A Methodological Framework with Lessons Learned for Introducing Business Process Management

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Abstract. Business process management (BPM) is becoming more and more important for organizations of different sizes. However, the introduction of BPM is a non-trivial task, requiring a lot of experience and helpful guidance in order to be successful. As existing BPM approaches are usually limited to descriptions on a high level of abstraction, they are typically not sufficient to support practitioners in this regard. This paper therefore presents a framework for the introduction of BPM that aims at providing systematic guidance through all the steps of a BPM adoption project. Among other aspects, it especially tackles the areas of a systematic method- and tool selection, which often cause difficulties in practice. In addition, and more importantly, the paper introduces several lessons learned derived from real-world experience made while using this framework. As evidence for the value of these lessons can be presented, they are considered a helpful contribution for industry and academia to make BPM introduction projects more successful.

1   Motivation

Organizations in a competitive environment are facing many challenges, such as globalization, rapidly changing market demands, high expectations with respect to product innovations, flexibility regarding their customers' wishes, and cost pressure. At the same time, they have to fulfill requirements regarding compliance with laws, conservation of resources as well as high rates of return for their shareholders. Since business processes usually form the core of these entrepreneurial actions, the situation described above makes it indispensable for organizations to improve their business processes with respect to efficiency, transparency, and agility [1]. This is the point where business process management (BPM) [2] comes into play. Recent analyses have shown augmented interest in this area [3], and even medium-sized organizations and public organizations such as administrations, research organizations, or universities have therefore started to adopt the BPM concept.

However, while there exist plenty of publications that explain the advantages and principles of BPM, there exists almost no approach describing how to systematically introduce BPM (and supporting toolsets) in an organization with sustainable benefits. Moreover, most existing BPM approaches limit themselves to descriptions on a high

level of abstraction (see related work in section 2) and are therefore hard to apply for less experienced practitioners in industry. Thus, the assumption of many people in the BPM community that it would be implicitly clear how to adopt BPM does not hold true, and we experienced in several projects that such an adoption is still a big challenge. Rather, as this paradigm is quite new, the responsible people in organizations usually do not have sufficient knowledge from their educational background to adopt BPM without clear guidance.

Many organizations therefore need costly external consultancy if they want to introduce BPM, which is often not feasible for small- and medium-sized enterprises or public organizations due to budget restrictions. Such organizations are therefore often prevented from benefitting from the advantages of BPM because the entry barriers are too high for them. This bears the ultimate risk that they may suffer a loss of competitive advantage in the mid-term future.

On the other hand, when organizations try to introduce BPM without the proper knowledge or with inappropriate adoption methods and tools, they risk wasting a lot of effort or even leading the entire organization into chaos. This holds especially true for the selection of BPM methods and corresponding tools to support BPM-related tasks because such methods and tools must be carefully defined to fit the organizational culture. For organizations that are not fully aware of the BPM concepts, a detailed procedure is therefore necessary to support them in selecting suitable methods and tools from the vast quantity of BPM solutions offered. Hence, getting the requirements for a BPM method and a toolset that actually fit an organization's culture is of major importance because both are crucial for the overall success of BPM in practice.

In this paper, we therefore introduce a methodological framework according to which concrete BPM adoption projects can be performed in an organization. The framework takes all the important steps of a BPM introduction into consideration, and resolves the problems mentioned above regarding BPM method definition, tool selection, and requirements analysis. Hence, in contrast to the multitude of rather technical approaches discussed in today's BPM community, our framework concentrates on the methodological aspects of a BPM adoption.

The framework and a concrete instantiating guideline defined by the authors (to be published) have been successfully applied twice in large industry projects so far. By using the lessons learned from the first project in the second, it was possible to significantly increase acceptance and avoid pitfalls. Hence, it can be concluded that using the framework and the annotated lessons learned may help to increase the chances of success in future BPM adoption projects.

Therefore, and as a contribution that is more important than the framework itself, the paper lists and describes these lessons learned for each step of the BPM adoption framework in order to provide a helpful contribution for the industrial audience. However, as the framework and the lessons learned are also usable as requirements for BPM adoption approaches, there is an additional contribution for the academic audience to support them in elaborating more advanced methods in this regard.

The remainder of paper is structured as follows: In section 2, the results of a literature review regarding related work in the domain of BPM introduction are presented. Section 3 introduces the framework for introducing BPM and the research approach according to which it was developed. Section 4 briefly describes two case studies in which this framework was instantiated. In section 5, the lessons learned and

resulting recommendations for BPM adoption projects are explained. Finally, section 6 contains the paper's conclusions and recommended directions for future research.

