

Reusable Decision Models Supporting Organizational Design in Business Process Management

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Abstract—Transition towards a business process oriented enterprise is explored in research from different perspectives. One of the most popular approaches is Business Process Management. Its activities include process definition, execution, monitoring and analysis. Its implementation was studied in research and practice from the process and application related points of view. The organizational changes are often out of scope or only marginally regarded in these implementation strategies. This paper summarizes recurring and thus reusable organizational decisions that appear in the course of the implementation process and provides the accordant organizational design. This design can be applied throughout the industries for enterprises that are about to start a business process management initiative. Thus, this approach supports a rather inter-enterprise than intra-enterprise reuse paradigms.

Keywords—organizational patterns; business process management; design model reuse.

I. INTRODUCTION

There are numerous Business Process Management (BPM) implementation strategies, mainly provided by large consultancy firms or business application software developers that individually emphasize different aspects such as general implementation strategies as well as choosing and implementing a business process modeling tool. Among these, the organizational changes are very important as the organization commits to implementing business process management activities [25][29][22]. The organizational structure is an essential attribute of the design of an enterprise, especially when in a situation of change (e.g., BPM implementation). It defines the relationships between employees to support specialization and coordination of work. Modern enterprises have a variety of relationships between organizational units in order to operate more efficiently and responsively [20]. In case of an enterprise orienting towards a process-centric views and BPM the allocation of activities to positions and establishing new communications structures between them is a challenge in itself – this being decided often before thought is given to what detailed activities will be executed and what exact IT will support this. Therefore, managers need to be able to develop robust models of their organizations regarding the BPM-related changes, and then provide them so the information can be effectively reused and shared by many people and systems involved in the BPM project. Although organizational changes are usually

determined early in the process of emerging BPM commitment – particularly when BPM should pervade several divisions or even the whole enterprise – actionable artifacts that may support the manager in allocating actions and responsibilities to organizational entities are scarce.

Artifacts of today do not meet the requirements of decision makers that need to be guided in the organizational design of BPM implementation projects. However, the availability of such a decision supporting artifact and its reuse across different BPM initiatives may greatly benefit organizations that have adopted business process-centric views. These benefits can be found in a guided and faster way of identifying and making organizational BPM decisions and reduced risk of failing to specify organizational-critical parameters which may have led to uncalled-for costs [28]. Reusing such knowledge on organizational BPM decision making within a globally operating enterprise and its distributed business units would also be a prerequisite for future innovative behavior [12]. Acknowledging that different organizations display a wide range of characteristics which will require individual strategies contingent upon the company's composites and its environment, we argue that recurring decision topics in organizational design do exist and that they may be consolidated and “packaged” for later reuse in similar problem settings [13]. We therefore explore the possibility of creating a generalized conceptual decision model that consolidates recurring decision topics concerning organizational design in BPM initiatives. This decision model is intended as an actionable item and for later reuse by decision makers or managers in BPM projects.

The rest of the paper is organized as follows. In Section II we review the state of the art of decision support methods regarding organizational design for BPM and highlight the lack of an artifact at the adequate level. Section III collects recurring decision topics in organizational BPM design and explains their range of implementations alternatives. In Section IV we consolidate our findings and propose the developed conceptual decision model. In Section V we apply our decision model to a simplified real-world BPM implementation scenario and demonstrate the instantiation. Section VI discusses briefly the limitations of the decision model and its possible extensions.

II. STATE OF THE ART

BPM includes methods, techniques, and tools to support the activities of design, enactment, management, and analysis of operational business processes [26]. These main activities and the scope of BPM are often summarized in a BPM life-cycle [23][17][30]. Over the last three decades research in BPM has generated a large body of artifacts addressing organizational, managerial, information systems and technology, and socio-economic topics. Works on BPM implementation often focus on the areas of business process automation or product implementation, e.g., [25][11][16]. The human aspect is considered in the focus of change management or software requirements in some of these works [25][5]. As we concentrate on the organizational design for BPM, implementation strategies regarding technology selection and process modeling as well as modelling-related topics are out of our scope. These areas are already covered by existing approaches. In the area of tool selection ISO [8] offers a standard process for software evaluation, other frameworks exist in research and practice e.g., [2][4][27]. Zucchi and Edwards [29] as well as numerous researchers such as [1] identify critical success factors for BPM implementation. In e.g. [27][9], a general process for BPM implementation and integration is shown and described. Armistead and Machin [1] propose a decision support method for selecting the adequate BPM implementation project type.

