Human-Oriented Challenges of Social BPM: An Overview

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Abstract: Social BPM is the practice of actively involving all relevant stakeholders into BPM through the use of social software and its underlying principles. This allows enhancing the correctness, completeness, and usefulness of process models and instances by leveraging the domain and method knowledge of the entire business community. However, the large number and variety of contributors and contributions also results in a number of challenges, which will be examined in this paper.

1 Introduction

Today, businesses must be willing to constantly revisit and improve their business practices to remain profitable in the light of challenges such as global competition and cost reduction. This can be achieved through business process management (BPM), which aims to ensure a high level of cost- and resource-efficiency, speed, accuracy, and flexibility of business operations [Ham10]. Traditional BPM approaches have been found to suffer from several shortcomings, such as a divergence between process models and execution reality, and the failure to leverage ideas for innovation held by process end-users [SN09]. To solve these problems, it is necessary to re-envision the management of business processes as a task that is carried out by the entire business community rather than a few individuals [SVOK11]. Social BPM aims to achieve this goal by establishing an “architecture of participation” for BPM through the use of social software and its underlying principles [EGH10]. This paper examines human-oriented challenges that arise when such an approach is employed, i. e., challenges that arise either as a precondition for, or as a consequence of the inclusion of the entire business community.

Typically, most business process management activities are performed by method experts and IT developers according to requirements specified by domain experts and end-users who eventually enact processes with the support of information systems [SR12]. However, it can be argued that the correctness, completeness, and ultimately usefulness of a process can only be maximized if all relevant stakeholders participate in all phases of its life cycle, including end-users, and possibly even customers and external suppliers [SVOK11, Sch12]. This can be achieved through social BPM, which enables a large variety of internal and external actors with varying degrees of BPM training to contribute their domain knowledge and method expertise. By working together in large numbers,
the business community can leverage its “wisdom of the crowd” [Sur05] to create better and higher-quality process solutions than a single expert can achieve alone. However, this can only be successful if certain challenges are overcome, such as initiating and ensuring the ongoing participation of relevant actors. Solving this problem might not be straightforward and can affect other areas, thereby resulting in new challenges. For instance, the individuals that can make the most valuable contributions are not necessarily those with the most profound knowledge of BPM and therefore need to be supported through appropriate methods and technology. It can be seen that employing social BPM may have far-reaching consequences and requires overcoming problems in diverse areas, which may stem from it being a research topic orthogonal to other issues of BPM [vdA13].

This paper aims to answer the following question: What are the most important human-oriented challenges of social BPM currently recognized in literature that need to be overcome for its successful application? For this purpose, its remainder is organized as follows. In Section 2, previous work on which this article builds is named. Afterwards, Section 3, establishes the theoretical background of the paper. Section 4 outlines the drivers of social BPM, provides a definition, and describes its underlying principles. Section 5 examines human-oriented challenges that result from the application of social BPM. Lastly, a brief summary and an outlook are presented in Section 6.

2 Related Work

Previous publications that this paper builds on can broadly be classified in two types, namely literature on social BPM in general, and literature addressing particular challenges, key concerns, and success factors of social BPM and other related fields.

The foundations of social BPM as a distinct research topic lie in the Workshop on Business Process Management and Social Software (BPMS2), which has been carried out in conjunction with the International Conference on Business Process Management since 2008 [NS09]. Notable publications resulting from these workshops subsequently published in journals include [EGH10] and [BDJ11]. Furthermore, social BPM has also been recognized as an important topic by practitioners and is discussed from various perspectives in the book “Social BPM - Working, Planning, and Collaboration Under the Impact of Social Technology” [Ric11].

A considerable amount of publications has, to some extent, addressed or raised awareness about challenges relevant for this paper, including social BPM literature (e. g., [BDJ11], [EGH10] and [JAW09]), and literature on BPM in general (e. g. [BICS07], [IRRG09] and [PCBV10]). Beyond these works, it is also necessary to consider publications that do not directly address social BPM, but concern other topics highly related to the former. This includes the following fields. Firstly, social BPM can be seen as part of the “Web 2.0” and “Enterprise 2.0” paradigm [VH07, KR09], and as such may also be affected by challenges resp. profit from solutions offered by literature in that area. Secondly, it is also related to inter-organizational, collaborative BPM initiatives which are often carried out in a top-down controlled fashion and need to overcome certain barriers [NH11, NP11].
Lastly, social BPM can also be interpreted as an application of crowdsourcing. It is thus subject to challenges specific to that field, such as those outlined in [DRH11], as well.

