

A Comparative Study on the Use of Web 2.0 in Enterprises

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Abstract: An increasing amount of companies are interested in using the innovative potential of Web 2.0 technologies. This paper describes the main results of a comparative analysis of several quantitative empirical studies on the use of Web 2.0 in enterprises. This includes findings about diffusion, possibilities of application, benefits, barriers, and factors of success for the use of Web 2.0 in enterprises. The findings of this comparative study show effective and reasonable ways of using Web 2.0 in enterprises.

Keywords: Web 2.0, Enterprise 2.0, empirical study, survey, potential, benefit, barrier

Categories: A.1, H.4.2, H.4.3

1 Introduction

During the last years, the term “Web 2.0” [O’Reilly 05] has found its way into businesses. Web 2.0 is best described as a combination of new technologies (like web services, AJAX, RSS, mashups), new types of applications (i.e. social software, like wikis, blogs, social networking), new patterns of interaction, and new principles of organisation (e.g. participation, wisdom of crowds) as well as new business models (such as long tail, webtop, etc.). Likewise, the term “Enterprise 2.0” [McAfee 06] has emerged for the use of Web 2.0 applications and technologies in enterprises including the organisational change in enterprises, which accompanies the technical innovation. Due to the high potential of using Web 2.0 applications and technologies in enterprises, much research on their usage in enterprises has been done recently. Usually, relevant case studies (e.g. [Back 08]) or quantitative empirical research (e.g. [Alpar 08]) covering a wide range of objectives, problems, and perspectives constitute the empirical basis for this research work.

This paper offers a comparative analysis of suchlike studies on the use of Web 2.0 in enterprises. Thus, it summarises the current findings of the existing studies on this subject. In addition, it draws some conclusions for the practical application of Web 2.0 technologies in enterprises as well as points to areas for future research. Such a comparison of different studies provides a synopsis of the findings and gives a good orientation about the state of knowledge. In addition, the data for the respective studies, which form the basis for this paper, were collected at different dates, thus making it possible to identify general tendencies about the development and specific fields of use of Web 2.0 in enterprises. Furthermore, the synopsis of many quantitative data gives a greater coverage, thereby offering better possibilities for orientation than a single study. This paper locates differences between the studies compared, thus offering hints to possible areas of further research.

In Section 2, the methodological approach to the analysis of the studies is described in some detail. The findings of the comparative study are presented in Section 3, whereas Section 4 discusses them, draws some tentative conclusions from the findings, and gives a forecast on future research.

2 Methodological approach

The comparative analysis of different studies on the use of Web 2.0 in enterprises will clearly state what is currently known on the subject, especially on the challenges and perspectives. On this basis, deductions can be drawn about necessary further steps for realising the full potential of Web 2.0 in enterprises. Altogether, ten studies were examined in this comparative analysis: [Bughin 07], [Bughin 08], [ClientVela 08], [CoreMedia 07], [Döbler 07], [Herrmann 07], [IBM 08], [Leibhammer 08], [Trommsdorff 07], and [Wittmann 08]. Only studies including data from Germany were selected. Hence, studies only based on data from other countries were not considered. In order to assure the comparability of the studies, they were selected according to the following principles: The studies were to be predicated on quantitative empirical data. In addition, each study should take multiple Web 2.0 applications into its focus. Thus, mere case studies (e.g. [Back 08]) as well as studies focussing on just one single application type (e.g. [Euroblog 07]) were excluded a priori. To assure a high relevance, only studies dating back less than two years were included in the comparative analysis.

To compare the studies an analytical framework was developed. Key aspects were: conceptualisation of the term Web 2.0, diffusion of Web 2.0 in the enterprises, range of application in the enterprises, benefits, barriers, and critical success factors. These are the main aspects the studies are dealing with, the only exception being the conceptualisation of Web 2.0, which is hardly considered by the analysed studies at all. The data was evaluated by using the method of content structuring. That is to say, the material of the studies was partitioned according to the respective aspects of the chosen analytical framework. In the ensuing detailed analysis, typical features were identified by searching for similarities and differences between the studies. This task was accomplished with the aid of the software Atlas.ti 5.5.4. The next section presents the respective findings in an aggregated and concentrated form, abstracting from the details pointed out by the studies.

3 Findings

This section highlights some aspects distilled from the many findings of the comparative study, namely the conceptualisation of Web 2.0, the diffusion, range of application, benefits, and barriers of the use of Web 2.0 in enterprises.

3.1 Conceptualisation of the term Web 2.0

Neither does any of the studies bother to give a precise definition of the term Web 2.0 as used in the context of the respective study nor are the respective interview partners queried as to their understanding of this term. Most of the studies mix up diverse

technologies, application types, principles of organisation as well as business models and juxtapose them in an undifferentiated way (e.g. [Bughin 07]). Implicitly, most of the studies lay particular stress on the technical aspects. This becomes obvious when looking at the possible answers given to the question whether the companies are using Web 2.0. In most cases, certain technologies and application types are enumerated. Only one study [IBM 08] is based on a non-technical definition of the term Web 2.0.