Four possible BPM implementation project scenarios are suggested that are contingent upon a) the commitment of the responsible business manager and b) the resulting impact on the organization. By determining these contingencies the fitting project type can be identified. The project types are further characterized by six features, of which two address distinct organizational attributes, i.e.: 1) the number of employees impacted by the BPM activities, and 2) the type/size of organizational unit concerned (e.g., department – business unit – organization-wide). While the decision matrix can support the broad selection of an initial BPM approach, the level of analysis remains rather high considering that organizational change for BPM will involve more operational decisions. Notably, concepts that capture coordination- as well as strategy-related topics are not provided.

Organizational aspects of BPM, i.e., the reporting and steering department for BPM, were investigated by Gartner in multiple case studies [18][3][19]. On the alignment of the BPM Gartner states that the optimum implementation is often a blended model in which IT and the business drive BPM projects. Thus, it is suitable to align BPM initiatives and expert knowledge at the IT and gradually hand it over to the business. But first of all the common ground should be established that indicates what is the purpose and goal of BPM implementation and what results are expected. Communication and transparency on these objectives need to be provided by the higher executive levels. The lack of suitable communication structures between top executives and the business units represents another significant risk. It should be clear that the existing, often function-oriented, organizational structure will be changed towards a process-oriented organization form. These changes and their effects

need to be communicated using the techniques known from the change management domain. Snabe [24] provide an extensive roadmap for enterprises to enhance their business process management performance. Nevertheless, it does not consider the assignment of responsibilities to roles involved in business process management initiation and support. Additionally, no description on governance structures for BPM are given, thus, the focus is on the processes. The considered strategy aspects focus on enterprise with a level of BPM implementation that is comparable to the CMM level 2, instead of considering level 1 that includes the decision and introduction of a governance structure. For implications of strategy definition, the extensive work by Mintzberg [15] is referred to.

One of the important BPM implementation tools is the establishment of a central expertise institution for BPM. Jeston and Nelis [9] and Olding and Hill [19] provide some approaches concerning design and implementation of such a central institution. This institution is often referred to as: “competency center” [3] or “center of excellence” [6]. Establishing such an organ requires significant organizational changes such as its alignment, its internal organization, its target group and its main tasks. Zucchi and Edwards [29] describe these institutions as “business process offices” and indicates their establishment as one of the critical success factors for BPM. Remarkably, most of the publications concerned with this topic are often case-specific or derive from consultancy practice and do not address the organizational design in their demonstrations.

III. RECURRING DECISIONS IN BPM ORGANIZATIONAL DESIGN

In BPM literature and in practice several implementation relevant aspects regarding organizational design exist. Here they are called *organizational decision topics*. We define organizational decision topic as a focus area including multiple potential outcomes related to an element of the organization, i.e., a managerial position, in terms of responsibility and control. Thus, a decision topic directly relates to a concrete role and scope of responsibilities in the area of interest. Each decision topic has different entities or action alternatives.

Decision on the choice between these elements is assigned to the responsible that is associated to the decision topic. We define *organizational decision* as a choice of one of the alternative entities within the decision topic. Therefore, it is a reaction to an identified problem within a decision topic, which solution provides an added value to an organizational stakeholder. We emphasize that the organizational decisions discussed here are all executive decisions following the taxonomy of Kruchten [10], i.e., they do not address requirements for technology instantiations or for their properties (cf. executive, ban and property decisions in [10]). Zimmermann et al. [28] provide three stages of the decision making in the context of decision modeling with reuse: decision identification, decision making and decision enforcement. In this paper we focus on the first two steps in the context of organizational decisions for BPM implementation. Recurring and thus reusable organizational decision topics in the context of BPM were identified

within BPM implementation literature and in interviews lead with BPM experts and managers that were concerned with the implementation of a BPM initiative. These topics were also verified in workshops. The interview analysis revealed organization-related content clusters that occurred in the most of the interviews. These clusters were identified as decision relevant topics. The results were then presented to a group of BPM experts including the interviewees. In the upcoming discussion, the topics were rounded up and commented. As a result of this workshop the organizational decision topics presented in figure 1 were defined. For a better representation the recurring decision topics are summarized here as questions that can occur in different order and influence one another during the implementation process. Therefore, figure 1 shows the questions that are to be considered for BPM organizational design as a cycle and not as a process model.