3 Background

Social software is defined as “software that gets better the more people use it” [VH07]. From a more technical perspective, it represents a class of Web-based applications for humans that support the exchange of information, the establishment of relationships and the communication in a social context [Hip06]. While such tools are often used with the intention of reaching a specific goal, this does not always have to be the case [JAW09]. SCHMIDT and NURCAN determine the purpose of social software as supporting the generation of digital goods that combine the contributions of multiple individuals who may not know each other and who are not initially organized in a hierarchical structure [SN09]. Social software is thus commonly seen as part of the “Web 2.0”, a term coined in 2004 describing then recent developments and applications of Web technologies that facilitate and encourage the voluntary and active participation of end-users in content creation [VH07]. These ideas have first found widespread use in personal contexts, but are nowadays increasingly employed by companies as well [KR09]. One very popular type of social software are Wikis. Typically, the users of such a collaborative authoring tool are not organized in any predetermined way and have equal editing and viewing rights. This allows documenting topics of interest exhaustively by making not only common knowledge available, but also knowledge held by only a few experts. Lastly, Wiki pages are dynamic by definition and are continuously expanded or revisited as new knowledge becomes available. Consequently, the quantity and quality of content managed in a Wiki increases with the number of active participants. Further types of social software include social tagging, blogs, microblogs, social networks and instant messaging [KR09].

Business process management is an approach for maintaining business performance through the management of business processes [Ham10], which are “[sets] of activities that are performed […] to jointly realize a business goal” [Wes12]. It “includes concepts, methods and techniques to support [their] design, administration, configuration, enactment, and analysis […]” [Wes12] and is supported through software called business process management systems [Wes12]. On a broader scale, BPM has also been described as a holistic approach to the management of an enterprise [SVOK11] that addresses the entire business layer and consists of six core elements [RvB10]: strategic alignment, governance, methods, information technology, people, and culture. When performed successfully, BPM allows companies to “create high-performance processes, which operate with much lower costs, faster speeds, greater accuracy, reduced assets, and enhanced flexibility” [Ham10]. Its purpose is thus the continuous improvement of business operations through incremental or radical change of business processes [RvWML10]. Activities related to business process management are typically arranged as an iterative life cycle. Most BPM life cycles are very similar and implement a basic Plan-Do-Check-Act approach with steps such as design, engineering, enactment, monitoring, and re-engineering [SVOK11, Wes12].
4 Social Business Process Management

As mentioned in the Introduction, traditional BPM approaches suffer from several shortcomings that motivate the need for a social approach. First, current BPM methodologies often follow a top-down decomposition approach from the strategy and business goals of an enterprise down to the level of individual business processes [SR12]. As a result, process improvement is a long-running process in itself that requires time-intensive negotiations and compromises, and restricts opportunities for implementing change to specific points in the BPM life cycle [WHR10, BDJ11]. This can become a problem when companies must be agile to react to new and unpredicted developments in a timely fashion [Ric11]. To ensure that business processes meet current needs, changes to a process model should be possible at any time and quickly reflect themselves in practice. Secondly, many aspects of process management have been conceptualized as activities carried out by a small number of experts. This is especially true for the process of process modeling and its three stages elicitation, modeling, and validation [RMH13]. In such an approach, process end-users are not empowered to directly integrate their knowledge and experiences from past enactments into process design [SR12]. However, as knowledge about current practices and improvement potentials is distributed across a potentially large number of different stakeholders, this is not suitable for corporate reality [RMH13]. If these issues are not addressed sufficiently, the following problems may arise [SN09, EGH10]:

- **Model-reality divide**: This term describes a state of divergence between “planned” and “real” processes, i.e., between idealized models and the way in which processes are actually executed. This phenomenon occurs when end-users do not accept the created models because they do not reflect their day-to-day work.

- **Lost innovation**: In organizations that employ a top-down approach to BPM, employees may refrain from sharing ideas for process improvement and innovation, because the guidelines for change management are seen as too intransparent and restrictive and the chance of success considered too small. Therefore, this knowledge is either lost entirely, or applied on the local scale of individual process instances, thereby once again increasing the model-reality divide.