3.2 Diffusion in the enterprises

Generally, the term Web 2.0 is well-known in business by now. As to individual application types, the picture is somewhat more differentiated: While some of the studies report that application types like wikis, blogs, and social networking are known by more than 90% of the companies, the degree of popularity for the types RSS, tagging and bookmarking is significantly lower in the range of 70-80%.

According to the studies based on a technical definition of Web 2.0, over 30% of the companies surveyed make use of Web 2.0 technologies and applications. However, the one study [IBM 08] employing a socio-technical definition of Web 2.0 states that a far smaller share of companies uses Web 2.0 (under 10%).

Undisputedly, wikis are the most widespread Web 2.0 application in enterprises. Similarly, instant messaging and forums are well-established in practical use. Other well-known applications like blogs and social networks, however, are to a significant degree less frequently used. As a rule, the rate of usage of Web 2.0 in enterprises depends heavily on the business sector the company is engaged in as well as on the size of the company. A differentiation between business sectors yields the result that the use of Web 2.0 is very high in the information industry, the reason being that a strong affinity to information and communication technology exists in this branch (e.g. [Leibhammer 08]). In contrast, the industry and the service sector have adopted Web 2.0 less often. In particular, the finance sector shows a comparatively low use of Web 2.0 (e.g. [Wittman 08]). A differentiation according to the size of the enterprise lends some support to the suggestion that the use of Web 2.0 increases with the size of a company. For example, large companies employing more than 5000 persons use some of the application types nearly twice as often as the average.

3.3 Range of application

With respect to the range of application of Web 2.0 in enterprises, one has to distinguish between organisational function and organisational level of use. As to the former category, Web 2.0 is most extensively used in After Sales Service (e.g. [Bughin 07]), Marketing, as well as in Research and Development ([e.g. [Herrmann 07]). Some potential is also seen in Logistics (e.g. [BITKOM 07]). However, Web 2.0 doesn't seem to be particularly suited for Human Resource: According to one study [CoreMedia 07], HR managers are twice as likely to consider Web 2.0 as not suited to be employed in their area as the average manager.

With a view to the organisational level, the most popular area of use for Web 2.0 is the project team. According to the studies surveyed, more than 50% of the Web 2.0 users use Web 2.0 technologies and applications on this organisational level (e.g. [Leibhammer 08]). With 45%, the company-wide use is the second important area. Again, this is more common in larger companies with more than 500 employees (cf.

[CoreMedia 07]). A cross-company use (i.e. collaboration with suppliers, partners, and customers) is also more frequently observed in larger enterprises (e.g. [Bughin 07]), most often a unidirectional distribution of information prevails (e.g. via blogs).

3.4 Benefits

The studies show that the use of Web 2.0 in enterprises has its biggest impact on knowledge work, innovation processes and cooperation. All of these areas will benefit by the improvement and speeding up of processes that an adoption of Web 2.0 technologies and applications entails. Knowledge work is expected to benefit primarily by an improvement of the search for experts and contact persons (e.g. [CoreMedia 07]). Furthermore, a well-directed as well as faster and easier exchange of information should result from adopting Web 2.0 technologies and applications. Besides, the use of external and internal knowledge as well as internal communication processes on the whole are expected to be improved (e.g. [Leibhammer 08]). At the same time and by the same reason, innovation processes are expected to benefit from the use of Web 2.0 technologies and applications as the integration of both external and internal knowledge is improved and the collective intelligence of employees and customers is utilised. In addition, the possibility to use Web 2.0 applications in order to improve cooperation with customers will both raise the quality of service on the one hand and have positive effects on the acquisition of new clients on the other hand, amongst others because the companies get a good means to keep a closer eye on the – possibly changing – customers' needs (e.g. [ClientVela 08]). Internally, companies expect an increased cooperation of employees over and beyond departmental barriers and a better integration of the employees in general (e.g. [Leibhammer 08]). In other areas, like cooperation with partners and suppliers as well as improving the decision processes in general, companies expect the magnitude of benefits due to the adoption of Web 2.0 technologies and applications to be rather limited (e.g. [Bughin07]).

3.5 Barriers

The studies identify a whole range of economic, cultural, and technical factors that can be seen as more or less great obstacles to the use of Web 2.0 in enterprises. From an economic point of view, the biggest drawback for a rapid adoption of Web 2.0 technologies and applications is the fact that cost-benefit analyses yield somewhat hazy results – while it is always possible to pin down the costs of adopting new technologies, it is very hard to determine the exact financial benefit. Further obstacles mentioned are high priority isn't given by the top management, assumed high security risks and inadequate control over the content (e.g. [Döbler 07]). The use of Web 2.0 is also seen as a potential source of distraction for employees (e.g. [Herrmann 07]). To sum up the respective findings of the individual studies, Web 2.0 is not conforming to the prevailing corporate culture. Management as well as employees seem to be quite reluctant to adopt Web 2.0 technologies and applications for doing business [Leibhammer 08]. Such a sceptical attitude is aggravated by the fact that companies rate the technological maturity of available Web 2.0 solutions as quite low, with the possible exception of the IT-affine information industry [Leibhammer 08]. Another important obstacle to the adoption of Web 2.0 technologies and applications in enterprises is their assumed technical complexity (e.g. [CoreMedia 07]).

