How can organizations use wikis for innovation?

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ABSTRACT

Wikis were first developed over 15 years ago. Research has shown that organizational or corporate wikis are sustainable and can be beneficial to organizations particularly in improving work processes, collaboration and knowledge management. However, there has been little research done to show how organizations can use wikis to support innovation processes. To bridge this gap, this paper explores how wikis can be used in different stages of innovation. We review existing literature as well as analyze case studies of wikis deployed in four organizations in order to highlight how wikis can be used to address challenges of knowledge management and collaboration in different stages of innovation from idea generation to commercialization. In particular, we propose a model that explains how wikis require a clear purpose for their use, a culture of collaboration, and integration within a formal innovation process.

1. Introduction

The purpose of this study is to explore how wikis can contribute to organizational innovation. The significance of collaborative social networks in fostering organizational innovation represents a paradigm shift in the conceptualisation of innovation processes. Researchers argue that innovation processes require the support of collaborative technologies because they help in the efficient storage and retrieval of codified knowledge, bring people together to innovate, enable the formation of virtual teams to carry out the innovation process and create an organizational climate that favours product innovation (Kohler et al., 2009). We argue that wikis have significant potential as collaborative and knowledge management tools in organizations and hence the aim of this paper is to examine and identify how wikis can be used at various stages of the innovation process to support the development of new products and organizational processes.

The structure of the paper is as follows: first, we define the wiki concept and then review the literature on the use of wikis in organizations both from a collaborative and a knowledge management perspective. In the next section, we explore organizational innovation and identify the stages of innovation. The paper then presents case studies that illustrate the deployment of wikis in 4 organizations. An analysis of the case studies is presented to show how wikis can be used to support the stages of innovation and the key success factors for wiki adoption and use. Finally,

we discuss the key management and organizational factors that need to be addressed to make the process successful. The original contribution of the paper is in mapping the uses of wikis against the stages of innovation and in identifying the additional factors that need to be considered to make their use organizationally effective.

2. The wiki concept

Wikis are simply defined as websites which are collaboratively created by multiple users in a web browser (Wagner and Majchrzak, 2007). Wikis differ from other websites because they not only allow users to contribute but also to modify and update content automatically (Hester and Scott, 2008). In a wiki, anyone can create a new page as well as add, edit or delete content within an existing page thereby creating a " freely, expandable collection of interlinked web pages" (Leuf and Cunningham, 2001, p.14). The first wiki is attributed to Ward Cunningham, a software developer based in Oregon, U.S.A., in 1995. This wiki was referred to as the Portland Pattern repository and it is found at http://c2.com/cgi/wiki According to Choate (2008), Cunningham's goal was to use the www as a way for software developers to "more readily share ideas about design patterns" (p. 2). The term wiki which means "quick" in Hawaiian was deliberately chosen by Cunningham to describe how wiki technology enabled fast creation of content online (Taft, 2006).

Wikis are described as being made up of two components: the wiki technology and the social norms or principles enabled by the technology which is also referred to as the wiki way. Since the development of the first wiki, a variety of wiki engines (known as

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wiki clones) are freely available on the web. The wiki page available at http://c2.com/cgi/wiki?WikiEngine provides a list of more than 200 different wiki engines and also offers a top ten list of the most popular wiki engines. These wikis differ in their design, as well as their intended use, with some wikis being better suited for corporate rather than personal use.

Prasarnphanich and Wagner (2009) define the "wiki way" as the underlying system of social principles or norms, partly embedded in the wiki technology and partly shared as a code of conduct within the wiki community. The wiki way exhibits certain characteristics including collaborative writing of shared pages with little individualism, openness to change and modification by anyone and cumulative, incremental development which allows integration of new contributions with existing ones.

Nowhere are the characteristics of the wiki way more evident than in Wikipedia. Wikipedia, the world's most famous online encyclopedia runs on MediaWiki which is free web-based wiki software. Wikipedia's information page (http://en.wikipedia.org/wiki/Wikipedia:About) states that the name "Wikipedia" was formed by merging the words wiki and encyclopedia. Wikipedia symbolizes the collaborative nature of wikis as evidenced in its description as a free encyclopedia that is written collaboratively and that anyone can edit. Wikipedia was created in 2001 and now boasts over 3 million articles. That number continues to grow daily as the visitors to the site continue to edit and create new articles every day.

