A Framework for Reflective Business Process Management

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Abstract

Current literature in the area of Business Process Management (BPM) holds a very “mechanistic” view, focusing on top-down specified business processes and the resources needed for their execution. However, such a perspective neglects the contribution of individual employees, whose skills, experiences and knowledge influence the value added through a business process significantly. In today’s knowledge-intensive business world however, organizations need employees who have the experience and knowledge to cope with fast-changing environments and requirements while performing their work productively.

The purpose of this paper is to introduce a framework to combine reflection processes with BPM. This framework provides a conceptual baseline for the development of information systems enabling organizations and their employees to improve their learning processes. Reflection and reflective learning are seen as the key concepts to generate the knowledge and expertise needed in this context.

1. Introduction

Triggered by a continuously changing business environment and major technological developments, an intensive discussion of process-oriented management approaches takes place in academic literature as well as in practice for almost 20 years now. Accordingly, a variety of articles dealing with the topic of Business Process Management (BPM) have been published in the meantime [1]. However, this literature holds a very “mechanistic” view, focusing on top-down specified business processes and the resources needed for their execution. Such a perspective disregards the contribution of the individual employee, whose skills, experiences and knowledge influence the value added through a business process significantly.

In general, the successful management of learning and knowledge has become a critical success factor for organizations in today’s knowledge-intensive business world. Back in 1996 already, Argyris and Schön precisely described some requirements for (learning) organizations, which are still up-to-date nowadays: “it is conventional wisdom that business firms […] need to adapt to changing environments, draw lessons from past successes and failures, detect and correct the errors of the past, anticipate and respond to impeding threats, […] build and realize images of a desirable future.” [2] However, the question remains how an organization should act and react in order to fulfill these requirements.

A common answer to this question is that organizations need employees who have the experience and knowledge to cope with such requirements and perform their work productively. Nonetheless, a continuous professional development including learning processes to acquire knowledge [3] is needed to maintain such capabilities over time. In these situations, formal learning methods alone are insufficient because of their long preparation time and their separation from daily working routines. What is needed is a kind of “real-time-learning” to enable individuals and also organizations to react on changing requirements and conditions in time and in an adequate manner. Eventually, this functionality should be provided or at least supported by an appropriate information system.

However, conceiving such an information system that meets these learning requirements presupposes a thorough understanding of how to get a systematic grip on learning processes and how learning can thus be institutionalized as a part of daily business, including existing information systems. This paper aims towards answering these key questions by (a) introducing the concept of reflection and reflective learning respectively (section 2) and (b) incorporating it in the area of BPM (section 3). Thus, the main contribution of the theory-driven work at hand is the development of a framework for reflective BPM. The paper closes with a discussion of the framework’s implications (section 4) and a conclusion (section 5).
2. The theoretical background of the framework - reflection and reflective learning

While studying the literature about reflection, it becomes obvious that this term is an interdisciplinary topic. Accordingly, many sources emanating from partially different disciplines like philosophy, psychology and education exist, with little integration of the respective concepts. In the context of reflective practice for example, the examination of the topic originates from the professions of teaching and nursing mainly [4]. As a consequence, reflection can be seen as a generic term, incorporating many ideas [5] and therefore needs to be defined in relation to the respective scope of its use.

In order to converge to the understanding of reflection underlying this paper, some basic concepts and models which strongly influenced the manner in which the term reflection is used, will be discussed in the next sections. Furthermore, their implications for the concept presented in this work will be outlined.

2.1. Some basic mechanisms of reflection

In 1933, Dewey [6] presented his view of reflection in the book “How We Think”. This work strongly influenced the work of many other authors and determined their ideas and approaches of reflection [5], [8]. Dewey pointed out the existence of two experiential processes which direct to learning: (1) trial and error processes leading to “rule and thumb” decisions and (2) reflective activity enabling effective problem-solving mechanisms and improved effectiveness of learning in general [5].

Dewey associates reflection with thinking by considering the skills necessary to manipulate knowledge in order to revise it for a certain purpose. The starting point for the reflective activity he described is a state of doubt or uncertainty guiding the reflective process [4]. According to Dewey, reflective thinking is an “active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it, and the further conclusions to which it tends” [6].

