, therefore, there occurred a lucky combination of a bottom-up (i.e. starting from the users' needs) with a top-down approach (i.e. involvement of the head of the company). The direct involvement of one of the owners, who acted as a "wiki champion", was crucial for initiating the project and designing the general guidelines of its development, but, at the same time, a conducive climate for experimentation and collaboration, as well as the free and active contribution of users, were essential to keep the system alive and to boost its use.

### 6.3 Integration with the daily work

The analysis also suggests that the success of the system was greatly favoured by the fact that the wiki was considered helpful for the daily work of the people, or it is better to say, in line with the way they exchange knowledge. For this reason, economic rewards to promote its usage were not necessary because employees tended to use the system naturally. It should also be noted that in this case, the goals of the wiki were clear and closely related to the working context.

### 6.4 Knowledge content and format

At Infonet, the KM processes that are supported by the wiki system involve exchanges of both tacit and explicit components. The case study highlights that even though a core part of the knowledge managed by the company is explicit in nature (being mainly technical data, configurations, etc.), the way or support by which these content are formatted imply a tacit feature (because employees, for reasons of speed and flexibility, are used to employing flexible representations, combinations of graphics and notes, descriptions in natural language, etc.). This brings about an important implication for KM: to determine the nature of the exchanged knowledge (i.e. if it allows the use of highly automated systems, or if it is tacit and requires flexible systems), it is not only the kind of content itself that must be considered but also the format and support by which knowledge is stored and exchanged. At Infonet, the flexibility regarding how to store and retrieve technical data has been revealed as being important, especially because it allows meeting the established practices of the company. From this point of view, the wiki offers a good trade-off between efficiency and automation (e.g. searching tools and pre-classifications of coded data) and a certain degree of openness and flexibility in inserting content.

### 6.5 Flexibility and usability

Together with the familiarity that the users increasingly have with this technology (probably thanks to the spread of Wikipedia), flexibility and usability make this tool suitable for small organizations. This statement is fully confirmed in the case of the examined company; however, it has to be considered that its employees have a technical culture that other

companies may not have. The analysed system, however, still has some weaknesses. One is the cumbersome editing mode which obviously affects the ease and speed of use (which should be the strongest point of a wiki). The second concerns the poor integration with other repositories of business data (more or less structured and more or less explicit – such as accounting data and commercial information). Finally, some content and functions are considered useful but less usable. All these means that the wiki cannot be completely designed in advance, but needs continuous assessment and improvement: its points of strength and weakness emerge only during its use. In this sense, keeping note of the reactions of users can be particularly crucial.

### *6.6 Other organizational and cultural aspects*

The case study confirms that these can be critical, even more than the technical aspects, at least under some circumstances. The decision to adopt the wiki system does not solve all the issues involving KM. In this regard, it must be remembered that Infonet introduced the wiki after testing other solutions, and this allowed the company to better identify its cognitive processes and relevant needs and only eventually to turn to wiki. Also, the organizational context of Infonet seems well suited to the testing of the new social media technologies.

## 7. Conclusion

Our analysis contributes to the research about the adoption and use of wikis as KM systems. By means of a direct investigation of the behaviours and opinions of individual knowledge workers, it takes into account a perspective that the literature has so far less addressed in depth.

The study confirms that wikis can be very useful tools for supporting KM processes of small organizations. Their flexibility, user-friendliness and capability to manage both explicit and tacit aspects of knowledge exchanges can be greatly appropriate to the needs of a small firm.

### *7.1 Implications for research*

The results contribute to the research on benefits and disadvantages of wikis in SMEs. Particularly, the study highlights that the success of wikis inside an organisation is influenced by social and organizational factors, even more than the technical ones. In addition, it is shown that attitudes and behaviours of individuals can play a decisive role, especially in the case of small companies. This also concerns the company's owners and, more generally, the managerial style, particularly when the heads of the company are directly involved in the operational activities.

