

Success Factors of Enterprise 2.0

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ABSTRACT

This paper presents the results of three interlinked case studies in companies who have recently introduced Wiki software. The case studies were all conducted with the same methodology, starting with an interview with the responsible person, design of a survey based on the interview findings and then application and interpretation of the survey. The goal of the studies was to identify success factors and/or barriers for Enterprise 2.0 adoption. The results show some clear common trends among the studied companies, which lead to a set of general recommendations for successful introduction of Enterprise 2.0.

Categories and Subject Descriptors

H1.2 [Information Systems]: User/Machine Systems

General Terms

Human Factors, Verification.

Keywords

Knowledge Management, Enterprise 2.0, Knowledge technologies

1. INTRODUCTION

Social software has become very popular and successful in the internet where systems like Wikipedia or Stack overflow show how a combination of individual users' contributions can result in huge and highly valuable knowledge sources, leveraging the so-called "wisdom of the crowds".

Attempts to introduce social software into a business environment ("Enterprise 2.0") turned out to be less successful. It seems that – besides the obvious scale difference – enterprise contexts notably differ from the open web in terms of the motivation of people to contribute. The purpose of this paper is to clarify the sources of motivation in enterprise settings by

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conducting interviews and surveys with business users of such systems.

1.1 Enterprise 2.0

Enterprise 2.0 was introduced by McAfee [6] and refers to the use of Web 2.0 technologies in companies. In his article, McAfee mentioned six requirements for Enterprise 2.0 systems, comprising the need for easy contribution, linking and tagging of content, smart technologies for recommending improvements automatically, as well as for effective information supply via search and subscription.

According to an AIIM industry watch report [7] "Help finding and sharing expertise" and "Break down departmental / geographic barriers" are currently the key drivers for Enterprise 2.0, while Corporate culture and a general lack of awareness and leadership are the biggest impediments.

1.2 Research question

In this work, we aim to investigate the success factors of Enterprise 2.0 more deeply. In particular, we aim to clarify the motivation of the employees to participate in the knowledge sharing process of a company. From this, we will derive a set of concrete recommendations for improving that motivation. We constrain our research to Wiki software because Wikis are a "common denominator" across a large number of companies.

1.3 Methodology

To answer our research question we examined three enterprises in the IT sector, which have recently implemented a Wiki software. Our results have been obtained via three interlinked case studies, conducted along the following four steps:

1. We interviewed the persons responsible for the introduction of the Wiki to find out about the motivation for the introduction of the software in each company, the used motivation techniques and their perceived success. We used open questions to allow the interviewee to share any relevant experience.
2. Next, we designed a survey with closed questions – based on the results from the interviews in the first step and on existing information about people's motivation in knowledge sharing in the web – to find out if the users of the software shared the impression of the interviewed person.

3. We then compared the results of interviews and surveys and drew conclusions that we translated into a set of recommendations for successful Wiki introduction.

2. RELATED WORK

A large part of the literature about company-internal use of social software focuses on one particular tool. There is, e.g., specific literature about enterprise microblogging [8, 9], the corporate use of weblogs [4], wikis [10] or social networks [2].

Stocker et al [10] explore how enterprise wikis are used in practice by comparing 15 studies from 2005 to 2010. As a summary, they state that *“most of the reviewed wiki publications, do not explicitly take the perspective of the knowledge worker into account, [...] Whenever scientific publications have researched the behavior of users, the respective usage of the wiki was not comprehensively outlined.”* It is the goal of the present work to close this gap.

Majchrzak et al. [5] divided the respondents of a survey into different groups according to their wiki behavior, namely into “adders” who focus primarily on adding new content and “synthesizers” who focus primarily on synthesizing already existing content.

Arazy et al. [1] did a survey at IBM and found that the motivational factors driving wiki participation in corporate settings seemed similar to the motivation of open source and Wikipedia users. Enjoyment, learning new skills and direct benefits were important drivers, while social pressure did not play a large role. Furthermore they noticed a correlation between motivation level and wiki proficiency, suggesting that as users become more proficient in using wikis, the motivation for wiki adoption and usage will increase.

Holtzblatt et al. [3] report various factors impeding wiki use in a governmental research organization. They found a reluctance to share specific information due to a perceived extra cost, the nature of the information and the desire to share only “finished” content. They also discovered a heavy reliance on other, non-wiki tools due to traditional work practice, lack of guidelines, and cultural sensitivities. To improve the situation they recommend including implementation of incentive structures, support for dynamic access control, documenting clear guidelines and policies, and making wikis more usable.

3. INTERVIEW RESULTS

As mentioned before, we selected 3 companies of different size in the IT sector, which use some kind of enterprise social software. Table 1 shows a short overview of the selected companies:

Table 1- Overview companies

	<i>Company 1</i>	<i>Company 2</i>	<i>Company 3</i>
Employees	11'000	15	70
Sector	Energy Trading	Software-Development	Software-Development

All three companies use the Atlassian Confluence Wiki. We conducted interviews with the responsible person in each company. Each interview covered the following four topics:

- Context: background information of the company, its internal structure and the rough field of usage of the Wiki.