These problems can potentially be solved by social BPM. Today, there is no common understanding of what the term exactly entails [Puc11, Ric11]. From a purely technological point of view, social BPM can be seen as providing new tools for activities in the BPM life cycle by adding social software features to conventional BPM systems [SN10, Puc11, DC11]. For instance, a Wiki could be used for process design and documentation, a microblogging service to broadcast the execution status of a specific process instance, or a social network to find the best partner for collaboration on a specific task. However, while social software as enabling technology is of course an important aspect of social BPM, practitioners have recognized that reaping its potential benefits also requires embracing its underlying ideas, which will often result in organizational change [Puc11]. Therefore, for this article social BPM is defined as the involvement of all relevant stakeholders in the BPM life cycle by applying social software and its underlying principles. These principles are (cf. [SN09, VFL10, SN10]):
**Self-organization.** A system is self-organizing if it is capable of ensuring and refining its functionality through cooperation of its components without external influences [VFL10]. In this vein, social BPM is not regulated, and planning and control are performed by the business community in a democratized, bottom-up fashion rather than top-down [Hip06]. This is accomplished, e. g., by the signing and versioning of work activities, social feedback through discussions and ratings, and banning malicious actors [Hip06, JAW09].

**Egalitarianism.** All users are equal and possess equal rights [SN10]. This entails the transparency and open modification of contributions, i. e., all work results cannot only be viewed, but also edited by all other actors within the limits of reason [JAW09]. Consequently, no distinction is made between the roles of method and domain experts. Specifically, social BPM must avoid excluding any individuals from participation, be it explicitly due to not being part of a specific organizational unit, or implicitly due to not having the necessary method knowledge and training [BDJ+11]. Thus, the usability of BPM software for BPM novices also plays an important role. To ensure the desired level of quality, social BPM does not rely on access control but on trust and reputation [JF09, SN10].

**Collective intelligence.** Social BPM is based on the idea that the collective wisdom of a crowd can create better process solutions than individual experts alone [Sur05, SN09]. This requires users to establish and maintain relationships with one another and to perform many-to-many interactions rather than working in isolation [Hip06]. Sporadic connections of low emotional or temporal intensity, also called weak ties, are of special importance in this context as they form the “long tail” of knowledge and innovation accessible that would not be captured without them [SN09]. Leveraging the collective intelligence of a business community can only be accomplished if all relevant participants are actually included and their needs considered. Therefore, it is necessary to create an organizational environment that enables and fosters continuous contributions by all stakeholders [JAW09].

**Social production.** By using social software, individuals create content such as text and diagrams, and context information in the form of annotations, reputation and social links, which are both considered valuable [SN09, EGH+10]. These artifacts are developed by all participants interactively and all actors who consider themselves competent to contribute are enabled to do so [JAW09]. New information is continuously assessed and fused with the existing body of knowledge to perform a selection of the best available ideas. Additionally, changes become effective and visible immediately, thereby enabling an agile cycle of process improvement without any unnecessary delays between the detection of a desirable change and its transfer to the practice of process enactment [SN10, EGH+10, Rus11].

By respecting these principles, business process management can be re-envisioned as a task that is carried out by the entire business community rather than a few individuals [SVOK11]. This allows all stakeholders to contribute their specific method or domain knowledge about business practices and innovation potentials, which is one of the biggest opportunities of social BPM. Furthermore, the continuous integration and immediate effectiveness of new contributions provides the BPM life cycle with more agility, and thus the ability to react to internal and external events more quickly [SN09, BDJ+11]. As a result, the model-reality divide can be closed and lost innovation avoided.
5 Challenges

Compared to traditional BPM approaches, social BPM enables the participation of a much larger and more heterogeneous set of actors. However, such an approach can only be successful if a number of human-related challenges are overcome. While some of these issues should be addressed before social BPM is even initiated, other challenges become more important with an increasing number and variety of contributors and contributions. The following list of challenges has been compiled from an extensive review of the literature named in Section 2, enriched by keyword-based searches in relevant academic databases. The challenges have been extracted manually during the review, with a focus on those with a high perceived importance and specificity for social BPM. This list is not supposed to finite or complete. However, the scope of the literature review has allowed capturing several important current challenges. For each challenge, further keyword-based as well as forward- and backward-searches based on the literature named in Section 2 were performed to obtain initial insight into how it is currently being addressed. Due to the subjective nature of the selection process, the list of challenges may be subject to extension and modification. Furthermore, it is not exclusive to social BPM, but may apply to top-down collaborative BPM approaches and other aspects of the Enterprise 2.0 as well.