### *7.2 Implications for management*

The case study shows that it is crucial that the system fits the actual KM processes of employees in their daily business needs. Consequently, it may be essential that the implementation project is not strictly the result of top-management decision: a combination of a top-down approach (with the direct sponsorship of the company's owners) and a bottom-up approach (that takes into account the needs of individual users) can be a key success factor.

The main limit of the study is that it investigated only one company, and in addition one operating in a particular sector with specific knowledge needs and capabilities. The familiarity that Infonet employees have with ITs has undoubtedly facilitated the introduction of the system. Thus, the findings can provide inspiration and find application to other cases, although they cannot be directly generalized in strict sense. More research is needed to address this issue by examining and comparing the introduction and usage of wiki in different business contexts.

## References


Almeida, F.L.F. and Rocha, R.M. (2011), "Introduction of a wiki in an enterprise: motives and challenges", *Journal of Systems Integration*, Vol. 2 No. 4, pp. 46-53.

Andriole, S.J. (2010), "Business impact of Web 2.0 technologies", *Communications of the ACM*, Vol. 53 No. 12, pp. 67-79.

Baxter, G.J. and Connolly, T.M. (2014), "Implementing Web 2.0 tools in organisations: feasibility of a systematic approach", *The Learning Organization*, Vol. 21 No. 1, pp. 6-25.

Borchardt, U. (2013), "Towards value-oriented use of social media for knowledge management in SME", in Fred, A., Dietz, J.L.G., Liu, K. and Filipe, J. (Eds), *Knowledge Discovery, Knowledge Engineering and Knowledge Management*, Springer Berlin Heidelberg, pp. 323-336.

Dotsika, F. and Patrick, K. (2013), "Collaborative KM for SMEs: a framework evaluation study", *Information Technology & People*, Vol. 26 No. 4, pp. 368-382.

Gardner, B. (2013), "Making sense of enterprise 2.0", *VINE*, Vol. 43 No. 2, pp. 149-160.

Gears, D.A. (2012), "Corporate wiki conduct: a study of organizational influences, emotion and motivation", *Journal of Leadership, Accountability and Ethics*, Vol. 9 No. 3, pp. 75-85.

Gonzalez-Reinhart, J. (2005), "Wiki and the wiki way: beyond a knowledge management solution", *Information Systems Research Center*, pp. 1-22.

Grace, T.P.L. (2009), "Wikis as a knowledge management tool", *Journal of Knowledge Management*, Vol. 13 No. 4, pp. 64-74.

Hasan, H. and Pfaff, C.C. (2006), "The wiki: an environment to revolutionise employees' interaction with corporate knowledge", *Proceedings of the 18th Australia Conference on Computer-Human Interaction: Design: Activities, Artefacts and Environments*, ACM, pp. 377-381.

Hester, A.J. (2010), "Increasing collaborative knowledge management in your organization: characteristics of wiki technology and wiki users", *SIGMIS-CPR '10*, Vancouver, 20-22 May, pp. 158-164.

Holtzblatt, L.J., Damianos, L.E. and Weiss, D. (2010), "Factors impeding wiki use in the enterprise: a case study", *CHI 2010 Extended Abstracts on Human Factors in Computing Systems*, pp. 4661-4676.

Jackson, P. and Klobas, J. (2013), "Deciding to use and enterprise wiki: the role of social institutions and scripts", *Knowledge Management Research & Practice*, Vol. 11 No. 4, pp. 323-333.

Jennex, M.E., Smolnik, S. and Croasdell, D. (2007), "Knowledge management success", *Proceedings of the 40th Annual Hawaii International Conference on System Science*, IEEE.

Kiniti, S. and Standing, C. (2013), "Wikis as knowledge management systems: issues and challenges", *Journal of Systems and Information Technology*, Vol. 15 No. 2, pp. 189-201.

Kosonen, M. and Kianto, A. (2009), "Applying wikis to managing knowledge – a socio-technical approach", *Knowledge and Process Management*, Vol. 16 No. 1, pp. 23-29.