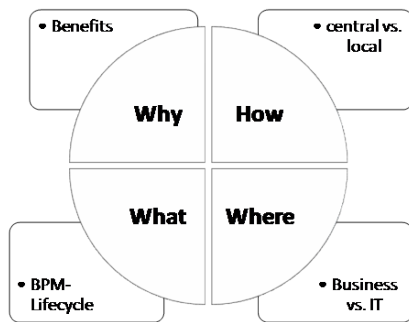


Figure 1. Reusable decisions Topics in BPM Organizational Design

BPM is a holistic management approach aiming to align an organization with the interests of its stakeholders, customers and employees while eventually raising a company’s agility and operational performance. BPM fosters and supports business effectiveness and efficiency, adopts a cross-departmental approach and examines the impact of all relevant applications, users and stakeholders. As BPM strives for innovation, flexibility and integration with technology through continuous process improvement and the visualization of formerly non-transparent process structures, BPM is claimed to be able to increase efficiency, to reduce costs and improve the quality of products and services [9]. These arguments can serve as possible answers to the question “why” that is often present when a new technology, management approach or product program are introduced or their implementation is described. Thus, the motivation for BPM implementation can be extrinsic, i.e., enforced by law or market, or strategic. Often the question “why” BPM is to be implemented answered by general BPM strategic benefits, e.g.: increasing customer satisfaction, increasing competitiveness or more agile business process [14].

Once the BPM implementation has been decided the mode of its introduction and integration into the enterprise architecture, i.e., “how”, has to be defined. Coordination and governance aspects need to be considered within the enterprise. Governance aspects include decisions that can range from self-government to strict control. Furthermore, reporting structures need to be taken into account. Here two major modes can be identified: centralized implementation and administration

or creation of local entities that are responsible for BPM implementation and expertise. A centralized BPM institution has the advantage of concentrated expertise and serving as an information point but it also requires the ability to address distributed requests. If BPM is to be introduced as a central corporate issue, it should be steered either by a central committee or a center of excellence. This central organ can be organized in different structures which are described in the following:

- Line organization,
- Staff organization,
- Matrix organization or
- Pure project organization

Which style the institution is to be organized in, is determined by the structure of the existing organization, the size, the significance and the length of the project, problem relevance and availability of material and human resources. The line organization uses the existing functional organizational departments and draws the project team members from existent business units. Therefore, one major advantage of this organization form is that the existing organization structure can be used and that team members can also work part-time for the project not hindering their normal work. On the other hand, there is the staff organization form which also uses member of a higher management level who coordinates the work of the sub project departments. In contrast, a pure project organization is most suitable if very important and huge projects are to be conducted which are not time crucial and whose budget is not too limited. This type creates a kind of organization unit just for project purposes provided with its own material and personal resources.

Finally, a project can be organized in a matrix style which follows the idea that each project member remains in his or her job position but is now subordinated to the (external) project manager who has the functional authority. In some way, the matrix organization comprises the line- and the project organization. Still, this form makes it reasonably difficult to coordinate the competency interfaces. In a hierarchical organization structure, the entities responsible for the BPM implementation may be the corporation, a division, a department, a group or a team. In addition, it may be a committee, a task force, a project management organization or any other form of a sub-team. Thus, “how” addresses distribution of authority. As modern organizations may not be confined to a strict hierarchy for chains of authority, different chains of authority may be defined for different purposes. BPM is supported by the IT (through business process execution software tools or tools for process modeling support), but it is also used in the day-to-day work by the business while IT is often needed to implement some of the BPM activities.

So the question arises, “where” BPM should be situated within the organization and what reporting structure will be appropriate. BPM responsibilities can either be situated in the IT or the business sector. Often, BPM executives report to the IT department since BPM highly depends on methodologies, leads to thorough process analysis and is supported by technologies such as modeling tools [19]. Despite the strengths

of IT to provide methodologies, tools and technologies, this approach leads to a lack of alignment with business objectives. Hence, reporting to the business sector is usually the better solution to ensure proper alignment with the core strategy and the company’s objectives, allowing the business to better direct and manage the activities connected with economic issues [19]. When determining the relevance of the two company sectors the BPM strategy must be considered. The alignment to the IT or business sector should be determined according to the BPM strategy and employed instruments. If BPM is heading towards process automation or a BPM software tool is applied, IT must be included to some extent but should not assume the majority of BPM in the long term. Thus, “where” addresses the type and scope of organizational units involved. Reporting and communication relationships need to be established between the participating organizational entities. “Where” may occur to be the most extensive organizational decision topics, as it contains different aspects such as reporting structure, responsibility and the scope of the action. The choice depends here on multiple aspects such as the alignment of BPM stakeholders, budget responsibilities, organization structure or the dominance of the one of the two enterprise departments (business vs. IT) within the organization structure.