Another author often cited in the context of reflection is Habermas [9]. Similar to Dewey, Habermas also considers reflection as a kind of tool to create knowledge [4]. In his opinion, several different processes exist which support the generation of knowledge and one of these processes is reflection [9]. However, Habermas’ motivation to examine reflection must be seen from a more philosophical point of view, aiming at a concept often referred to as “critical reflection” in literature [10], [11]. “For critical theorists, [...] ‘critical reflection’ is emancipatory. Quite distinct from the process of day-to-day problem-solving, critical reflection refers to an examination of social and political taken-for-granted, both historical and contextual” [10].

We agree with Moon [4] that although different motivations guided the two authors on their way examining reflection – Dewey with more interpretative interests concerning the process of effective education and Habermas believing in ideals of empowerment and political emancipation – their work share a common view of reflection as a mental process, incorporating a certain purpose as well as the result or the outcome of the reflective process. This understanding of reflection also constitutes the baseline for the paper at hand. However, to develop the concept of reflection which is needed to combine it with the ideas of BPM, some further approaches of reflection and reflective learning will be discussed in the next sections.

2.2. Reflective learning

In management development, experiential learning is considered the dominant theory nowadays [10]. Experiential learning theory is strongly influenced by previous work of scholars, who considered experience as a very central aspect of human learning. In this context, learning is defined as a process of knowledge creation through transformation of experience [12].

The development of experiential learning theory was stimulated by a publication of Kolb [4], where he introduced a model well-known as the experiential learning cycle [13]. This model comprises “Concrete Experience” and “Abstract Conceptualization” as two forms to grasp experience as well as “Reflective Observation” and “Active Experimentation” as two forms to transform experience. “Immediate or concrete experiences are the basis for observations and reflections. These reflections are assimilated and distilled into abstract concepts from which new implications for action can be drawn” [12]. Although Kolb identified reflection as an important component of learning from experience, he did not discuss in detail what is meant by this component he called “Reflective Observation” [5].

In contrast to Kolb’s work, other authors focus more precisely on the process of reflection in experiential learning (for examples see [4]). The theoretical assumptions guiding the understanding of the reflective process in this paper can be traced back to a model introduced by Boud, Keogh and Walker in 1985 [7]. This model is focused on experience-based, deliberate learning, presuming a learner who intends to learn in order to achieve a specific goal. Reflection in this context “is an important human activity in which people recapture their experience, think about it, mull it over and evaluate it.” [7]
The reflection process in this model [7] is based on the total experience of a learner. These experiences can consist of behavior, ideas and feelings. The reflective process can be composed of three main elements. (1) Returning to experience by remembering outstanding events, repeating the initial experience in the learner’s mind and sharing characteristics of the experience with others. (2) Attending to feelings, which is divided into the utilization of positive feelings (focusing on successful learning situations as well as positive experiences), and removing obstructive feelings in order to enable a more rational examination of events. The most important part of the reflective process is the (3) re-evaluation of experiences however. The learner reconsiders the experience according to the specific intention, combines new and already processed knowledge and finally integrates this knowledge into his conceptual frame of reference. As already mentioned before, the model assumes the reflection process to be executed intentionally, aiming at a specific objective. Therefore, the possible outcomes of reflection may include new perspectives on experience, a change in behavior, the readiness for application or a commitment to action.

2.3. How to categorize reflection

Keeping in mind the central ideas of Dewey, Habermas and Boud, Keogh and Walker concerning reflection and reflective learning respectively, another two approaches are introduced in this section in order to enable a kind of categorization. This categorization is useful to operationalize the concept of reflection, allowing for more profound considerations of reflection in BPM. At first, different levels of reflection according to a model presented by van Manen will be introduced, before some considerations with regard to the time dimension of reflection are explicated.

The ideas underlying the model of van Manen [14] are related to the ideas presented by Dewey. In his work, van Manen applies the concept of reflective activity or thinking to pedagogical processes. Reflection in this context is defined as a mental action, which distances a person from events so that these events can be observed in a more objective manner [4]. To refine this understanding of reflection, van Manen presents a model differentiating four levels of systematic reflection:

- The first level (I) of the model describes thinking and acting on an every day basis in ordinary life,
- while the second level (II) refers to more specific reflection on incidents or events [4].
- On the third level (III), a person reflects systematically on its own experience and the experiences of others in order to gain critical insights about an everyday action.
- The fourth level (IV) finally, describes the reflection about the way a person reflects. This latter kind of reflection aims to find out more about the nature of knowledge and the conditions that shaped existing experiences.

