Improving Knowledge-Intensive Business Processes Through Social Media

Abstract

Social media are confirmed to have one of the most transformative impacts of technology on business, within and outside organizational boundaries. This research investigates the impact of social media on knowledge-intensive business processes, in particular process improvement. We aim to make a research and practical contribution to the emerging research on social media in Business Process Management (BPM), currently dominated by conceptual research. The paper describes an empirical case study research, conducted in a large financial services company, in the context of their Recruitment process. While related research argues that social media are best used within the modeling and execution phases of the BP Lifecycle, our research findings indicate a different approach. In the case organization social media are seen as an enabler of process improvement, changing its main objective from process efficiency to customer-focused effectiveness, even prompting the company to consider possible transformation of their organizational structure.

Keywords (Required)

Knowledge-intensive Business Processes, Social media, Process Improvement, Case study research

Introduction

After more than two decades of Business Process Management (BPM) organizations are starting to shift their attention away from routine, transactional business processes (BPs) towards more complex ones involving situational decision-making and human knowledge. These processes now constitute “the larger portion of organizational activity” (Harrison-Broninski, 2010: 445) and are recognized as the most important BPs today (Davenport, 2005; Le Clair and Miers, 2011).

Therefore, BPs that involve knowledge work that is complex, situational and non-routine are increasingly termed knowledge-intensive BPs (KIBPs) (Eppler, 2006; Dalamaris, Tsui, Hall and Smith, 2007; Davenport, 2010; Kulkarni and Ipe, 2010; Marjanovic, 2011; Marjanovic and Freeze, 2012; Isik et.al., 2013). While improvement of highly structured, transactional BPs is well understood, with many well-known methods available, improvement of knowledge-intensive BPs is still an open research and practical challenge (El Sawy and Josefek, 2003; Dalamaris et al, 2007; Marjanovic, 2011; Isik et al, 2013).

At the same time, the emergence of social media and their transformative impact on all aspects of business, including BPs, have prompted a growing number of researchers to investigate new challenges created by different approaches to combining social media and BPM. The same trend could be also observed in industry with the new term “Social BPM” being coined by Forrester research, and increasingly adopted by industry practitioners, see for example (Bernard, 2013).

Most importantly for our research, recent BPM research offers a promising idea that social media could be particularly suitable for KIBPs, including their improvement (Bruno, Dengler, Jennings, 2010; Smidt, 2012; Xie and Xu, 2009; Erol, Granitzer, Happ et al, 2010; Dollmann, Fettke, Loos, 2009; Dengler,
Koschmider, Oberweis and Zhang, 2011; Mathiesen, Watson et al, 20110). This very idea provided an initial motivation for the research presented in this paper.

Even though research on social media and BPM integration is still emerging, it is possible to observe a research gap related to a notable absence of empirical studies in real-life settings. As illustrated later in the paper, a number of prominent researchers are still engaged in conceptual research, using hypothetical examples to illustrate possible integration of BPM and social media or give recommendations for future research and practice. However, there is currently little understanding what changes are needed within organizational processes to harness the full transformative potential of social media (Aral, et. al., 2013).

The research presented in this paper aims to contribute to building empirical research in this emerging area by considering the following research question:

_How do organizations use social media to support and improve knowledge-intensive business processes?

Through an exploratory research case study, conducted in a large financial consulting company, we investigate its Recruitment KIBP and the role of social media in this context. We are particularly interested in possible impact of social media on knowledge-intensive tasks and their ongoing improvement.

Our research findings offer further confirmation that when it comes to improvement of KIBPs, companies are moving away from process efficiency towards process effectiveness. As shown, in the case organization, this shift in process improvement objective was initially prompted and then enabled by social media, by helping the company to close the feedback loop with BP’s main customers (i.e. past, current and potential job applicants), who could be considered as external process participants, due to their involvement in BP improvement. The feedback posted on social media also led to another type of process improvement, prompting the company to consider internal organizational changes in the near future.

**Related Work: Business Process Management and Social Media**

Research on social media applications/technology in BPM is growing. As the researchers continue to look for new opportunities for combining social media technologies and BPs, they are also contributing to further expansion of BPM towards more flexible people-driven processes, including knowledge-intensive BPs. “The main effects of social software will be recognized in all knowledge-related processes. These processes may include sales, marketing, innovation or human resources.” (Erol et. al., 2010: 465).