2   Related Work

A handful of papers and books addressing certain aspects of BPM adoption are already available. In a literature review, we therefore analyze the strengths and weaknesses of the existing approaches, and identify how they are related to the framework introduced in this paper. In this regard, we analyzed whether 1) there is a presentation of the general idea of BPM, 2) a step-by-step guideline for the BPM introduction is included, 3) all aspects of an introduction are covered, and 4) all steps are described in detail. Furthermore, we checked whether they address 5) requirements analysis for a customized BPM method and 6) a BPM toolset. Finally, we investigated 7) how the issue of best BPM practices and recommendations is dealt with. Table 1 summarizes the findings of our literature review.

The BPM handbook "BPM Basics for Dummies" [1] by K. Garimella et al. addresses various aspects of BPM in general and gives an overview of BPM. The strength of the book is the presentation of various BPM best practices and pitfalls, which may enable organizations to introduce BPM more successfully. In addition, it contains an abstract procedure for the introduction of BPM. However, only a small selection of aspects is presented, and neither details nor a concrete step-by-step guidance are provided.

The main part of the whitepaper "BPM Governance" [4]by A.-W. Scheer et al. is the presentation of a BPM lifecycle depicting how to apply BPM in organizations. Additionally, several so-called key elements and best practices are mentioned. Furthermore, the establishment of a "BPM Center of Excellence" is recommended. This institution should support the governance of BPM in an organization and offer various services, such as methodologies, tools, and communication activities. Finally, the paper describes how to establish BPM governance. This part contains all the important steps of BPM introduction; however, it is only very coarse-grained and does not include requirements analysis for a customized BPM method or toolset.

The whitepaper "How to get started with BPM" [5] by Software AG presents the concept of a "process improvement life cycle", describing several phases from the identification of business processes to the implementation of designed to-be processes. The first steps of BPM introduction include an assessment of the corporate culture, which influences the introduction strategy, and the finding of sponsors to support the introduction. The paper presents the general ideas of BPM and its introduction. Nevertheless, it stays on a high level of abstraction, and neither requirements analysis for the BPM method nor a toolset are touched.

The whitepaper "BPM adoption scenarios" [6] by B. Portier consists of several BPM introduction scenarios, which are presented to extensively describe best practices helping organizations in similar situations. The addressed topics include process modeling and implementation with appropriate tools, the establishment of collaboration among employees, and the permanent managing and monitoring of business processes. However, only general ideas in the form of these scenarios are contained in the paper, while no step-by-step guidance is given. In addition, the paper

mentions some requirements for toolsets, but provides no considerations on how to make an analysis or selection of tools.

The book "BPM Concepts, Languages, Architectures" [2] by M. Weske presents a more detailed methodology for the introduction of BPM. The approach consists of seven phases and covers mostly the important steps that are also included in the framework of this paper. The description of the phases contains general information on what to do, but in some cases it is not specified how exactly to achieve certain results. The selection of tools is included in this approach, but it does not consider a way to systematically analyze requirements for them.

The dissertation "Business process-based Requirements Specification" [7] by J. González contains an approach on business process-based requirements engineering and object-oriented modeling of information systems. Here the aspects of requirements engineering, in particular regarding the elicitation of the as-is situation and the transformation to to-be processes, are described in detail. However, further aspects in the context of BPM introduction are not touched at all or only in passing.

The book "Business Process Management" [8] by J. Jeston et al. contains a complete approach for the introduction of BPM. It consists of ten phases, which cover all the relevant steps in detail, including extensive step-by-step instructions. Best practices are contained as well. Nonetheless, the focus of this approach lies on the development of a proprietary BPM suite, which is why the analysis and selection of existing tools is not included. Additionally, it does not support prioritization and decision-making by providing contain concrete formulas and calculations.

Table 1. Overview of Related Work

Authors	General idea of BPM	Step-by-step guideline for introduction	Complete cover of all aspects	Steps described in detail	Requirements analysis for BPM method	Requirements analysis for BPM toolset	Best practices and lessons learned
Garimella	✓	(✓)					✓
Scheer	✓	✓	✓				(✓)
Software AG	✓	✓					
Portier						(✓)	✓
Weske	✓	✓	✓			(✓)	
González	✓	(✓)		(✓)	✓		
Jeston	✓	✓	✓	✓	(✓)		✓

Thus, as Table 1 shows, there exists some work related to the introduction of BPM in an organization. However, most of these approaches stay on a very general level and do not elaborate the details, and can only be used as an entry point for a company to get a rough insight into the subject of BPM. Especially the whitepapers of BPM vendors are not really useful without additional information or consulting. Despite some very in-depth guidance, such as in the handbook by Jeston mentioned above, the lack of papers or books addressing the topic of systematic BPM tool selection is

remarkable. In addition, the analysis of requirements for customizing a BPM method and selecting an appropriate BPM toolset is hardly considered in the existing literature.