5.1 Involving External Stakeholders

There is a broad consensus that integrating a wide variety of individuals from different backgrounds into BPM yields a higher rate of success and acceptance [NP11]. Through inter-organizational inclusion, boundaries between different enterprises can be blurred, and thus the definition of business processes expanded beyond the scope of a single company. Ultimately, this allows for an unhindered exchange of ideas and information and thus helps with closing the model-reality divide and avoiding lost innovation on a broader scale [NP11]. However, external stakeholders typically have their own interests and motivation for participation, and thus selecting the right actors at the right time for the right type of contribution is a challenging issue [VB10]. This may not always be straightforward, as there are certain factors that reduce the attractiveness of inter-organizational collaboration [NH11]. One of the most significant barriers is the fear of knowledge loss, i.e., of losing process knowledge as an important source of competitive advantage to competitors. Furthermore, if companies are not aware of potential benefits that may result from involving all stakeholders, they are not motivated to initiate or participate in such efforts. Lastly, boundary-spanning BPM is often perceived as being very costly due to the large number of transactions and time that it requires. These issues affect not only the focal enterprise, but external stakeholders as well.

To extend the reach of social BPM, research should find rules for good inter-organizational involvement, i.e., how, when, and which external actors should be included. Furthermore, it should be examined if the aforementioned barriers apply, and how to overcome them.
5.2 Motivating Participation

Clearly, the most important ingredient to social BPM are the stakeholders who are willing to contribute their own knowledge. Therefore, for such an approach to be successful, it is essential that all users who can make meaningful contributions are motivated to invest their time and effort continuously to create and maintain process models and other content. While having only a small number of contributors who are highly active may be a valid scenario in some cases, this contradicts the principles of social software and thus presents a risk for closing the model-reality divide and avoiding lost innovation [EGH+10].

The first step towards continuous participation is accomplished by reaching a critical mass of users. This is necessary due to the fact that simply providing employees (and other stakeholders) with a platform for social production does not necessarily lead to its adoption without any meaningful initial content. Thus, companies have to carefully select the right individuals for the initiation of social BPM that can provide the required digital artifacts [KR09]. Until this “ramp-up” phase has been completed, the usefulness of social software may not reach its highest possible level [EGH+10]. Subsequently, it must be ensured that participants are motivated to continue with their involvement. This is a difficult task because the usage of social software is very time consuming and should be voluntary rather than being enforced [EGH+10]. Solving this problem requires either ensuring that employees are interested in the work itself and its results (intrinsic motivation), or providing them with monetary remuneration in dependence of some indicators of performance (extrinsic motivation). It has been noted that the latter may actually have a negative effect on participation and thus the former should be preferred [KR09]. While there are many different possibilities to invoke intrinsic motivation, the tools most often discussed in social BPM literature are based on the practice of gamification [Rit10]. For instance, users could be rewarded with “honor points” according to their contributions [JAW09]. The points themselves already provide incentive due to the fact that they are a measure of status and reputation, but can also be used as an input for extrinsic motivation [KR09].

As of yet, academics still have to address factors influencing the continuous participation in BPM on a broader scale [IRRG09]. Consequently, social BPM research should focus on finding and evaluating measures that reinforce the motivation of potential contributors. Furthermore, it should be examined how the “ramp-up” phase can be completed successfully and without unnecessary delays.

5.3 Training Novice Modelers

Modeling is an important part of social BPM, as it allows process end-users to make their process knowledge explicit without relying on method experts and long-running improvement cycles. However, experts often argue that novice modelers do not possess the necessary skills for this purpose, as modeling software, modeling languages and models themselves are too difficult to use for untrained individuals [NP12]. As a consequence, even though novices are allowed to contribute their own knowledge and experience in theory,
they might not be able to do so in practice [SN09]. One way to overcome this problem is teaching contributors the skills required for successful participation. Measures for BPM education include teaching it at university, which is an opportunity for integrating it firmly within the mindset of future employees, and thus, organizational culture [BICS07]. In the short term, [RMH13] suggests that real-time collaborative process modeling can also serve as a measure for the training of employees as it animates the exchange of information about the modeled domain as well as modeling expertise. In this way, more experienced actors can help novices to increase their level of knowledge, and thus enable them to make more contributions with a higher quality. Following this idea, a promising approach for familiarizing stakeholders with social BPM may be the organization of social BPM labs\(^1\). In such workshops, participants use social software and groupware to collaboratively model the processes of a business community over the span of one or two days. Bottom-up self-organization is combined with top-down guidance through, e.g., moderators, quality managers, and method experts to ensure that the learning goals of the lab are met. Ultimately, this not only teaches the required skills, but may also promote social BPM and increase the motivation for active participation.