- Motivation and implementation: origin of the project, reason for the introduction, way of introducing the system.
- Operation: usage of the system, content handled, motivation of the users, support provided.
- Conclusion: Summary of success/usefulness/acceptance of the system in the specific company

3.1 Company 1

- **Context:** Our first subject of investigation is a large energy company in Switzerland. They operate in the fields of energy and energy services and have subsidiaries in many cities in and outside Switzerland. They operate power stations in 8 European countries; they exist since the beginning of 2009 as the result of a merger. The Wiki-System is used only by a small fraction of all employees (currently around 400).
- **Motivation and implementation:** Company 1 uses the wiki since 2005. It was introduced as part of an internal project as a system documentation platform and as a project storage. At that time, only an intranet and an electronic file storage were available. The wiki is neither supported by nor was it brought up by the management. It is only used in some departments. Therefore there is no companywide wiki.
- **Operation:** Company 1 runs only one wiki instance with several spaces for different units. The technical maintenance of the system is handled by IT Operations and the “Application Responsible”. The maintenance of the content is handled individually for each space by the business unit to which it belongs. There is no overall directive or rule on how to work with the wiki. There are, however, power users who are responsible for a certain business unit’s space and meet from time to time with other power users.
- **Conclusion:** According to our interview partners, the wiki is well used on some spaces, but rather poorly on others. Users are sometimes unsure about what kind of information belongs in the wiki. However, new spaces are continuously created. There is too much and outdated content which leads to difficulties in finding the right information quickly. This leads to frustration with the system and hence a lack of participation.

3.2 Company 2

- **Context:** Our second company is a small software development company in Zürich. There is one location with several offices with maximum four employees in it.
- **Motivation and implementation:** The Wiki is used company-wide since around one year. It has been brought up by employees. After an evaluation it has been supported by the management. The goal of the Wiki was to replace the file system used in project documentation. The first rollout took place in one team. This pilot team developed guidelines and designed a project structure.
- **Operation:** Each project has a dedicated space in the wiki system. Therefore, content is well organized. In addition to the project spaces there is a company space for sharing know-how on a general level. Furthermore, a wiki master motivates employees during meetings to create entries about the discussed topic. This ensures a constant flow of new information. The wiki master also labels outdated

content. According to our interview partner, the motivation to use the wiki depends on the individual employee as well as on the project managers who can freely decide whether to use the wiki.

- **Conclusion:** According to our interview partner, the wiki is constantly in use. All initial expectations have been fulfilled. Especially the project template, which was designed during the pilot time, is working really well. There is much potential in Confluence that they do not use. There is currently no customization of the system. The only weakness is the disintegration with the file system.

3.3 Company 3

- **Context:** Company 3 is a young firm offering agile web development. As a merger from two companies in 2007 they now operate in four locations in Switzerland. The majority of the 70 employees are young web developers working in development teams. Further staff includes the management, administration and business development.
- **Motivation and implementation:** Company 3 uses the wiki since its foundation. Both predecessor firms used a Wiki (Mediawiki, Tiki Wiki), which were integrated into Confluence right after the merger. The biggest of the three analyzed wikis has been brought up by the management itself and was therefore strongly supported by it.
- **Operation:** Company 3 runs three Wiki instances, namely an internal one, one for project documentation, accessible to customers and a public Wiki for documenting open source projects. The internal wiki is highly customized in respect to workflows and project templates. It is used for generation of quotes, bills or dunning letters. However it doesn't replace entirely the specialized financial accounting software. The wiki also includes organizational content such as information about holiday absences. While the wiki is generally open for every employee, there are a few restricted spaces like personnel, financial or board of directors. New employees receive a Wiki training.
- **Conclusion:** According to our interview partner, the wiki is well used and most people like to share information. Since documentation is normally part of a project, there is enough time to create wiki content. Furthermore the firm's culture supports information sharing. Recently it has been recognized that there is too much content and it is difficult – especially to new employees - to find relevant information. With the constant growth and no explicitly defined responsibility, the wiki has some inconsistencies, like duplicate content or unclear navigation. As a consequence it was decided to have no more new space and the wiki will get an intranet-like navigation. Additionally Google Analytics is used to get often-used search terms, which resulted in zero hits. It's also planned that a responsible person is appointed to each space.

Table 2 - Survey Sample Size

	<i>Company 1</i>	<i>Company 2</i>	<i>Company 3</i>
Total Users (approx.)	400	15	70
# users contacted	160	6	28
Survey Size (effective)	20	3	4

4. SURVEY RESULTS

We next performed a survey among the company employees based on the interview insights. It had the same parts: context, motivation and implementation, operation and conclusion. Most questions used a 4-point Likert scale, complemented by a few open text questions. **Table 2** summarises the survey sample sizes at the three companies.

4.1 Activities

By far the most frequent activity in all wikis is reading. Most of the users read an entry at least once a day. Both creating and editing entries is performed on a weekly basis on average, whereas commenting entries is a rarely performed at all. At Company 3, all users heavily use the wiki as an information source. All of the respondents read entries several times a day.