Some authors like van Manen [14], Loughran [15] or Raelin [16] explicitly stress the time dimension of reflection. Concerning the examined experiences, reflection can unfold before, at the same time or after these experiences. According to Loughran [15] and Raelin [16], in this paper these three forms of reflection should be referred to as:

- Anticipatory reflection: enables a person to consider alternative options, decide about possible procedures and to anticipate experiences arising from the actions planned.
- Contemporaneous reflection: is very similar to Schön’s [17] concept of reflection-in-action. This type of reflection helps a person instantly confronted with an unexpected situation or problem by reframing the problem and considering new approaches [16].
- Retrospective reflection: describes a process of looking back in order to make sense of past experiences [14].

Together with the four levels of reflection outlined earlier in this section, these three time dimensions of reflection will serve as the conceptual baseline for the framework of reflection processes in BPM presented in section 3.

2.4. Reflective learning in the organizational context

As already mentioned in the introduction of this paper, individuals and organizations have to cope with a changing business environment nowadays. Therefore, it is very important for organizations to constantly enable and support the development and proficiency of their employees. The question is however, how this task can be performed by and for the benefit of an organization.

In general, two different approaches to answer these questions do exist in literature [8]. On the one hand, the problem is regarded from a management perspective, stressing the importance of activities like strategic planning and controlling as well as competence management in order to provide a kind of framework concerning the daily working environment of the individual employee. On the other hand, there is the perspective of early literature on organizational learning (e.g. [18]), building on the understanding that only individuals can acquire specific skills and knowledge. In this context, organizational learning does occur if the individual is
learning and acting on behalf of the organization [19].

Thus, in association with the idea of BPM presented in section 3, we understand organizational learning as the improvement of an organization’s task performance over time, including the learning to change the values that define “improvement” [2]. In our framework, we distinguish if reflection in the context of BPM leads to a top-down process or a bottom-up process of organizational learning. The bottom-up approach is characterized through the (self-) development of the individual employee, assuming that enhanced individual performance contributes to a better mode of operation within the organization [20]. However, the experiences concerning the individual performance enhancement must also be communicated within the organization to contribute to the organizational knowledge base. Accordingly, the learning results have to be embedded into employees’ minds and/or in organizational artifacts to become organizational. From our point of view, this embedding takes place through the integration of the learning results into daily business processes and the enclosed working routines.

However, this bottom-up (individual) perspective is insufficient to explain a target-oriented development of an organization over time. What is missing are reference functions guiding private adjustments, for example if comparing individual performance and its contribution to the favored performance of the organization. “Such reference functions are fulfilled by organizational maps, memories and programs” [2], which incorporate work flow diagrams, data bases and procedural specifications of organizational routines for example. Due to the fact that such organization-wide references can only be created or adapted if harmonized with top-management directives, we consider this kind of organizational learning as a top-down approach. Thus, we comprehend the learning process at an organizational level as structural changes, affecting the individual level and the subsequent individual learning processes respectively.

3. A framework to combine reflection and Business Process Management

In the previous subsections, some concepts of reflection and reflective learning were introduced and defined for the purpose of this paper. The subsequent statements substantiate the idea to combine these concepts with the topic of Business Process Management, which is introduced prior to that.


Current literature in the area of BPM predominantly holds a very “mechanistic” view, focusing on top-down specified business processes and the resources needed for their execution. As Vanderhaeghen, Fettke and Loos [21] point out however, human task managers usually have a certain scope of discretion while dealing with specific tasks which is not fully representable in predefined business process models. As a consequence, such a “traditional” BPM perspective neglects the contribution of individual employees, whose skills, experience and knowledge influence the value added through a business process significantly.