Besides the analyzed resources, a huge amount of work has been done with respect to BPM in general or on particular BPM methods. This is important for an organization to determine whether it makes sense to tackle BPM adoption and invest money in this area at all. However, the introduction of BPM itself is addressed much less intensively and, thus, motivates the need for a systematic framework to support such an endeavor.

3   A Framework for Introducing BPM

As shown in the previous section, according to the authors' experiences made in real projects, no existing BPM approach completely addresses all steps that are important for introducing BPM in a sustainable manner. In this section, we therefore introduce our methodological framework for the stepwise introduction of BPM in an organization. The framework forms a holistic approach in this regard and guides the entire BPM adoption process starting with the initial idea until the final rollout of an organization-specific BPM method and a supporting toolset. By taking into account concrete requirements engineering techniques for capturing the expectations of an organization, the framework particularly aims at guiding the responsible persons through all steps of BPM introduction in a systematic and traceable manner, which is vital for the project's success.

The framework presented in chapter 3.2 is only an abstraction from the concrete method we developed to guide BPM adoption projects. In contrast to known existing approaches in the literature, these guidelines do not only cover step-by-step procedures, but further information such as responsibilities for individual tasks, in- and outputs, or pre- and post-conditions for each activity and are therefore much more detailed. Unfortunately, due to space limitation, only a brief overview of the framework can be provided in this paper.

3.1   Research Approach

The BPM introduction framework was elaborated by using the five steps of "action research" as proposed by Susman [9]. According to this approach, we first identified the actual challenges to be solved when introducing BPM in an organization. These challenges were collected in two real projects (see section 4), where we were asked to support the internal project teams in establishing BPM. The most important challenges we experienced there were

a)   the function-oriented instead of process-oriented thinking of many people
b)   the low trust and high apprehension regarding the advantages of BPM
c)   the unclear implementation of a BPM method in order to actually fit the organizational culture and capacities
d)   the procurement of a suitable BPM suite.

In the subsequent research step of "action planning", we then collected possible solutions to these challenges. This was done by studying the literature in the

corresponding areas and combining our own experiences from previous projects, as well as our methodological knowledge.

In the third step of "action taking", we then instantiated and applied the developed framework. We first applied the framework in a medium-sized research institute to gather first experience there. In a second iteration of the action research cycle, we applied an improved version of the framework at a large distributed research campus.

After each execution, an evaluation of the outcomes took place as a fourth research step. By reviewing the work that had been carried out, we analyzed how well the BPM introduction framework fulfilled the demands and addressed the identified challenges. As the researchers developing the framework were directly involved in its execution, they could gain insights into the ongoing activities and judge their success. In the fifth step, the lessons learned were then collected in order to define the required improvements.

The five steps of the action research cycle have been repeated twice so far. The lessons learned described in section 5 were achieved after the second iteration.

3.2   Overview of the Framework

The framework for the introduction of BPM in an organization consists of several steps, whose performance we recommend in order to accomplish BPM introduction projects successfully.

Figure 1 shows an overview of the entire introduction framework and additionally displays the interconnections between the individual steps.
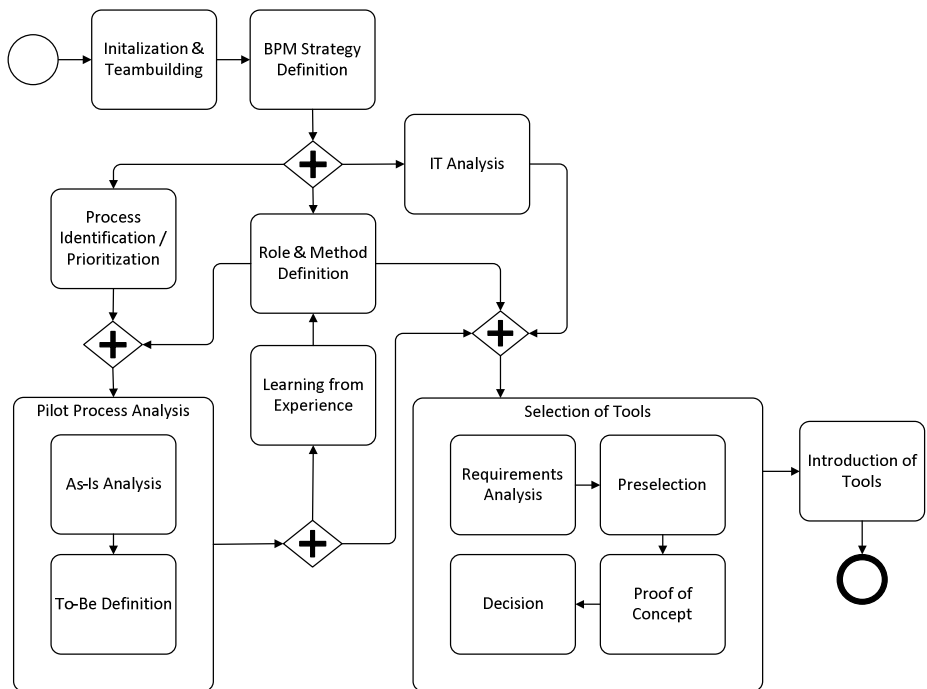