Although the relevant research is still emerging, it is possible to observe several prominent trends. First of all, researchers are aiming to use social media to address the known shortcomings of BPM related to design of BPs, such as the problem of “Model-reality divide” (Erol et al., 2009) and lack of flexibility. In their comprehensive report, Erol et al. (2009) provide an overview of new possibilities including design of more realistic business processes through social production, automating knowledge transfer and more flexible process enactment enabled by social software, such as wiki-based workflows.

Furthermore, numerous researchers focus on integration of social media technologies/applications across different phases of BP lifecycle. For example, Mathiesen et al. (2011) provide an insightful conceptual framework summarizing the social media opportunities along the main phases of BP lifecycle including process identification, modeling, analysis, improvement, execution and process monitoring and control. The researchers envisaged this framework to be useful for categorizing future corporate and research activities related to social media technology applications in BPM.

Focusing on individual phases of BP Lifecycle, Silva et. al. (2010) argue that social technology should be embedded in the modeling and execution phases. Similarly, Dengler et.al. (2011), see process modeling and process coordination as the main BPM activities that may benefit from social software. These insights are put into practice by researchers such as Koschider, Song and Reijers (2009) who propose a recommendation system for process modeling enhanced by advanced social features. In another example, Dollman, Fettke and Loos (2009) propose web 2.0-enhanced automation of collaborative BP model management. Opening up process design and enactment to external stakeholders, Brambilla et.al. (2012)
propose BPMN 2.0 - an extension of the well-known modeling language (BPMN) to capture “social BPM behaviors”.

Social (collaborative) production is also seen to provide new opportunities for enhancing BPs in different ways. Examples offered in the literature include integration of customer feedback into product development and using wikis and blogs to facilitate and improve knowledge exchange and decision-making (Schmidt & Nurcan, 2009). In another example, Schmidt (2012) proposes a framework for the support of value co-creation by social software, encouraging active involvement of consumers, thus turning them into so-called prosumers. The researchers quote Wikipedia.org and open source software development of Linux as successful examples of social production, often assuming that the same principles and patterns would work in BPM. "The concept of bottom-up modeling, based on the collective intelligence of the user community, is an integral part of social BPM methodology as it removes the hierarchical divide between process model developer and model consumer, which is often a barrier to model adoption. (Mathiesen, et. al., 2011, p.10).

Going beyond conceptual considerations, other researchers focus on BPM systems, aiming to enhance their flexibility. Xie and Xu (2009) propose a process-oriented mashup to enable process participants (users) to specify their needs, find web resources and execute the resulting process. Bruno et.al. (2011) aim to design a more agile BPMS by leveraging the four feature of social software (weak ties, social production, egalitarianism and mutual service provision).

In summary, the above examples demonstrate a growing interest in social media applications in BPM, with prominent researchers coming from the computer science/information technology rather than the information systems background. Moreover, these representative examples also illustrate some important limitations. Social media and BPM integration are often considered at the conceptual level with insights motivated and recommendations (when made) illustrated by hypothetical examples rather than applied in real-life settings. Similarly, when new systems are proposed, their development is often motivated by “theoretical” examples proposed by researchers. Also the outcomes are laboratory prototypes, used to demonstrate technical features but not considered from the socio-technical perspective.

Most importantly, the above examples illustrate an important research gap related to an observed absence of empirical research on social media in BPM, conducted in real-life setting. While the information systems community has embraced the research on Social media, with numerous empirical studies already published, research gaps related to social media in BPM are yet to be explored and addressed by our community. We argue that empirical studies are necessary to gain a better understanding of organizational practices in this emerging area, possibly leading to new research challenges and opportunities, based on real-life insights rather than hypothetical examples.

**Foundation Concepts and Frameworks**

*The Process/Knowledge Continuum*

To classify and describe different types of knowledge tasks and types of knowledge workers involved in a BP, we adopt a classification of BPs along the process/knowledge continuum by Harmon (2010), as depicted by Figure 1.

As shown, simple procedural BPs are guided by organizational policies and involve simple, highly structured decisions. At the other end of the scale are highly complex processes involving decisions made by experts. Here, all decision parameters as well as the outputs of these decisions cannot be captured in advance and turned into detailed process models. These complex processes require a high level of domain expertise that cannot be fully externalized and remain within the domain of tacit knowledge (Davenport, 2010). “These are the processes that – given current technologies – are impossible to automate in a cost effective manner. In other words, complex processes challenge our ability to define the specific procedures involved” (Harmon 2010, pg.39). Between these two categories are more complex processes performed by knowledge workers that still require experiential knowledge to make process-related decisions. Using this framework, it is possible to position knowledge-intensive processes considered in our research as BPs that involve tasks performed by knowledge and/or expert workers.
Another relevant frame
work used to inform our research is the so-called the BP lifecycle (also known as BPM Lifecycle). The BP Lifecycle is considered to be one of the key BPM concepts (Hammer 2010), because it is often found at the core of many BP improvement methods today.