Over the recent years there arose research approaches related to “social BPM” which aim towards augmenting traditional BPM with Web 2.0 [21] and social software [22]. Such applications, e.g. Blogs, Wikis, Social Networks, and Social Tagging, and their according enhancement potentials with regard to BPM are exemplarily examined by Houy, Fettke and Loos [23]. The framework for reflective learning in BPM presented herein also incorporates the meritocratic approach of social software [22] as well as the idea of self-organization and utilizing of a collective intelligence [21] (cp. section 2.4), so there is actually a significant conceptual overlap. I. e. Web 2.0 and social software applications may provide valuable tools for implementing parts of the framework. However, the work at hand mainly focuses on theory development from a learning point of view, so it aims towards providing indications where Web 2.0 and social software can be rendered useful for organizational learning rather than describing an implementation using social software concepts and modules.

In general, BPM efforts are focused on the continuous transformation and improvement of business processes nowadays rather than pursuing a singular, radical redesign as proposed by early-day Business Process Reengineering approaches and initiatives [24]. This idea of evolutionary improvement is typically conceptualized in a BPM lifecycle consisting of several phases. The classification and description of these phases can vary depending on the respective author. However,
Houy, Fettke and Loos [1] subsume a set of aspects, which are generally incorporated in the different BPM lifecycle concepts. In compliance with these aspects and according to a definition provided by van der Aalst et al. [25] BPM is understood as a set of methods, techniques and software tools which support the design, implementation, execution, control and analysis of business processes aiming to enable an optimized value creation. According to Scheer [26], a business process is defined as a sequence of executions in a business context in order to create goods or services. For the purpose of this paper, the phases of the BPM lifecycle are adapted from [1] and will be referred to as indicated in Figure 1 (see previous page). For each of these five phases, possibilities and potentials for reflection and reflective learning will be discussed within the next subsections. Figure 2 provides a summary of this discussion with the first column indicating the BPM lifecycle phase. The second, third and fourth column describe shortly the purpose of reflection, the content of the reflective process and the possible outcome of this process respectively (according to the statements made in section 2.2). “Reflection level” corresponds to the different levels of reflection according to the model presented in section 2.3. The category “Time dimension” indicates if the reflective process refers to (1) future (anticipatory), (2) current (contemporaneous) and/or (3) past (retrospective) experiences (section 2.3). Last but not least, the column captioned “OL” specifies, if the described reflection process contributes to a bottom-up or top-down organizational learning approach, as outlined in section 2.4.