Fig. 1. Steps of BPM introduction framework

The starting point is the "*Initialization and Teambuilding*" step where the idea of introducing BPM is born and the cornerstones for the upcoming activities are laid. The idea can come from any position in the organization. However, to be able to enforce the idea, the essential part is to get the approval of top management. If their commitment is assured, the introduction project is official launched and an internal team is created that will guide the upcoming steps.

In the "*BPM Strategy Definition*" step, the established team substantiates the initial ideas and analyzes the goals of the organization, the goals to be achieved with BPM, and the goals of the introduction project itself. Furthermore, a strategy regarding how to achieve these goals is defined and corresponding tasks and activities are planned. The strategy must be negotiated with the organization's top management. Finally, the team derives a measurement plan to allow evaluating the success and progress of the BPM introduction according to the aforementioned goal definition.

The following three steps can then run in parallel. During the "*IT Analysis*" step, the current IT landscape of the organization is analyzed in order to identify which existing systems are to be integrated into the BPM toolset.

During the "*Role and Method Definition*" step, a definition of the roles and method related to BPM takes place. A set of process-spanning and process-specific roles is defined and staffed with real personnel from the organization. Additionally, an organization-specific BPM method has to be defined, which will be applied to manage the organization's business processes. For some parts of the BPM method, like the as-is analysis and the to-be definition of business processes, the framework already contains a proposal for the corresponding steps. For the remaining parts, references to existing approaches in the literature or tailoring guidance on how to elaborate specific BPM activities for organization-specific needs are provided.

In the "*Process Identification and Prioritization*" step, a decision is made on which business processes will be further investigated as pilot processes during the BPM introduction project, as covering all processes is neither economically feasible nor necessary. Therefore, the existing business processes are captured and prioritized in order to identify those business processes that are suitable for the pilot process analysis.

During the "*Pilot Process Analysis*" step, which starts after process identification and prioritization as well as role and method definition have been completed, these pilot business processes are then worked on. In a first sub-step, they are analyzed to figure out how they are currently being lived in the organization. This is done by performing an elicitation and an analysis of the as-is situation, followed by a specification and validation phase together with representative process participants. In a second sub-step, the processes are then transformed into improved to-be processes by considering the capabilities of modern BPM tools.

When the pilot process analysis is completed for the first selected pilot process, the experiences are collected in the "*Learning from Experience*" step. The aim is to gather all the experiences related to the application of the BPM method in order to use it for adapting the role and method definition towards an approach that fits the organizational context very well. Hence, corresponding retrospective meetings are performed continuously, i.e., after the analysis of each remaining pilot process.

In the "*Selection of Tools*" step, a BPM toolset that which fulfills the organizational needs in the best possible way must be chosen. Therefore, the results of the IT analysis, the role and method definition, and the pilot process analysis are used to derive a set of corresponding requirements on the BPM toolset. Based on the derived set of prioritized

requirements, a pre-selection of possible tenderers is then performed in order to reduce the mass of existing offers to a manageable number. Afterwards, proofs-of-concept with the remaining BPM toolsets take place in order to test them extensively regarding their suitability for the organization. Based on the results of the tests, a procurement decision is made.

Finally, in the "*Introduction of Tools*" step, the selected BPM tools are introduced into the organization. This includes not only the installation and integration of the tool, but also the necessary training to enable the employees to use the BPM tools later on. Experiences gained after this step are fed back to the role and method definition if adjustments to the BPM method are necessary. Then, the organization is ready to run BPM in a productive manner.