4 Discussion

4.1 Weaknesses of the studies

Almost all studies feature serious weaknesses with regard to content and method. It is not only the comparison of the studies which is difficult, but in fact, their whole findings have to be questioned. Therefore it is necessary to check the individual findings of the respective studies critically. At this point, only some of the essential points of criticism are given which affect most of the studies.

In almost every study, central analytical terms are not defined or clarified. As aforementioned, this concerns especially fundamental term “Web 2.0”. This leads to surveys, in which aspects are parallelized and compared, which are not on the same level. For instance, one of the studies asks, whether the companies use Web 2.0 and the given possible answers amongst others contain ‘wikis’ and ‘collective intelligence’. But the use of collective intelligence is one aspect in the use of Wikis. A company can not choose between these two things. So, the conclusion “more companies are using wikis than collective intelligence” is useless.

Another point of criticism is that in almost every study the interview partners are members of the management. But especially the Web 2.0 application in enterprises is known to often start bottom up - from the level of the employees [Bughin 07]. Whether the Web 2.0 applications in the enterprise known by the management are used efficiently by the employees, cannot be concluded, but must rather be questioned. On the other hand, not all the tools used by the employees, are necessarily known to the management.

Empirical studies which survey quantitative data must factor these aspects and accordingly design their data acquisition, so that reliable conclusions can be made.

4.2 Need for more sophisticated analysis of the real requirements

Web 2.0 is a trend that is followed first of all by larger enterprises. There, it is easier to allocate resources for Web 2.0 projects like employees, infrastructure or budgets than in small and medium enterprises (SME). Many studies accent, that the use of Web 2.0 in companies increases and will further rise (e.g. [T-Systems 08]). But only a few studies relate the use of Web 2.0 to the challenges, problems, and requirements that they are supposed to address (c.f. [CoreMedia 07] relates knowledge management to the use of Web 2.0 tools). These studies conclude that companies often don't see Web 2.0 as a solution for their problems but as a trend, which has to be followed. This impression is amplified by the development of the use of some application types over the years. While in 2007 32% of the interview partners said, they used or planed to use blogs [Bughin 07], only 21% answered this in 2008 in the following survey [Bughin 08]. So, every third company had stopped its blog project. The enthusiastic start of projects is often followed by the disillusioning result, that not all tools bring real improvements with them. Therefore, it is necessary to analyse the individual need and the requirement of the enterprise before introducing Web 2.0 applications. Appropriate methods for analysis are not available yet, but object of recent research.

4.3 Organisational potentials are hardly seen and exploited

The studies compared show that Web 2.0 provides an enormous potential of innovation for enterprises and there are a lot of possibilities for the use of Web 2.0 in enterprises. But in contrast, our analysis of the studies also shows that the potentials of the use of Web 2.0 in enterprises for the design of new forms of work and organisation are hardly exploited or even seen.

The use of Web 2.0 in enterprises does not only mean the introduction of a new web technology. It also relates to a change of current work and organisational structures as well as business processes. In general, with the introduction and use of Web 2.0, an enormous organisational potential can be realised. This organisational potential of Web 2.0 relates particularly to the possibilities for the creation of new forms of work and organisation as well as new business models. For instance, by the means of Web 2.0 principles (c.f. participation), a conversational communication instead of a Tayloristic one-way-communication can be established, open innovation processes with partners, customers and suppliers can be realised, and group-oriented work can be designed. It supports the overcoming of hierarchical structures, the creation of decentralised entities, as well as individual, collaborative and organisational learning. It has been possible to implement fundamental findings of the work sciences regarding the improvement of the social relationships between employees, to which a great number of scientific investigations have repeatedly called attention. This way, Web 2.0 enables new work and organisational forms, which can promote personality and organisational development. But our analysis shows, there is not sufficient awareness of the necessary organisational changes. The highest benefit is mainly expected in the optimisation and speedup of existing processes. But the potentials of the creation of new forms of work and organisation are hardly seen. Obviously, enterprises are not aware sufficiently that with the introduction and use of Web 2.0 the related forms of work and organisation have to be changed fundamentally. In addition, the analysis of existing studies shows that these studies mainly focus on technical aspects. Only one study [IBM 08] focuses the possibilities of new organisational forms. It is not clear to which extent the results of the studies are influenced by this fact or reflect the real situation in the enterprises. New studies have to be conducted taking non-technical aspects into account in more detail.

One main reason for this situation is that consequences of the new organisational principles of Web 2.0 are not understood sufficiently and therefore the necessity of an intentional design and development of an enterprise towards an enterprise 2.0 is not fully obvious. If progress should be made in the field of the use of Web 2.0 in enterprises, it is necessary to intensify the work on theoretical foundations and methodology of Web 2.0 principles, their analysis as well as the transfer of this knowledge to the practice in enterprises. Further detailed and methodologically assured empirical analysis can provide an essential contribution to this.

Acknowledgements

This work is a result of the research project ICKE 2.0 (www.icke-projekt.de) which is supported by the German Ministry of Education and Research, BMBF (Grant No. 01IH08040A).

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