The need for teaching BPM has been recognized and discussed in various publications, including [BICS07] and [IRRG09]. However, it is currently a topic addressed mostly by practitioners, with academics being more focused on challenges concerning methods and technology. Therefore, social BPM research should address this topic by examining which skills contributors require, and how they can be taught best.

5.4 Providing Modeling Tools for Novices

Besides training, novice participation in process modeling can also be facilitated by tools that compensate for a lack in the former, such as highly usable modeling software and expressive, yet non-overwhelming modeling languages.

**Modeling software.** Usability has been shown to be one of the most highly valued qualities of BPM tools, which is true for novice users as well as modeling experts [PCBV10]. Inexperienced participants can further be supported by user interface agents that guide them through specific modeling tasks [Dry97], the automatic detection, prevention, and recovery of syntactic errors [KJ03], and the implementation of pragmatic guidelines that facilitate the creation of understandable models (see Section 5.5). The usability of modeling software can also be enhanced through social software features. For instance, social recommendations can provide actors with suggestions on how to proceed with modeling a specific business process based on other existing models, their past behavior and that of other users, as well as inter-personal relationships [SWMW09, KSR09]. Research on social BPM should address factors that make modeling software usable for novices, and the role of social software in this context.

**Modeling languages.** Examining the preferences and task performances of novice model-

ers when recording their process knowledge using different modeling archetypes, [RSR12] has found the “flowchart” to yield the most favorable results. As this type of diagram is very similar to conventional modeling techniques, it is reasonable to assume that the latter are also suitable for users with little modeling experience. Another consideration is the required expressiveness of the modeling language. Many languages offer a large variety of different notational elements to cover an equally large variety of modeling scenarios. However, not all of these elements are frequently used in practice [zMR08], and therefore it may be reasonable to provide a reduced set of elements with smaller expressiveness to novice users [Rit10]. Further research should examine how social BPM participants can be provided with the diagram types and subsets of modeling languages that match their task and level of capabilities.

5.5 Ensuring Model Quality

The quality of a process model is a multi-faceted property that determines whether it can successfully be used for its intended goal. Maintaining this property has been recognized as a difficult task in modeling efforts that include non-expert users [MRvdA10] and is thus of special concern in the context of social BPM [EGH+10]. Based on three of the higher levels of the SEQUAL framework [KJ03], this section will examine the interrelationships between social BPM and model quality.

Semantic quality is given if a model is valid by containing only relevant and correct statements about a domain, and complete by containing all relevant and correct statements. In practice, this is difficult to achieve and thus has to be judged in relation to the modeling goal. Social BPM offers great opportunities for a high semantic quality as it includes a large variety of stakeholders and their in-depth knowledge about different parts of a domain. By integrating these contributions, reasonably complete and valid process models can be created, thereby diminishing the model-reality divide.

Pragmatic quality is given if a process model can be understood and is thus consistent with its interpretation by humans, which allows the reader to learn from it. [MRvdA10] have proposed seven pragmatic modeling guidelines intended to help non-expert users with the creation of understandable models, such as “use as few elements as possible” and “avoid OR routing elements”. To improve the adherence to these guidelines, modeling software can be extended with functionality that warns modelers of any violations.

Social quality requires participants to reach a shared understanding about a process model as the result of social learning. It is thus characterized by a convergence of the knowledge and model interpretations of all actors. This does not necessarily imply that a consensus is reached, but merely that inconsistent views are resolved where the benefits exceed the costs. Ensuring social quality not only reduces inconsistencies, but can also help with the detection of harmful contributions made by malicious actors. Clearly, social software can be an important enabler for social quality and many application scenarios have been studied in social BPM literature. For instance, [SMM+10] proposes a Wiki-like system that allows users to rate and comment on individual models.
Social BPM research should analyze how the use of social software and its underlying principles can positively and negatively affect the quality of business processes. Furthermore, the role of trust and reputation for ensuring social quality should be examined.