<table>
<thead>
<tr>
<th>BPM Lifecycle phase</th>
<th>Purpose of reflection $^1$</th>
<th>Reflective process $^1$</th>
<th>Outcome of reflection $^1$</th>
<th>Reflection level $^2$</th>
<th>Time dimension $^3$</th>
<th>OL $^4$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategy Development (section 3.2.)</td>
<td>Definition of strategy and strategic objectives as well as alignment with business processes</td>
<td>Re-evaluation of experiences concerning market situation and company’s core competences as well as process improvement potentials</td>
<td>New perspectives on &amp; readiness for strategic decision making</td>
<td>III</td>
<td>⬇</td>
<td>O</td>
</tr>
<tr>
<td>Design (section 3.3.)</td>
<td>Design of business processes in general</td>
<td>Re-evaluation of experiences (e.g. from previous C&amp;O-phase) concerning optimization and Improvement potentials for business processes</td>
<td>New perspectives &amp; readiness for implementation of improved business processes</td>
<td>III</td>
<td>⬇</td>
<td>O</td>
</tr>
<tr>
<td>Design of business processes in progress</td>
<td>Evaluation of experiences concerning possible future conditions for the execution of business processes</td>
<td>New perspectives &amp; readiness for implementation of improved business processes</td>
<td>III</td>
<td>⬇</td>
<td>O</td>
<td>L</td>
</tr>
<tr>
<td>Design of business processes supported by simulation approaches</td>
<td>Evaluation of experiences concerning possible future conditions for the execution of business processes</td>
<td>New perspectives &amp; readiness for implementation of improved business processes</td>
<td>III</td>
<td>⬇</td>
<td>O</td>
<td>L</td>
</tr>
<tr>
<td>Implementation (section 3.4.)</td>
<td>Smooth integration of designed business process in organisational routines</td>
<td>Re-evaluation of experiences and anticipation of possible restrictions for the implementation of business processes</td>
<td>Readiness for implementation of designed business processes</td>
<td>III</td>
<td>⬇</td>
<td>O</td>
</tr>
<tr>
<td>Execution &amp; Monitoring (section 3.5.)</td>
<td>Realisation of easy to implement process improvements in day to day working routines</td>
<td>Returning to experiences while executing business processes</td>
<td>New perspectives on working routines</td>
<td>I</td>
<td>⬆</td>
<td>O</td>
</tr>
<tr>
<td>Improvement of own day to day working routines</td>
<td>Re-evaluating experiences (e.g. best practices) in order to improve own execution of business process</td>
<td>New perspectives on working routines</td>
<td>III</td>
<td>⬆</td>
<td>O</td>
<td>L</td>
</tr>
<tr>
<td>Ability to react to unexpected situations or problems in daily working routines</td>
<td>Evaluation of experiences in order to cope with incidents or events while executing business processes</td>
<td>New perspectives on working routines &amp; readiness for appropriate reactions</td>
<td>II</td>
<td>⬆</td>
<td>O</td>
<td>L</td>
</tr>
<tr>
<td>Controlling &amp; Improvement (section 3.6.)</td>
<td>Controlling &amp; improvement of organisational working routines</td>
<td>Re-evaluation of experiences in order to interpret aggregated data about finished business processes</td>
<td>New perspectives on working routines &amp; change in organisational behaviour</td>
<td>III</td>
<td>⬆</td>
<td>O</td>
</tr>
<tr>
<td>Can occur in every stage of the lifecycle (section 3.7.)</td>
<td>Understanding of underlying assumptions and improvement of own reflection techniques</td>
<td>Re-evaluation of experiences concerning own reflection processes</td>
<td>New perspectives on learning procedures, knowledge and values</td>
<td>IV</td>
<td>⬆</td>
<td>O</td>
</tr>
</tbody>
</table>

Explanatory remarks:
$^1$ see for discussion section 2.2.
$^2$ see for discussion section 2.3.
$^3$ see for discussion section 2.4.
$^4$ bottom-up approach ⬆
$^5$ top-down approach ⬇

**Figure 2: Framework for reflective BPM**
3.2. Strategy Development

In the area of strategic management, a strategy originates from a company’s vision, which describes a preferable future state of the organization. Sometimes, there is a differentiation of vision statement and mission statement in literature, where the mission statement is explained as the declaration of a company’s purpose [27]. Nevertheless, the definition of a corporate strategy and corresponding strategic objectives is an individual and very creative process, which could be supported by reflection. In order to ensure a long-term success however, the defined corporate strategy needs to be aligned with the organizational structure of the respective company. Accordingly, the challenge in the Strategy Development phase of the BPM lifecycle is to align the defined corporate strategy with the (core) business processes of the organization.

Strategy definition is generally top management responsibility. Accordingly, reflection processes in the Strategy Development phase of the BPM lifecycle are assumed to be carried out by the management board of a company. In this context, the management board reflects systematically on own or others’ experiences (level III) in order to attain new perspectives or the readiness for strategic decision making (outcome). The reflective process can thereby be related to past experiences, e.g. concerning the development of the company in general as well as to identified improvement potentials for business processes (retrospective dimension). Furthermore, the reflective process can also be related to future experiences if considering alternative options (e.g. different business strategies) or by making decisions about the realization of process improvement potentials (anticipatory dimension).

Reflective learning in this context is initially restricted to the members of the management board. However, the results and implications of the strategic decision making process need to be established on all levels of an organization, because the implementation of the defined corporate strategy will fail on the operational level otherwise. A prerequisite for this implementation on the operational level is the communication of the intended strategy and a breakdown of strategic objectives to lower levels of the hierarchy. Thus, organizational learning is assumed to follow a top-down approach in this context.

3.3. Design of processes

The design phase of the BPM lifecycle incorporates two main tasks, the identification and documentation of already existing business processes (as-is-analysis) [28] and the design of favored, future business process models (target processes to-be) [29]. There is an ongoing discussion in academic literature however, with some authors arguing for a detailed as-is-analysis and some authors arguing against it, stating the unjustifiable effort of this procedure [28]. For the purpose of this paper, especially the design of to-be business processes, afterwards carried out within the organization, is interesting because this activity provides several points of contact for reflection and reflective learning respectively.