Main BPM activities are summarized in the so called BPM life-cycle. In literature numerous variations of the BPM life-cycle exist, its main activities can be summarized as being: Modeling, analysis, simulation, implementation, monitoring and improvement of business processes [26][30][5]. These are also the potential answers to the question, “what” should be implemented as BPM main activities within the given enterprise. Process understanding is crucial for process management that is why the most BPM projects start with introduction of a modeling tool. Process implementation is often realized using workflow management systems. Process analysis can be supported by software tools like decision support systems or business intelligence tools but it still requires significant human involvement. Establishing a process monitoring strategy is gaining more and more attention from practitioners and research. The need for a central and holistic implementation of BPM can therefore originate from the use or need to perform at least one of these activities in a business unit. Successful implementation of one of the aspects can lead to the initialization of an enterprise-wide BPM-implementation discussion, i.e., influencing the question “why”.

“What” also implicitly addresses the organizational positions, i.e. extending the term of a “role”, and assignments. People are linked to positions through assignments. The possible positions of interest here arise from the typical BPM activities such as designing, enacting, etc. [26][30]. These activities are often very closely related with the process execution and are often supervised and executed by the accordant business worker who is involved into the process. Though, the addressee of the results might be on the other organizational level.

IV. CONCEPTUAL DECISION MODEL

an organization has to face in the context of a BPM implementation project is the first step towards adaptation of

the organizational structures. The questions presented above are the identified as recurring decision topics during a BPM implementation initiative and are now grouped. Once the decision topics are identified, one of the alternative decision entities has to be chosen, i.e., a decision needs to be made. Figure 2 aligns decision makers with their organizational level and the decision topics presented above. Thus, the choice between the decision entities is to be made on the assigned organizational level. BPM is a topic that is relevant for the entire enterprise and is supposed to support strategic goals of the enterprise. That is why the decision on its potential benefits and implementation scope is to be supported by and taken on the upper organizational level, i.e., the so called C-level.

The “why” can also be initiated on the operational level, as the need for process modeling or monitoring can originate closer to the process execution. Decisions made on this level have a rather long-term time horizon for their realization, being mostly abstract in their declarations. The more it comes to the actual implementation and operationalization of BPM, the nearer the decision making level is to the specific business processes. The implementation of BPM expertise in the organizational structure, as well as its resulting governance and reporting structures are defined on the tactical, i.e., mid-term, level. It is often also the task of the middle-management to find a respective structure for BPM implementation. A centralized institution such as a center of excellence for BPM can often be a valid solution for big and middle enterprises. Hence, the strategy and internal organization structure need to be developed before the implementation project. Often, members of such a center are assigned to their duties despite their daily job using the staff or line organization. This structure might hinder the development of the center or the fulfillment of its tasks as the members get less identified with BPM being responsible for the daily as well as for the BPM related tasks. Furthermore, the question of whether the BPM- related topics and projects are initiated and governed, by the IT or by the business, needs to be defined on the middle-management level.

What BPM activities are needed for the actual processes performance in the enterprise can be decided or at least initiated on the operational level. That is, where the requirements are made on the process task level and the changes can be directly monitored and controlled. Additionally, tactical level can initiate the choice by requiring certain process- related quality standards or metrics. Therefore, the addressees of the BPM activity results are the operational, directly process-related workers, as well as the middle-management.

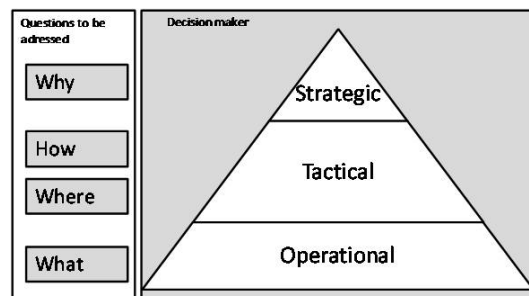


Figure 2. Conceptual Decision Model for organizational design for BPM

The decision structure presented in figure 2 identifies possible and reusable decisions and the accordant decision makers. This structure does not prescribe the timely sequence of the decision making. Moreover, often the decision occurrence depends on the organizational and process structure as well as culture within the enterprise. The need and benefits of BPM or some of its areas of activity are detected on the tactical or operational level. So the “what” decision often drives the “why”. Was the need for BPM detected or more important supported in the IT-division, it is very likely that the BPM competences and governance structure will be tied to the IT. While the recurring decisions can influence one another in their outcomes, it is important that the roles that are responsible for their making are assigned and communicated. Addressing the main BPM topics and a general organizational structure, the decision model shown in figure 2 is not limited in use within one enterprise. Small, middle and big enterprises independent from their industrial sector can benefit from this decision structure. The reuse focus lies here on using the model for different (kinds) of enterprises in the same context: initiating or implementing business process management in their business and organizational structure.