5.6 Handling Information Overload

In a successful social BPM setting with many participants and a high frequency and quantity of contributions, finding relevant people and content can become a significant challenge [JF11]. This problem is also known as information overload and, if not addressed, may result in users overlooking content to which they would otherwise contribute, providing inaccurate contributions, or abandoning the system altogether [HT85]. To cope with this situation, filtering important from unimportant information based on individual criteria and priorities must be possible. [HT85] points out that filtering should never be dependent on content, but only determine which content will be shown. Therefore, the following paragraphs will briefly analyze how context information (cf. Section 4) can be used for this purpose.

Annotations are meta-data that provide additional information about contributions and can thus be used for search and evaluation [EGH+10]. A social approach to annotation-based filtering can be realized with the use of social tagging. By adding tags to process models, parts thereof, or other digital artifacts, users collaboratively provide machine-readable details about their meaning. This information can be used for filtering, e.g., by searching for models or model parts within larger repositories using tags [SMM+10], or finding similar models through tag-based similarity measures [LB13].

Reputation or ratings are a special type of annotation that support the decision whether to trust the validity of an object or the contributions of a specific actor. Providing a quantifiable measure of reputation is important for social BPM as users may not necessarily know each other [EGH+10]. To mitigate the effects of information overload, process models can be filtered and prioritized according to their rating or the reputation of their creators [DC11]. As a result, participants can choose to only consider contributions that have been judged to be of a high quality, or conversely, search for content of a low quality and help to improve it. Social BPM literature has examined different types and uses of reputation, such as rating the contributions of others to create a list of “top authors” [QSJ08].

Social links are relational information that describes how humans connect themselves to form social networks [EGH+10]. Participants can use them to search for relevant or interesting contributions made by users that are, e.g., structurally close within the network, popular by having many relationships, or assume a specific role such as being distributors of information or bridges between different network parts. If a social networking site is used in the context of social BPM, participants have the opportunity to make these connections explicit by “befriending” other actors. Further types of relationships can be discovered from data in which they are implicitly contained, such as the event logs of software systems used for process enactment [vdARS05].

To ensure that potential contributors can always find the content to which they would like
to contribute or that they are interested in, further research should be carried out on the possible uses of context information.

5.7 Integrating Semantics

When individuals with diverse backgrounds collaborate, it is very likely that they will use different terminology to refer to similar concepts. This may result in misunderstandings and can ultimately have a negative effect on process performance [BDJ11]. Most importantly, since social BPM integrates the contributions of people with varying levels of education, roles, and tasks, a so-called language gap may arise, as for each person, terms may hold different meanings [MS11]. For instance, this gap can manifest itself in a diverging use of synonyms and homonyms [BDJ11]. Therefore, to achieve semantic integration, a common vocabulary of terms and their semantics must be established and maintained through social production. Different proposals on how to achieve this with social software can be found in social BPM literature, including the creation of a BPM folksonomy by means of social tagging [MS11], and the usage of Wikis with semantic extensions [BDJ11]. However, it is not inherently clear how the work results should be used. Therefore, additional measures must be defined and implemented to integrate them, e.g., into process modeling or textual discussions for conflict resolution.

6 Conclusion

By employing a social approach to BPM, companies can establish an “architecture of participation” that enables and encourages all process stakeholders to participate in process management. This allows them to contribute their own domain and method knowledge, thereby providing the necessary requirements for closing the model-reality divide and preventing lost innovation. However, social BPM presents its own challenges and problems that first need to be overcome. This paper has provided initial insight into the factors that influence the success of social BPM by analyzing its human-related challenges. Future work on the issues raised can be performed in different directions. First and foremost, measures that allow meeting them need to be found (or connected to social BPM), refined, and evaluated. Some such approaches have already been presented throughout Section 5, but still need to be critically reflected to determine where and how much additional work is required. Some suggestions on how to commence this research have already been given throughout the previous section. Secondly, the list of challenges, which has been derived from relevant literature, should be empirically validated by conducting expert interviews, or obtaining experiences through concrete applications of social BPM in real-world scenarios. Lastly, the scope of examination chosen for this paper can be broadened. Specifically, social BPM is a topic orthogonal to other aspects of BPM [vdA13], and may thus yield challenges specific to all of its core elements (cf. Section 3). Therefore, a future version of this paper will re-examine the challenges of social BPM from this higher point of view.
References