When designing business processes, the comprised activities and resources need to be documented in order to communicate them throughout the organization. In general, this documentation is carried out by using common process modeling notations like the Event-driven Process Chain (EPC) or the Business Process Modeling Notation (BPMN) for example. Thus, the purpose of the documentation is the creation of process models. In this paper, we follow the definition of vom Brocke [30], who interprets the process of model construction as a sequence of conditions, which are adopted by the model to be developed. The model designer starts with an internal, mental model which is expanded together with a model user in an intersubjective manner in order to design a harmonized model.

This process of model design is an appropriate activity for reflection. The model designer can re-evaluate systematically her own and others’ experiences, e.g. those from model users, (level III) in order to find new perspectives on and improvement potentials for the respective business process (outcome). The reflective process is related to past experiences in this context (retrospective dimension). However, it is also possible that the model designer starts to reflect while designing a business process, because she is confronted with an unexpected situation or problem incidentally (stage II, contemporaneous dimension). For example, it could happen that while designing a business process, the process designer discovers some inefficiency in the sequence of different activities and reflects about this incident.

In addition to the above mentioned process of model construction, some other activities in the context of business process improvement are also incorporated in the “Design” phase of the BPM lifecycle. Once process models are designed, it is possible to use these models for simulation purposes for example. Such simulation studies can be used to generate, analyze and evaluate alternative instances of a business process in order to design the optimized business process afterwards. Furthermore, interdependencies between different business processes can be simulated aiming to identify the most efficient combination [29]. In this case, a reflective process can help the process designer to
systematically evaluate her own and others’ experiences (level III) in order to anticipate possible conditions influencing the execution of the respective business process in the future (anticipatory dimension). The outcome of this reflection process can consist in new perspectives on or concrete implications for the simulation model, leading to an improved design of the optimized business processes afterwards.

Reflective learning in the three scenarios described above occurs on an individual level initially (process designer or model user). However, if the improved business processes are implemented in the organization, every employee involved in these processes as well as the whole organization can benefit from these improved models. A prerequisite to realize these benefits is that the designed process models are considered as a kind of work instruction and are followed by the employees involved. In this way, the process models can be seen as a top-down specification of individual working procedures which apply a top-down approach of organizational learning accordingly.

3.4. Implementation of processes

After the design of business processes is finished, these processes need to be implemented within the organization in order to execute them in day-to-day business. Depending on the complexity of the respective business process, its realization can cause a lot of coordination and communication efforts regarding employees or IT systems involved. Therefore, the Implementation phase in the BPM lifecycle comprises all activities necessary to smoothly integrate the designed business processes into the daily routines of an organization. These activities can include the communication of changes within the work environment to employees as well as decisions to which extent existing information systems could support the designed business processes for example [31].

Reflection in this context can help the organization to prepare for a smooth integration of the designed business processes into daily working routines (outcome and purpose). By re-evaluating past experiences (retrospective dimension) systematically (level III), e.g. about already occurred problems while transforming process models into more technical models executable in information systems, some implementation obstacles may be prevented. Furthermore, it could also be very beneficial to anticipate possible future circumstances (anticipatory dimension) which might influence or even prohibit the implementation of business processes. If some data about work processes is gathered during the execution of a business process for example, this may affect industrial laws. Therefore, this situation should be discussed with the workers’ council and the concerned employees before the implementation of the respective business process actually takes place.

The implementation of business processes is the continuation of the Design phase activities, assuring the actual incorporation of the top-down specified working procedures into the organization. Therefore, also these activities conducted during the Implementation phase of the BPM lifecycle contribute to a top-down organizational learning approach.

3.5. Execution & Monitoring of processes

Once the business processes are implemented into the organization, they can be executed in daily business. Depending on the available IT systems and the respective level of automation, this execution can be monitored, for example by examining the work progress regularly. These monitoring activities can be supported by BPM systems, which provide detailed information about the current status of process instances in progress [31].