3.3 Instantiating Method

As already mentioned above, we have defined a concrete, instantiating method for managing BPM adoption projects (still to be published) besides the generic

Table 2. Example for the description of a step of the introduction method

Name	Purchasing decision
Goal	Making the decision to buy a BPM suite.
Precondition	Show case is completed.
Input	Ranking of BPM suites.
Involved Stakeholders	Members of the total team.
Procedure	1. Calculate the cost-benefit ratio (CBR) for each of the tested BPM suites. To do so, divide the score of the BPM suite determined after the show case (compare chapter 3.9.3) by its price, which was elicited during the self-disclosure. $$CBR_{Tenderer} = \frac{Score_{Tenderer}}{Cost_{Tenderer}}$$ To normalize this value, divide it by the highest CBR value in order to get a value between zero and one for each tenderer. $$CBR'_{Tenderer} = \frac{CBR_{Tenderer}}{\max\{CBR_{Tenderer}\}}$$ 2. Rate the tenderer's experience and stability (EaS) on a scale from one for very poor to five for very good. To do so, make use of information about the company such as its economic situation, the tenderer's references and experiences. This information has been gathered during the self-disclosure. To normalize the value, divide it by 5. $$EaS_{Tenderer} = \frac{RatingOfEaS}{5}$$ 3. …
Output	Recommendation to buy one particular BPM suite.
Post-condition	Decision to get one particular BPM suite is made.

methodological framework. This method is designed to give a prescriptive guideline in order to enable practitioners to run BPM adoption projects in a repeatable manner. For this purpose, detailed information on what has to be done when, how, and by whom, including decision procedures, moderation guidelines for workshops, formulas for various calculations, inputs, outputs, pre- and post-conditions for activities, etc. are provided. An example of how the steps are described is depicted in Table 2.

4   Real-World Application Studies

The framework, respectively the aforementioned instantiation, has been applied in two large projects so far. The context of these projects is briefly depicted below.

4.1   Engineering Institute

The first project started in late 2010 and took place in an institute dealing with engineering consulting. The institute is organized into eight departments with around 250 employees in total. The overall motivation of the institute for introducing BPM was the low effectiveness and efficiency of supporting business processes, as this resulted in low process compliance and dissatisfaction among the employees. In particular, too much effort was spent on administrative or supporting issues, which negatively affected the results of the core processes. After motivating top management to think about BPM, a BPM core team was established in the organization involving administrative people as well as external experts (i.e., two of this paper's authors). Together with the management, this team defined precise goals for the BPM introduction and derived a clear strategy for what the organization wanted to achieve by using this paradigm. Based on this, the core team then started involving further stakeholders from other departments such as the head of the administrative department or administrators from the IT department. With the former person, an initial business process map was created using brainstorming techniques before systematic prioritization took place in order to determine which processes should act as pilot processes. With the IT administrators, the constraints given by the IT landscape (e.g., hardware, backup systems, firewalls, LDAP, etc.) as well as the most important information systems to be potentially integrated into a BPM suite were then identified. In parallel, the core team tailored the BPM method and the role model proposed by the authors to the given situation at the institute. Most importantly, concrete persons within the institute were assigned to the cross-cutting and process-specific roles prescribed by the framework in order to determine the stakeholders to be involved in the next BPM adoption steps.

Together with the people assuming a process-specific role in the (three) identified pilot processes, these processes were then analyzed in detail. Both the as-is and the to-be analysis took place in joint workshops lasting two hours each. In between, the core team elaborated the information gathered, specified the pilot processes in their as-is respectively to-be state, and conducted validation interviews with the stakeholders. After each workshop, a retrospective meeting was held in which the procedure for the next workshop was defined based on the lessons learned.

Based on the results of the pilot process analysis and the consideration of IT constraints, an initial set of requirements for a BPM suite to be procured was derived by the core team. Furthermore, the core team elicited additional requirements from people who had been assigned to the cross-cutting BPM roles before. The purpose of this additional elicitation was to understand their functional and non-functional expectations concerning software support for generic BPM activities like process modeling, process implementation, process controlling, etc.

The final list of requirements was then prioritized and used to contact potential BPM suite vendors. From nine contacted organizations, five organizations were preselected and invited to present their solution and to explain how they would deal with the stated requirements. Based on the impressions gathered during these presentations, a procurement recommendation had to be made to the top management because no further effort was allocated for making a more in-depth proof-of-concept. Unfortunately, due to political reasons, it was not the recommended solution that was finally bought at the end of 2011. In the meantime, and with some corresponding challenges, the pilot processes have been implemented and are currently going to be brought to production.