2.1. Wiki use in organizations

Wikis are cited as examples of web 2.0 and social software tools, a group which also includes weblogs (blogs), folksonomies (social bookmarking, social tagging) and social network sites (e.g. facebook, linkedin). Web 2.0 tools are defined as a new generation of web based collaborative tools that are changing the way people work and the way information is created and shared (Dearstyne, 2007; Hasan and Pfaff, 2006; McAfee, 2006). Web 2.0 tools have experienced phenomenon growth in the last couple of years. This is attributed to the growing popularity of online social media networks like MySpace, You Tube, Flickr and Second Life which allow for easy exchange of personal information, photos and videos as well as the growing importance of knowledge workers who are heavily dependent on information systems tools for information creation, access and exchange (Avram, 2005; Dearstyne, 2007; Hester, 2010). An article by Singer (2008) cites a report by Forrester research which claims that companies are expected to spend $4.6 billion by 2013 to integrate web 2.0 applications into their corporate computing environment. The report highlights mega-companies such as General Motors, McDonald's, NorthWestern Mutual Life Insurance and Wells Fargo among those who have already jumped into the Web 2.0 bandwagon.

One of the earliest applications of wikis for collaboration is in software development. Wikis provide an opportunity for widely distributed and decentralized teams of people to collaborate to produce software (Louridas, 2006). Web 2.0 tools emphasize online collaboration and sharing among users. In organizations, wikis can be used for collaboration between individuals or teams, located at the same location or at different locations. Prasarnphanich and Wagner (2009) argue that wikis offer more opportunities for collaboration than other web 2.0 tools. This is because of the unique characteristics of wiki technology and design which includes:

- *Collaborative authorship*—Wikis enable web documents to be authored collectively and individual web pages are not owned by their creators. Any user (registered or not) can edit the pages and save new page version which replace earlier versions.
- *Instant publication*—New saved pages are instantly published in the wiki because there is no editor review. Because any published content is immediately visible, other users have opportunity to add to the contribution, thereby creating new content and new opportunities for further editing resulting in a continuous process of incremental knowledge contribution referred to as wiki magic.
- *Versioning*—Prior versions are stored in the wikis temporal database. This version management acts as a safeguard against accidental content destruction or vandalism as well as providing a way to keep track of prior changes including author, date and other related information
- *Simplicity of authorship*—Wiki authorship is relatively easy and users do not require any web publication skills. Users can write using plain text or simplified mark up language. Hyperlinks are easily created using double hypothesis.

2.2. Wikis as knowledge management systems

Hasan and Pfaff (2006) refer to wikis as next generation knowledge management systems (KMS) providing an alternative to traditional knowledge management systems by addressing many of their limitations. Traditional KMS are described as IT-based systems whose functions include codifying and sharing of best practices in a knowledge repository and the creation of corporate knowledge directories and networks (Alavi and Leidner, 2001). The creation of these repositories is described as time consuming, laborious and costly. Meloche et al. (2009) also argue that these repositories do not serve their purpose because they are not updated regularly and are often ignored by knowledge workers.

Some researchers also argue that KMS have failed to capture tacit organizational knowledge (Hasan and Pfaff, 2006; O'Leary, 2008). The theory of knowledge creation (Nonaka, 1994) categorizes knowledge as explicit or tacit. Explicit knowledge is defined as knowledge that can be codified and is transmissible in formal, systematic language while tacit knowledge is hard to formalise and communicate (Nonaka, 1994; Nonaka and Takeuchi, 1995). In organizations, tacit knowledge is difficult to capture and exploit because it resides inside people (Stenmark, 2001) and is deeply rooted in each individuals action experiences as well as the ideals, values and emotions they hold (DeSouza, 2003).

Web 2.0 technologies, including blogs, wikis and discussion forums, have been proposed as a way to overcome the problem of managing tacit knowledge in organizations. Wagner (2004) and Wagner and Bolloju (2005) refer to these technologies as "conversational technologies" and argue that they can facilitate knowledge management processes from knowledge creation and storage to knowledge use and refinement. These processes are carried out "conversationally", that is, is through a discussion forum where participants contribute to the discussion with questions and answers, or through a blog which is typified by a process of storytelling or through a wiki using collaborative writing. As such, conversational technologies present a knowledge management solution that is inexpensive, fast and supports the collaboration of people in distributed locations.

Wagner (2004) argues that although conversational technologies like discussion groups and web blogs offer similar advantages for knowledge management, the wiki technology has the potential to address some specific knowledge needs including capture of ad hoc as well as distributed knowledge, location and filtering of knowledge and maintenance of dynamically changing knowledge.