While there are several different versions of BP Lifecycle frameworks, in essence they all follow the same BP improvement logic (or pattern) where the existing “as-is” BP is identified and analyzed in order to propose its improved version (“to-be”) that is then implemented in its organizational context and its execution is monitored in order to identify new opportunities for the next cycle of process improvement. Illustrative examples of this pattern include prior research in social media and BPM such as (Mathiesen et al, 2010) as well as the mainstream BPM, such as Hammer (2010) and Harmon (2010).

As discussed in the previous section of this paper, the BP Lifecycle has been considered by a number of researchers interested in combining social media and BPM. This was the main reason why the same BP Lifecycle framework was used in our research to provide an initial understanding of commonly used approaches in current research.

Research context

Company A is a large consulting firm based in Germany and providing financial services across Europe. At the time this case study was conducted, the company employed about 750 people. It was also experiencing a very high growth rate, with around 100 new consultants employed each year. The main criteria used to select this company for our research were company’s growing interest in Social BPM and ease-of-access for the researchers.

Company A could be categorized as a “knowledge intensive firm” (Newel et al, 2009) because it is “competing on its ability to solve complex problems and provide solutions for their clients” (Newel et al 2009, s.24). For these companies, it is critical to recruit and retain an expert workforce in order to sustain a competitive advantage in a long term (Newel, 2009).

Company A’s recruitment department and its Recruitment BP provided the main context for the case study, reported in this paper. As Company A considered its employees to be the most important organizational resource, its Recruitment BP was one of the company’s core processes. The process required complex knowledge of its process participants (as described below). At the time our study was conducted, this process was already supported by social media for more than four years. Consequently, the Recruitment BP was assessed as suitable our research, as an example of a complex KIBP supported by social media. The following section outlines our chosen research method.
Research methodology

Using the social media and business transformation research framework proposed by (Aral, et. al., 2013) our research could be positioned across the management and organization activity and measurement and value activity. The level of analysis is a single firm, more precisely one of its core BPs.

In terms of research methodology, this project adopted the interpretivist research approach (epistemology). Thus, as researchers, we aim to gain an interpretative understanding of social reality and “the ways human beings as members of social groups engage in, interpret and mutually construct their particular realities” (Cecez-Kecmanovic, 2011:5). We assume that “access to reality (given or socially constructed) is only through social constructions such as language, consciousness, shared meaning and instruments (Myers, 2009). As a research method, we adopted a research case study as the most appropriate because “the research topic is new and the published research is still emerging” (Myers, 2009).

Compared to positivist research with formal propositions, quantifiable measures of variables, hypothesis testing, and the drawing of inferences from the sample to the stated population, as classified by Orlikowski and Broudi (1991), our aim is to increase understanding of the phenomenon within its contextual situation, from the perspective of the participants without imposing our a priori understanding of the situation. Therefore and in line with Orlikowski and Broudi’s criteria for interpretivist research (1991, p.5), our research method could be classified as an interpretivist research case study.

The primary data collection involved the semi-structured interviews conducted with the participants in the Recruitment process. We selected and interviewed all member of the recruitment team – the custodians of the Recruitment KIBP. Given the main focus of our study, we also interviewed additional employees responsible for the company’s social media. Each interview took approximately 1-1.5h. The number of interviewees was deemed sufficient to gain an understanding of all aspects of the process, from the perspectives of all process participants.

The primary data collection method was also combined with secondary data obtained from the company’s documents describing the Recruitment processes as well as from publicly available social media data used by the company within the same process. When analyzing data, we used the previously described foundation concepts and frameworks to inform our interpretation of data. However, they were not used in a rigid way, with both researchers open to new insights “not fitting” the frameworks and willing to modify our own initial assumptions and frameworks, as recommended by (Walsham, 1995). Table 1 summarizes our research methodology.