Leuf, B. and Cunningham, W. (2001), *The Wiki Way: Collaboration and Sharing on the Internet*, Addison Wesley, Reading, MA.

Levy, M. (2009), "WEB 2.0 implications on knowledge management", *Journal of Knowledge Management*, Vol. 13 No. 1, pp. 120-134.

Lykourentzou, I., Dagka, F., Papadaki, K., Lepouras, G. and Vassilakis, G. (2012), "Wikis in enterprise settings: a survey", *Enterprise Information Systems*, Vol. 6 No. 1, pp. 1-53.

Majchrzak, A., Faraj, S., Kane, G.C. and Azad, B. (2013a), "The contradictory influence of social media affordances on online communal knowledge sharing", *Journal of Computer-Mediated Communication*, Vol. 19 No. 1, pp. 38-55.

Majchrzak, A., Wagner, C. and Yates, D. (2006), "Corporate wiki users: results of a survey", *Proceedings of the 2006 International Symposium on Wikis*, ACM, pp. 99-104.

Majchrzak, A., Wagner, C. and Yates, D. (2013b), "The impact of shaping on knowledge reuse for organizational improvement with wikis", *MIS Quarterly*, Vol. 37 No. 2, pp. 455-469.

Mansour, O., Abusalah, M. and Askenäs, L. (2011), "Wiki-based community collaboration in organizations", *International Conference on Communities and Technologies*, *ACM*, *Brisbane*, *29 June-2* July.

Meloche, J.A., Hasan, H.M., Wills, D., Pfaff, C. and Qi, Y. (2009), "Co-creating corporate knowledge with a wiki", *International Journal of Knowledge Management*, Vol. 5 No. 2, pp. 33-50.

Meske, C. and Stieglitz, S. (2013), "Adoption and use of social media in small and medium-sized enterprises", in Harmsen, F. and Proper, H. (Eds), *Practice-Driven Research on Enterprise Transformation*, Springer, Berlin, pp. 61-75.

Milovanović, M., Minović, M., Štavljani, V., Savkovi, M. and Starčević, D. (2012), "Wiki as a corporate learning tool: case study for software development company", *Behaviour & Information Technology*, Vol. 31 No. 8, pp. 767-777.

Mühleisen, B., Schneider, C., Witschel, H.F. and Gutknecht, C. (2013), "Success factors of enterprise 2.0", *Proceedings of the 13th International Conference on Knowledge Management and Knowledge Technologies*, *Graz*, *4-6 September*.

Mujadi, H., Takeda, H., Shakya, A., Kawamoto, S., Kobayashi, S., Fujiyama, A. and Ando, K. (2006), "Semantic wiki as a lightweight knowledge management system", *Semantic Web – ASWC Proceedings*, pp. 65-71.

Muller, E. and Doloreux, D. (2009), "What we should know about knowledge-intensive business services", *Technology in Society*, Vol. 31 No. 1, pp. 64-72.

Palacios-Marqués, D., Soto-Acosta, P. and Merigó, J.M. (2015), "Analyzing the effects of technological, organizational and competition factors on Web knowledge exchange in SMEs", *Telematics and Informatics*, Vol. 32 No. 1, pp. 23-32.

Panahi, S., Watson, J. and Partridge, H. (2013), "Towards tacit knowledge sharing over social web tools", *Journal of Knowledge Management*, Vol. 17 No. 3, pp. 379-397.

Pfaff, C.C. and Hasan, H.H. (2011), "Wiki-based knowledge management systems for more democratic organisations", *Journal of Computer Information Systems*, Vol. 52 No. 2, pp. 73-82.

Razmerita, L. and Kirchner, K. (2011), "How wikis can be used to manage knowledge in SMEs: a case study", *Business Information Review*, Vol. 28 No. 3, pp. 175-178.

Singh, J., Kaur, A., Harun, R., Safinas, R.N. and Fareed, W. (2013), "Affordances of wikispaces for collaborative learning and knowledge management", *GEMA Online Journal of Language Studies*, Vol. 13 No. 3, pp. 79-97.