Concerning the execution of business processes, two possibilities for reflection can be identified. On the one hand, employees can reflect on their everyday thinking and acting while executing business processes (level I, contemporaneous dimension) in order to evaluate and improve their very own daily working routines (purpose and outcome). On the other hand, it is also possible to re-evaluate others’ experiences systematically (level III, retrospective dimension) aiming to improve the own way of executing business processes (purpose and outcome). One example in this context is the adoption of so-called best practices, containing the knowledge of many experts with regard to the respective business process.

As mentioned above, it is also possible to monitor current business processes in progress. In this context, deviations form normal conditions and exceptional circumstances should be disclosed as soon as possible in order to enable the employee executing or monitoring the respective business process to react directly and in an adequate manner. Incidental reflection on this current practical experience (level II, contemporaneous dimension) can help an employee to cope with such incidents and unexpected events by evaluating appropriate reactions (purpose, outcome).

From a learning point of view, the reflective processes described above lead primarily to a learning of the individual employee. However, by communicating concrete results and improvement potentials concerning specific business processes, this
individual learning can be transferred to the organizational level. Therefore, most of the described learning activities in the Execution & Monitoring phase of the BPM lifecycle can be classified as bottom-up organizational learning.

Excluded from this appraisal as bottom-up organizational learning is the incorporation of best practices into the work processes of the individual employee. In this case, best practices need to be identified and transferred out of the individual domain into an organizational dimension before they can be used by other employees. Therefore, best practices are seen as a kind of organizational knowledge. If this knowledge is used to improve the working routines of individual employees, this is classified as top-down organizational learning accordingly.

3.6. Controlling & Improvement of processes

In contrast to monitoring activities described in the previous subsection, controlling of business processes in this paper is defined as the analysis of aggregated data about multiple, already completed process instances [31]. For this analysis, it is necessary to gather and aggregate information about the respective processes. Afterwards, deviations between actual and favored performance parameters can be analyzed in order to identify improvement potentials. The results of this Controlling & Improvement phase can be incorporated in the next iteration of the BPM lifecycle (e.g. by discussing the improvement potentials in the following Strategy Development phase and keeping them in mind for the subsequent Design Phase), thereby closing the loop.

While analyzing and interpreting aggregated process data, process managers can reflect systematically about these past experiences (level III, retrospective dimension) in order to gain new insights on current working routines and develop some alternatives to change organizational business processes and behavior subsequently (purpose and outcome). Graphical representations of relevant information about the finished business processes (e.g. diagrams and dashboards) can support the reflective process reasonably.

Reflective learning in this context occurs on an individual level (process owner or manager) initially, based on the experiences from many executed process instances and the respective employees involved in these business processes. This individual learning is transferred to the organizational level while discussing and considering the underlying improvement potentials in the next Strategy Development and Design phase of the BPM lifecycle respectively. Therefore, organizational learning in this context follows a bottom-up approach.

3.7. Level IV – reflection about the own way of reflection in BPM

In the preceding subsections, the different possibilities for reflection and reflective learning within the BPM lifecycle were presented. However, apart from these dimensions of reflection in BPM, there exists another, more comprehensive perspective. According to the model of van Manen (see section 2.3), the fourth level indicates reflection about the own way of reflection. This kind of reflection can be used in every phase of the BPM lifecycle in order to understand the underlying assumptions while reflecting and to improve the own, individual use of reflection techniques. Correspondingly, the reflective process in this context consists in the anticipation, evaluation or re-evaluation of future, current or past experiences (time dimension) concerning the reflection processes of the individual. The overall objective thereby is to gain new perspectives on learning procedures and knowledge in general (purpose and outcome). Due to the fact that learning from this fourth level of reflection emanates from the individual and her very own processes of reflection, organizational learning in this context can be achieved through a bottom-up approach.

However, if this fourth level kind of reflection is carried out by decision makers in order to reflect on the values that define „improvement“ within an organization, the result may be to change these values (cp. understanding of organizational learning presented in section 2.4). This change of values however must be implemented throughout the whole organization in order to become truly embedded at an organizational level. Thus reflective learning in this context is seen as a top-down procedure accordingly.