<table>
<thead>
<tr>
<th>Research methodology</th>
<th>Our research project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metatheoretical assumptions</td>
<td>Interpretative approach (research epistemology)</td>
</tr>
<tr>
<td>Research method</td>
<td>Interpretivist case study research in a financial services company (single company)</td>
</tr>
<tr>
<td>Specific Research context</td>
<td>Knowledge-intensive business process: Recruitment process</td>
</tr>
<tr>
<td>Research techniques and tools:</td>
<td>Data collection:</td>
</tr>
<tr>
<td></td>
<td>Primary: Semi-structured interviews of BP participants (primary);</td>
</tr>
<tr>
<td></td>
<td>Secondary: Data collected from relevant social media web sites</td>
</tr>
<tr>
<td></td>
<td>Data analysis: Thematic analysis and coding</td>
</tr>
</tbody>
</table>

Table 1. Our Research Methodology, after (Cezez-Kecmanovic, 2010)
Findings

The Recruitment KIBP – Before Social Media

The interviewees were asked to describe their own tasks and give examples to illustrate complexity of their work, before and after social media were introduced. This information was used by researchers to infer the knowledge perspective of the Recruitment process, in particular knowledge-intensity of different tasks, based on the professional expertise involved. Figure 2 depicts the outcome of our analysis of the process before the introduction of social media. As shown, the recruitment process involved simple procedural tasks as well as complex tasks involving the expert work and experiential knowledge that cannot be automated.

For example, the initial screening of the application by the recruiter and the subsequent one by the target department are both considered being of medium complexity, in terms of knowledge involved. However, the interviewees do not see them fully automatable, because of the insights gained when applications are considered by experienced professionals, especially in the target department, as they may see some aspects of applicant work that might be useful, even though not directly related to the advertised position.

The scheduling of the interview appointment could be classified as procedural work: “it is a simple activity, [... but] it just gives us a hard time”. Due to its procedural nature, it is possible to automate it to some extent: “Usually it takes a lot of iterations until a suitable date can be found”. But this does not require knowledge work.

Both job interviews were classified as very complex, human-centered activities involving the experiential knowledge and many perspectives required. The task of reaching the final decision is even more complex, as different perspectives need to be consolidated and a consensus reached.

The verbal offer and negotiation are considered to be of medium complexity driven by the parameters such as the applicant’s qualifications, position sought and the current job market. The task of issuing a written offer is very simple using a predefined contract template that is individualized on the basis of the negotiated terms.
Supporting the Recruitment KIBP with social media

Company A started using social media in 2009 for two reasons: in order to keep up with the latest trend in consultancy industry as well as to reach out to a wider pool of job applicants. The very first application was in recruitment, namely job advertising via social media channels. The company experienced an immediate increase in numbers of high-potential candidates, especially among young professionals and graduates.

However, this particular use of social media platform was not considered as an integral part of the Recruitment KIBP. Rather, it was the company’s “front-end” providing an alternative input channel to the separate “back-end” (i.e. the Recruitment process). The increased visibility and the increased number of applicants did make an impact of the process throughput, as the number of applicants being interviewed did increase.

Over time, insights gained from social media started to penetrate the other aspects of Recruitment KIBP. Most relevant for our research, was the impact of social media on the existing and creation of new knowledge tasks. For example, when performing the knowledge task of “Initial application screening”, the recruitment employee had an additional opportunity to consider additional information provided on social media platform such as LinkedIn. However, according to the interviewees, due to the very strict privacy laws in Germany, they were restricted in terms of access and use of personal data posted on social media, for example Facebook.

Even more interesting impact of social media on the Recruitment KIBP, could be seen in creation of new knowledge tasks that have emerged over time, further extending process boundaries, as depicted by Figure 3. Rather than waiting for the applications to be received, the recruitment team started to proactively look for suitable candidates on social media, for example within different professional groups, encouraging them to apply for available positions even before they were formally advertised. This has been a common practice in the consultancy industry.

![Figure 3: Extending the Recruitment KIBP with Knowledge Tasks enabled by Social Media](image-url)

The second additional knowledge intensive task was added to the end of the process, not only extending the process beyond company’s boundaries but also making its outcomes visible. Thus, after a candidate got hired s/he was invited to share his/her opinion about the Recruitment KIBP, on social media platform called kununu.com. This is a German social employer-rating platform similar to Glassdoor. While the
successful candidates are encouraged to post their comments, the platform is also open to other applicants (unsuccessful and those declining an offer).

Figure 4 displays a screenshot of Company A’s rating on kununu.com. The left column consists of the applicants’ ratings, posted by successful and unsuccessful job candidates. The middle column shows the applicants’ ratings of the Recruitment KIBP. The bottom section of the screenshot shows various rating criteria are listed such as “I was treated well” or “I received an acceptance or rejection letter on time”.

In addition to quantitative ratings, this platform offers a rich source of qualitative data such as experience reports. They were used for improvement of the Recruitment KIBP as discussed in the next section.