4.2   Large Basic Research Organization

The second project started in the middle of 2011 and was carried out at one of the largest organizations for basic research in Germany. The institution employs more than 2000 people organized in more than 60 departments distributed over a large distributed campus. In addition, the organization accommodates and involves several thousand guest researchers per year in its core research and development activities. The overall motivation of this institution was to establish a process-oriented culture in order to perform the high number of internal processes much more efficiently and with much higher transparency for all involved people. After getting commitment from the organization's top management, a core team staffed by people from the internal process department and external experts (the paper's authors) was created. According to the proposed framework, the core team then started to identify and select business processes to be treated as pilot processes during the adoption project. Important criteria were quick wins when implementing these processes, representativeness for the organization's processes in general, and a crossover nature in order to be able to involve people from different departments. In parallel, the 15 core IT systems were identified and analyzed in terms of their suitability for integration or even replacement by an integrated BPM suite. Furthermore, the core team defined an initial BPM method to be used for the pilot process analysis and identified and involved people acting as process-specific roles for the pilot processes.

Unfortunately, it was not possible to determine people to take over the cross-cutting roles: Top management was not willing to set up a BPM organization as long as no decision basis had been provided yet by means of a procurement recommendation. Together with the involved people, a pilot process analysis then took place; again separated into an as-is and a to-be analysis phase. However, in contrast to the first project, much more effort was needed here. So, for each pilot process, up to three workshops were needed for the as-is, respectively to-be phase. The reason was that

there was a multitude of department-specific variants, which had to be aligned and negotiated. Thus, several lessons were learned that required the core team to adapt the analysis procedure continuously. Based on the identified characteristics of the pilot processes in their indented to-be situation as well as on the results of the IT analysis, requirements for a BPM suite were then derived. However, as no people were assigned to the cross-cutting roles, e.g., for process modeling or implementation, the core team had to derive requirements from these perspectives on their own. In this context, the reuse of requirements specifications from the first project was helpful to complement the initial set of requirements by adding BPM-task-specific issues. Instead of contacting BPM vendors directly, an official request for proposals was made by the organization. After making an initial pre-selection based on hard K.O.-criteria, 13 remaining vendors were invited to give a brief demonstration. Based on further criteria checked during these demonstrations, only three vendors made it to the final proof-of-concept, in which dozens of real-world scenarios were played in order to test the solutions for their suitability in the organization. Thus, a well-founded procurement decision could be made at the end of 2012.

5   Lessons Learned and Recommendations

The lessons described in this section were learned after applying the framework in the two aforementioned BPM introduction projects. We publish the lessons learned for two reasons:

1. To invite other researchers to contribute their ideas to continuous improvement of this framework.
2. To inform practitioners dealing with BPM adoption for the first time about good practices and typical pitfalls.

In the following, we describe our experiences for each step of our method that we deem as most relevant.

Initialization & Teambuilding: In this step, we experienced that it is very important to get commitment from management at higher levels (preferably top management) for the BPM project. BPM is a strategic issue, which includes cultural changes in the whole organization. Effectiveness can only be achieved if processes are analyzed across the boundaries of organizational divisions, which can often only be enforced by management decisions on high levels. In building the core team for the BPM adoption, it is important to choose team members who are technically versed and personally appreciated across disciplines and by various hierarchy levels. The core team should be able to motivate, influence, and fascinate others to push the project forward. This will ultimately increase acceptance for BPM in the whole organization. In addition, it is important to release the core team members from other work, so they can focus on the BPM introduction. Otherwise, the BPM project might easily lose priority while competing with the ordinary daily tasks of the core team members.

BPM Strategy Definition: It is a central aim to clearly determine why an organization is willing to invest in BPM and what BPM is supposed to provide. Thus, the goals to be achieved by BPM but also by the BPM adoption project itself should be defined precisely. Thus, clear controlling and measurement plans should be derived early in order to be able to track progress and success continuously. However, it is not

only necessary to define a clear BPM strategy but also to communicate it in the organization in order to avoid wrong hopes or fears (e.g., fear of people of losing their jobs) that might arise. Ideally, employees should be involved directly in decision workshops, because BPM will not work if it is enforced in a patronizing manner.

IT Analysis: In this step, the analysis should only focus on important parts of the IT landscape regarding a BPMS to be procured. Otherwise, too much effort will be spent on the analysis of systems of minor importance, which will consume a lot of time and effort. The IT analysis should therefore primarily analyze the existing infrastructure systems such as LDAP, etc., the existing business applications with which the daily tasks are performed, and any further system that is already known to be replaced or integrated by a BPMS.