Soto-Acosta, P., Perez-Gonzalez, P. and Popa, S. (2014), "Determinants of Web 2.0 technologies for knowledge sharing in SMEs", *Services Business*, Vol. 8 No. 3, pp. 425-438.

Sousa, F., Aparicio, M. and Costa, C.J. (2010a), "Organizational wiki as a knowledge management tool", *SIGDOC*, San Carlos, 27-29 September, pp. 33-39.

Sousa, F., Aparicio, M. and Laureano, L. (2010b), "Different contributor profiles in an organizational wiki", *OSDOC*, Lisbon, 8 November.

Standing, C. and Kiniti, S. (2011), "How can organizations use wiki for innovations?", *Technovation*, Vol. 31 No. 7, pp. 287-295.

Standing, C., Standing, S. and Law, F. (2013), "The role of the lifeworld concept in wiki adoption and use", *The Design Journal*, Vol. 16 No. 4, pp. 486-508.

Stieglitz, S. and Dang-Xuan, L. (2011), "Adoption and use of corporate wikis in German small and medium-sized enterprises", *AMCIS 2011 Proceedings*, *Detroit*, *4-7 August*.

Stocker, A., Richter, A., Hoefler, P. and Tochtermann, K. (2012), "Exploring appropriation of enterprise wikis: a multiple-case study", *Computer Supported Cooperative Work*, Vol. 21 Nos 2/3, pp. 317-356.

von Krogh, G. (2012), "How does social software change knowledge management? Toward a strategic research agenda", *Journal of Strategic Information Systems*, Vol. 21 No. 2, pp. 154-164.

Wagner, C. (2004), "Wiki: a technology for conversational knowledge management and group collaboration", *Communications of the Association for Information Systems*, Vol. 13 No. 1, pp. 265-289.

Wagner, C. and Majchrzak, A. (2007), "Enabling customer-centricity using wikis and the wiki way", *Journal of Management Information Systems*, Vol. 23 No. 3, pp. 17-43.

Yates, D., Wagner, C. and Majchrzak, A. (2010), "Factors affecting shapers of organizational wikis", *Journal of the America Society for Information Science and Technology*, Vol. 6 No. 3, pp. 543-554.

Yeo, M.L. and Arazy, O. (2012), "What makes corporate wikis work? Wiki affordances and their suitability for corporate knowledge work", in Pefers, K., Rothenberger, M. and Kuechler, B. (Eds), *Design Science Research in Information Systems. Advances in Theory and Practice*, Springer, Berlin, pp. 174-190.

## About the authors

Ettore Bolisani (Laurea "Electronic Engineering" and Ph.D. "Innovation Studies" – Padua University), after being an E.U. "Marie Curie" research fellow at PREST (University of Manchester) and a researcher at the Universities of Trieste and Padua, is now Associate Professor at the Faculty of Engineering of the University of Padua. His research centres on ICT management and Knowledge Management. He has participated in various research projects funded by the E.U., Italian Institutions and private organisations. He was Chair of the European Conference on Knowledge Management (University of Padua, 2009) and Editor of "Building the Knowledge Society on the Internet. Sharing and Exchanging Knowledge in Networked Environment" – IGI Global, Hershey PA (2008). He is co-founder and first president of the International Association for Knowledge Management (www.iakm.net).

Enrico Scarso is Associate Professor of Engineering Management at the Department of Management and Engineering, University of Padua (Italy). He received his PhD degree in Industrial Innovation from the University of Padua. His current research interests are in the area of technology and knowledge management, with a particular focus on the role of knowledge-intensive business services in local innovation systems. He has published in Technovation, *International Journal of Technology Management*, *International Journal of Electronic Commerce*, *Journal of Knowledge Management*, *Management Decision*, *International Journal of Operations & Production Management* and has presented various papers at international conferences. He is co-founder and secretary of the International Association for Knowledge Management (www.iakm.net). Enrico Scarso is the corresponding author and can be contacted at: enrico.scarso@unipd.it