![Kununu.com Profile with Ratings](image)

**Figure 4: Kununu.com Profile with Ratings**

**Improving the Recruitment KIBP through Social Media**

The interviewees reported Company A’s commitment to ongoing improvement of the Recruitment KIBP. Various improvement initiatives targeting knowledge tasks included interview training offered to managers and design of interview guidelines with an objective to provide more consistent interview experiences to applicants. However, in this paper we focus only on possible use and impact of social media on process improvement.

First of all, the additional social media-enabled process task of collecting and analyzing applicants’ feedback, was reported as an important source of ideas for ongoing process improvement. The examples included feedback on applicants’ experience with the interview process and their perception of the overall BP duration.

In addition to the feedback on various details of the process, the same social media application made the recruitment department aware of the need to “consolidate” (combine) data on successful applicants’ performance at the end of probation period and their posted feedback on social media. It was envisaged that such a combination would enable the recruitment team to better measure the effectiveness of the Recruitment process and possibly improve their selection and interview tasks. For example, they wanted to find out if the selected applicant passed the probation period and if not, what could be done to improve the interview process leading to better selection of candidates in the future.

However, to obtain such information it was necessary to go beyond the scope of the Recruitment process and overcome the barriers created by company’s existing silos. More precisely, the company had a clear division between the recruitment and the human resource department. Once the candidate was employed,
s/he was managed by the HR department with the recruitment department losing a valuable opportunity
to gain a further feedback on candidate’s performance within the first three months. Some aspects of this
valuable feedback were available on the social media platform. However, this information was not seen as
sufficient as it captured only the perspective of job applicants but not the company’s. Consequently, the
company stated to consider different opportunities to improve collaboration between these two
departments through better data and knowledge sharing, even leading them to consider their possible
merger in the near future. This example demonstrates the transformative effect of social media not only
on company’s BPs within which they are used, but also a broader organizational context, including
organizational structure, as predicted by (Aral, et. al. 2013).

Furthermore, social media also transformed the way process improvement was measured by the
recruitment department. For example, in the past they used process efficiency measured by overall
duration of the Recruitment process as the main target for process improvement. As reported by the
interviewees, social media prompted the recruitment department to gradually shift their focus to process
effectiveness. One of the newly adopted indicators of process effectiveness was applicants’ ratings and
feedback posted on social media.

At the same time, the recruitment team was also aware that good ratings posted on social media might not
always indicate the most suitable high-quality employee. Ultimately, for them, the main criteria for
process effectiveness and the best measure of process quality, was a high-quality employee being selected
and employed. As already stated, this information was not available to the recruitment team, as it was
owned by another department. However, social media increased the team’s awareness of this
“information gap” necessary to close the feedback loop on process effectiveness.

Finally, by sharing process evaluation data posted by applicants on social media platforms, the
recruitment team “opened” their internal BP to the outside world. In doing so, they also realized that the
same platform could be used to promote the company’s culture and values to potential candidates, who
would read the posted feedback before making a decision to apply. In this way, the applicants were
increasingly seen as “company brand champions”, thus changing their involvement with the BP from
process customers to external process participants.

Conclusions and Future Work

While prominent researchers argue that social media applications are best suited to enhance different
stages of BP lifecycle, in particular process modeling and execution, our research shows a very different
approach taken by the case organization that could be summarized as follows. First of all, social media
applications created additional knowledge-intensive tasks for the observed KIBP, thus extending its scope
beyond company’s boundaries. However, we found that the greatest impact of social media was on
ongoing process improvement in several ways. For example, the social media platform enabling process
customers (i.e. applicants) to post their process-related feedback served as an important source of insights
for process participants (i.e. the recruitment team) to “close the feedback loop” and gain new ideas for
process improvement. The same platform also enabled the team to measure the effectiveness of some of
their process improvement efforts related to customer experience (e.g. process duration). Other insights
obtained through social media platform prompted the company to consider process improvement
achieved through better information sharing across organizational silos.

Therefore, it is possible to conclude that the recruitment team did not follow the traditional BP Lifecycle
to guide their ongoing process improvement efforts. As interpretivist researchers, who started this
research by considering the same framework, we now question the wide-spread use of BP Lifecycle to
guide research and practice of social media applications in BPM. Although our research is limited to one
KIBP and with the outcomes that are not meant to be generalized, as per (Orlikowski and Baroudi, 1991;
Myers, 2004), based on insights obtained, we argue that more empirical research is needed to improve
our understanding of social media applications in KIBPs and their transformational impacts, taking the
socio-technical (IS) perspective.

Our future work includes more empirical studies of transformational effects of social media on business
process management. Over time, this is expected to lead to more insights and possible new methods for
people-centric improvement of KIBPs, in particular customer-facing ones that are increasingly supported
by social media.
REFERENCES