Process Identification & Prioritization: We experienced that it is important to select representative processes with quick wins that are not too complex. Considering complex processes during BPM adoption will lead to getting stuck in the process analysis without seeing results. This might lead to negative effects like disappointment among stakeholders or budget overruns already during the pilot phase, which will cast a shadow on the whole BPM initiative. On the other hand, addressing processes with low representativeness for an organization's process landscape or with low value is also risky, as such analyses would probably lead to wrong conclusions regarding both the required BPMS functionality and the overall improvement potential of BPM.

Role & Method Definition: As in core team building, it is also relevant for the actual BPM role staffing to achieve releases for these roles and make BPM one of their daily tasks (or ideally the only one). In this regard, it is essential to consider existing skills and competencies regarding business process modeling, controlling, implementation, etc. Furthermore, it is important to adapt the overall BPM concept to the actual needs of the organization, as every organization has different requirements regarding certain aspects (e.g., business process modeling language, elicitation techniques, etc.). In this regard, it is essential to ensure that a BPM method fits the organizational work culture. For instances, in highly flexible organizations with low standardization, it is very risky to roll out an approach that tries to rigidly govern processes. Thus, establishing a BPM method without systematic tailoring based on a thorough analysis of the actual organizational needs is a risky undertaking.

Pilot Process Analysis: Regarding the participants to be involved in process analysis workshops, we experienced that it is important to make it transparent who is chosen for the workshop and why. If possible, other stakeholders may also be informed about why they were not chosen. Representatives for all relevant roles of a business process (at least process participants and process owners) have to be included in order to get a complete picture of the process. For this purpose, we recommend also involving superiors as they often have an overview of large parts of the process. Furthermore, confidentiality should be claimed and assured at the beginning of each workshop. It must also be made clear for the participants that not people and their work are being criticized, but only the processes in their current state. These social aspects should lead to an open atmosphere, because otherwise information might be repressed, leading to wrong process descriptions and requirements. Regarding the performance of the as-is analysis workshop, it is not useful to model the processes directly electronically, e.g., using a laptop and presenter, because this takes too much time and detracts people from discussing the as-is situation. It is also not recommended using a process

modeling notation during the workshop because it is quite likely that many of the involved people are not able to understand it, even though they will probably not complain about that. We therefore recommend using meta-plan methods and cards, as these means involve the participants more actively in the creation of the process description (a formal language can be used afterwards to document the process in the back office). In this regard, it should also be focused on the main flow of the (as-is) process, thereby avoiding getting lost in details, exceptions, and branches. We recommend regularly reminding the participants that the 80% case of the process should be elicited. It is reasonable to identify the exceptions but not to model them in the process at this point in time. However, eliciting the perceived strengths and weaknesses of the as-is processes from the participants is an important step that should not be neglected.

Regarding the to-be process definition, we made good experiences by creating a proposal offline on which the participants can comment in a joint walkthrough. It is important to link the identified weaknesses to changes incorporated in the process. This makes it clear how these weaknesses will be addressed in the new process, which gives the participants a better understanding of what BPM and especially a BPMS is supposed to do. However, the recommended or possible process changes should be prioritized, as often not all aspects might be realizable within a given time and budget. Thus, decision makers should be involved early on. Furthermore, during the to-be definition, it is also necessary to explicitly and implicitly define the given exceptions as well as clear business rules. In particular, we recommend carefully analyzing the given business rules (and especially their enforcement), as overly strict rules may hamper an efficient flow of the process (or even block it), which in turn might lead to several problems in daily business such as a low acceptance of a BPMS, or uncontrolled workarounds.

Learning from Experience: In order to have an effective retrospective meeting we recommend collecting feedback and writing down the experiences continuously, at least after each workshop during the pilot process analysis. However, it is not sufficient to just track these lessons – the method must also be adapted accordingly. The core team should therefore analyze possible alternatives regarding how to avoid an observed problem and discuss which solution would be most promising. This is a good basis for continuously optimizing the method definition for the organizational context.

Selection of Tools: In order to filter the high number of possible BPMS tenderers, it is essential not just to state clear requirements, but also to define hard K.O. criteria. Furthermore, we recommend only inviting tenderers to further presentations that can fulfill at least 60% of the stated requirements. The presentations should have a strict agenda and timeframe. This prevents lengthy presentations about information of minor importance (e.g., pure marketing presentations). After that, the number of tenderers should have already been reduced to two to four tenderers, which will then be invited to an in-depth proof-of-concept workshop. In preparation for that event, we recommend elaborating concrete test cases that are comparable to the daily tasks of the organization when using the BPMS later. We propose including challenging scenarios to ensure that the tools are tested appropriately in the areas of process modeling, process implementation, process execution, and process monitoring. However, in the final decision, the economic situation of the tenderer should also be regarded, as well as the size and turnover of the company in comparison to the estimated project size.