4.2 Purpose

When asking participants about the purpose of Wiki usage, we found that the key purpose of all wikis is to find business relevant information and documenting project and individual work. Using the wiki for informal communication does not seem to be important. In Company 3, however, all respondents use the wiki to observe what happens in the company. The reason for this could be that Company 3 has no intranet.

4.3 Personal motivation

When asking about their personal expectations, all respondents answered that they participate mainly for their individual benefit. Increasing professional status was not very important whereas meeting company requirements with the use of wiki was mentioned frequently – an exception being the respondents from Company 3. In all companies, only some participate because they hope to motivate others to do the same.

4.4 Supported areas

Knowledge management is seen as the main area where a wiki is seen as a support, as well as the simplification of work, the improvement of efficiency of collaboration and cooperation with team members. The development of new ideas does not seem that important in a wiki, with the exception of Company 3 where no respondent says that it is not true.

4.5 Time used for Wiki activities

Most of the respondents use normal work time to perform wiki activities. Around half of them also use project time, which can be explained by wiki use for project documentation. Only a few people at Company 1 and 3 use dedicated wiki time. And no respondent said that they use their free time or do not have time at all to use the Wiki.

4.6 Assessment of Wiki content and structure

Most of the respondents are happy about the content quality of their wiki. On the other hand the majority is unhappy about the insufficient content up-to-dateness. It also seems to be a major problem to structure and organize the content in an easy way. E.g. in company 3, the content finding and its structure is rated insufficient. This had been stated in the interview, too.

4.7 Suggestions for improvements

We then asked the participants which of the previous areas had the greatest potential for improvement. According to the respondents there is big improvement potential for all of these,

except usability. The only surprise here is that there is still so much (perceived) room for improving content quality, although respondents rated the quality highly in the previous question.

4.8 How to increase motivation

We then asked which action would increase the participants' motivation to use and contribute to the Wiki. Almost all respondents would see an effect on the motivation if the content had good moderation according to quality and up-to-dateness. Additionally, official guidelines and rules how to use the wiki are seen as major factors for increasing motivation, especially at Company 1 where no management support exists for the Wiki. Monetary reward is also chosen frequently at Company 1, potentially attributable to its size and the existence of a bonus system there. A scoreboard, good design or dedicated wiki time do not seem really important for the motivation to use the wiki.

4.9 Barriers

The main perceived barriers hindering a success of the Wiki seem to be the absence of responsible persons, the lack of clarity what belongs into the wiki and the missing structure of the content. Furthermore, lack of good and current content is regarded as a barrier. The low will to share knowledge is rated differently by many respondents. Too much transparency is hardly mentioned as a barrier in all the companies.

4.10 Support

When asking for support quality, answers were heterogeneous across the companies: most of the respondents from Company 1 think that there is enough support. At Company 2, there is a tie between "Yes" and "No" answers. All of the respondents from Company 3 think that there is too little support. Possibly, the wiki's official character creates higher user expectations there.

5. CONCLUSIONS

5.1 General findings

All wikis are more or less well accepted by both the responsible persons whom we interviewed and the respondents of the surveys. In most cases, the conducted surveys corroborate the views of the interview partners. The following barriers to success have been consistently found in all three case studies:

- Outdated content: users cannot be sure of up-to-dateness, which is deemed problematic as opposed to the quality.
- Navigational structure: it is difficult for users to navigate and find specific information due to lack of clear structure. Solutions seem to be a rigidly defined structure (with the disadvantage of decreasing flexibility) or the introduction of a Wiki master.
- No moderation: A wiki moderator should link content, label outdated entries and help to organize content.

The approaches to solve those issues vary: e.g. for outdated content, companies 2 and 3 have set up dedicated projects or responsible persons - although with debatable success as the survey results for company 2 have shown. Company 1, where management support is lacking has no such plans.

5.2 Company-specific findings

Some findings are only valid for some of the three companies and can be understood when analysing the special situation of the companies. For instance, the existence of a bonus system and to some extent the size of company 1 explains why a monetary reward has motivational potential. It also seems

logical that Company 1, having no management buy-in to the Wiki, is lacking rules and guidelines for Wiki use. The official character and high degree of sophistication of company 3's Wiki can be an explanation for the increased expectations of users w.r.t. content finding.

Although it is hard to generalize from these findings, some problems being mentioned only in one company where this seems natural and the same problems *not* being mentioned in the other cases, points towards the same conclusion.

5.3 Recommendations

Based on the findings from the previous subsections, we conclude with a set of recommendations for Wiki introduction:

1. Keep content up to date
2. Care about clear content structure and navigation
3. Moderate the wiki (content)
4. Set up minimal guidelines and rules about the utilization of the wiki
5. Consider monetary reward if there exists a compensation scheme
6. Provide wiki support (technical)
7. Improve content finding

These recommendations are prerequisites to raise and uphold the motivation of Wiki users and thus ensure success of the Wiki endeavour.

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