4. Discussion and implications of the presented framework

The framework presented in this paper serves as a conceptual baseline for the development of software applications to support organizations and their employees in reflecting and improving working routines and learning processes respectively. Due to the maturing status of the idea presented, an application scenario could only stay vague. Therefore it is deferred in favor of putting an emphasis on characteristic key functionalities illustrating the implications and benefits of the framework.

First of all, the institutionalization of reflective activities within an organisation motivates employees to constantly scrutinize their daily working routines. Thus they are empowered to take an active part in the composition of business processes instead of just
executing predefined tasks. Apart from an increased job satisfaction, this higher participation may also lead to an improved performance of the respective business process and the corporate performance accordingly. Furthermore, not only the sphere of the individual is addressed by reflective activities but also the exchange of information and ideas. By communicating a problem or the outcome of the own reflective process to colleagues and team members for example, a discussion of the articulated case is enabled. In a kind of “collective reflection”, this case can be further evaluated and may lead to new insights which can only be created collaboratively and not by the individual.

This collaborative reflection can be supported and facilitated by social software (cp. section 3.1). In dementia care for example, carers are often faced with challenging behaviour (e.g. an aggressive attitude) of their patients without an observable reason. The reflection process of a single carer does not often lead to an explanation (Execution phase of the BPM-lifecycle, level II, contemporaneous dimension or level III, retrospective dimension). By writing down some information about the special incident during the work process in an internal blog, the case is available for a collaborative reflection process however. Other carers can read the information and re-evaluate it systematically (level III) with their own experiences from work processes with this patient (retrospective dimension). Thus a pattern may become visible, showing that the patient is aggressive only if it rains a lot for example. Accordingly, the outcome of this collaborative reflection process may be the insight to treat the patient with special care on rainy days (improvement of the work process) because he is meteorosensitive.

With regard to State-of-the-art BPM systems, some more implications of the idea presented herein can be concluded. Such systems allow for an aggregation and visualization of data concerning completed business processes. The objective of such tools is to provide a process manager with the information necessary to identify potential flaws in business processes (Controlling & Improvement phase of the BPM lifecycle). The corresponding improvement potentials are then discussed in the next iteration of the BPM-Lifecycle (Strategy Development phase) and may afterwards be implemented into the organization via the following Design Phase. However, this traditional approach has two major shortcomings.

First of all, this process can be very time-consuming, impeding a fast exploitation of improvement potentials as well as an appropriate reaction on changing market conditions. Instead of a process manager controlling historical data about finished business processes, the idea presented herein proposes that every employee is motivated to reflect about own process experiences and/or process experiences of others and the corresponding improvement potentials. The communication between the different employees can be supported via the already mentioned social software applications for example. Thus the outcome of the reflective process (e.g. process improvement potentials) can be made available in “real-time” to the organization although they are not documented in its process models yet. Nonetheless, also the target-oriented development of the organization over time can be ensured by following the “traditional” lifecycle phases and adapting business processes according to new insights.

Apart from this time-related factor, another shortcoming of State-of-the-art BPM systems is that the information provided by the system is restricted to aspects which can be captured automatically. Contextual information about the respective business process, like experiences of the employee executing it, is missing though. In this context, the approach presented in this paper enables organizations to gather contextual information from their employees (e.g. ideas for improvement stemming from reflection processes) in conjunction with the respective work tasks and corresponding business processes. Thus, the information a process manager can rely on while controlling business processes is enlarged considerably, allowing for a better support in decision-making about reasonable process adoptions and improvements.

5. Conclusion and outlook

In this paper, a framework for reflective BPM was developed, aiming to enable organizations and their employees to cope with fast-changing requirements and conditions in their day-to-day business. Reflective learning is seen as the key concept in this context to generate the knowledge and expertise needed for this task. While reflecting on individual or organizational working routines, an employee or manager is able to identify and realize improvement potentials for the benefit of the whole organization.

The framework presented in this paper is seen as a conceptual baseline for the development of a set of software applications supporting reflective learning. By implementing, testing and evaluating these applications in real-life learning and working environments in the near future, valuable input will be generated for the enhancement of the idea presented herein. Furthermore, studies about the use of these applications as well as possible barriers for the adoption within organizations could provide valuable insights for the work illustrated in the paper.
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