Table 3. Relevance of lessons learned

Step	Lesson learned	Relevance
Initialization and Teambuilding	Get commitment from management at higher levels	Medium
	Choose technically versed and personally appreciated members	Medium
	Release the core team members from other work	High
BPM Strategy Definition	Determine clearly why the organization invests in BPM and what BPM is supposed to provide	Medium
	Derive clear controlling and measurement plans	Low
	Involve employees directly	High
IT Analysis	Focus only on important parts of the IT landscape	Medium
Process Identification /Prioritization	Select representative processes with quick wins	High
Role & Method Definition	Achieve releases for people taking BPM roles	High
	Consider existing skills and competencies	Medium
	Adapt the BPM concept to the needs of the organization	High
Pilot Process Analysis	Make transparent who is (not) chosen for the workshops	Medium
	Involve all affected process roles (including superiors)	High
	Claim confidentiality	Low
	Use meta-plan methods to model the process instead of doing it by using a laptop and modeling languages	High
	Focus on the elicitation of the main flow of the process	High
	Elicit perceived strengths and weaknesses of the process	Medium
	Create a proposal for the to-be process offline and perform a joint walkthrough over the process with the participants	High
	Link the identified weaknesses to changes in the process	Low
	Prioritize possible process changes	Medium
	Involve decision makers early on	High
	Analyze given business rules carefully	Medium
Learning from Experience	Collect feedback and experiences continuously	Low
	Adapt the BPM method continuously based on experience	High
Selection of Tools	Define hard K.O. criteria to filter tenderers early	High
	Only invite tenderers to presentations that can fulfill at least 60% of the requirements	Medium
	Have a strict agenda and time frame for the presentations	High
	Select only up to four tenderers for a proof-of-concept	Medium
	Elaborate test cases that are comparable to daily tasks and include challenging scenarios	High
	Consider the economic situation of the tenderer	Medium
Introduction of Tools	Share team members' knowledge with their successors	Medium
	Define a clear rollout strategy and a strategy for the time after the BPM adoption project	High

Here, it should be checked whether the tenderer is really able to provide a solution that is not only appropriate technically, but also with regard to service levels, for example.

Introduction of Tools: If members of the core team will be substituted by other personnel after the adoption project, it is important for them to share their knowledge

with their successors promptly to ensure fluent transition between the introduction and future BPM activities. Furthermore, a clear rollout strategy (e.g., installing, configuring, training, etc.) must be defined and followed; as otherwise, the project might get stuck close to the end. Especially when the core team is released from its responsibilities, it must be clear who will further drive and manage the BPM activities. Without a motivated, skilled, and acknowledged person to do this job, the aforementioned investments are jeopardized. Thus, it is essential to define a clear strategy for the time after the BPM adoption project.

In Table 3, we summarize our lessons learned and assess their relevance based on practical experience from the aforementioned case studies and further projects. High relevance means that we run into problems when not following a lesson while we did not run into these problems when following it. Medium relevance means that when applying a lesson we experienced success, while we made no experience when not following it. Low relevance means we did not notice any difference, no matter whether we applied a lesson or not.

6   Conclusion and Future Research

An increasing number of organizations are currently interested in adopting business process management (BPM) to gain a competitive advantage by exploiting the benefits of this paradigm.

However, while there are plenty of publications dealing with BPM aspects in the area of notations, technologies, activities, or governance / management issues, methods or guidelines that explain how to introduce projects with sustainable results are rare, or described only on a very high level of abstraction. The majority of organizations have no staff with solid BPM experience, which represents a high entry barrier, as it bears the risk of running into problematic pitfalls if no investment is made in external consultancy.

Existing approaches like the handbook of Jeston [8] already cover to some extent the steps of BPM adoption as proposed in our framework. However, in some crucial aspects we made different experiences in practice, and therefore include them in our framework. For example, in contrast to using a combination of laptop and video projector for business process elicitation as suggested by Jeston, we experience the achievement of much better results by using the (informal) meta-plan method, as indicated in the lessons learned.

The purpose of this paper is therefore the provision of a methodological framework (based on practical experience) for guiding practitioners through the typical and most important steps of BPM adoption. Thus, for each of these steps, we presented our lessons learned gathered in two large real-world projects in order to provide practitioners with some insights when running their own adoption projects. Thus, it is expected that typical pitfalls can be avoided and that greater project success becomes realistic. However, the lessons learned also indicate areas where future research and development are worthwhile. Thus, our paper aims at providing first ideas for researchers based on our experience in this regard.

For the future, empirical studies are planned in order to provide more evidence of the advantages of our methodological differences in comparison to other approaches.

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