V. APPLICATION OF THE DECISION MODEL

A short illustrative example of the application of the presented decision model was conducted in a large organization that was about to develop a common BPM strategy as some BPM initiatives were already emerging developing their own approaches and tools. The strongly simplified example is used here to introduce a possible scenario for when and where the described BPM decisions can be applied including not only the business, strategic but also the governance aspects of such an initiative.

The need for BPM in the observed company came from the operations, i.e., from the business side, decision sequence running from the bottom to the top. The enterprise has a rather flat organizational structure. The names were simplified here, as the case study is only used for demonstration purposes. Mr. A is the CEO of the considered enterprise; Mrs. B is head of the business department, while Mr. C is head of the IT department. Table 1 shows the organizational decision topics, the chosen decision outcome, decision implementation and the (made anonymous) decision maker.

Thus, the company decided to implement BPM as previous experience in business process modeling and formulation in the departments already existed. Some of the departments were already using BPM modeling tools or process management approaches. Another motivation was that BPM goals are in this case accordant with the most of the enterprise’s strategic goals, i.e., design of flexible processes, short time-to-market and increasing customer satisfaction. What strategic goals can be supported by BPM implementation and how was described and operationalized in a strategy paper. The BPM implementation was decided to be central, i.e., realized by a central institution, here referred to as business process office (BPO). Matrix style organization form was chosen for the BPO, i.e., employees in the BPO still had their tasks in the departments but the tasks

were limited in favor of tasks related to the BPO. Head of the BPO is Mrs. B, i.e., the business side. Tasks of the BPO were defined as: harmonization of already existing BPM initiatives, development of a general BPM strategy, IT and consulting support in BPM related fields, monitoring and control of BPM implementation.

Organizational Decision Topic	Decision	Person	Decision Implementation
Why	Support strategic goals	Mr. A	Strategy paper
How	Central	Mrs. B Mrs. B	Business Process Office Matrix
Where	Business and IT	Mrs. B and Mr. C	Business and IT
What	Monitoring, Modeling, Automation, Tool Support	Mrs. B and Mr. C	Monitoring strategy, common modeling notation, company-wide tool support

Table I
APPLICATION OF THE DECISION MODEL

Though the initiative for BPM came from the business side, one important step for its realization was the acquisition of BPM tools, like business process modeling and simulation tools. Thus, the responsibility and therefore the budget were assigned to the IT department. Within the BPO the governance is therefore being shared by both the IT and business; IT-department being responsible for the budget and tool support while business department suggests the strategy and provides BPM expertise. Reporting on the success of BPM-related activities and projects includes the business side, i.e., Mrs. B as the head of BPO and Mr. C as head of the IT department. Once the organizational backbone has been established, the BPO took up its projects. The finished BPO activities in the company by now include: company-wide tool support, definition of a common business process modeling notation as well as developing a business process monitoring strategy. Decision on these strategies were made by Mrs. B and Mr. C based on BPM knowledge and experience as well as on the survey among the employees concerned with the topic of BPM or already having experience with BPM activities respectively.

Thus, the reusable model was helpful in this example by defining the governance aspects of the BPM initiative in the observed enterprise. A central institution for BPM was established, tasks and organizational aspects of the institution as well as the reporting structures were defined. The application of the reusable model enabled an efficient proceeding in defining, deciding and establishing the BPM supporting structures in the enterprise. Though it is too early to define the improvements of the company’s process management originating in the proposed structure, the company is being observed and interviews with the BPO members are held regularly for further analysis. Additionally, the exemplary case study only illustrates the situation in one given enterprise and marks the effectiveness of the reuse model comparing to the former status quo in the company, that is multiple, scattered BPM

initiatives. Nevertheless, further informal interviews were lead with different enterprises that lead to the conclusion that the topics addressed in the reusable model are the areas that require coordination and managerial effort. These aspects will be the focus of our future research.

VI. CONCLUSION AND OUTLOOK

In this paper we addressed the fact that in the context of the implementation of business process management or process-orientation several organizational decisions have to be made. We argued that there are specific related and reusable content clusters in the area of the organizational structure that reoccur independently from industries or enterprise size during such projects. These organizational decision topics are rarely the center of attention during BPM implementation and are often being solved intuitively accordant to the ad-hoc situation. This treatment might lead to conflict situation or lack of decision power in the future. According to practical experience and literature research we provided a structured overview of these recurring and reusable decision topics as well as their entities and developed a model for organizational decision making aligning organizational decision topics with organizational roles. This approach is similar to the existing approaches in the domains of strategy definition and strategic management (as in e.g., [15]). Being focused on initial and organizational aspects of BPM implementation in the enterprise, other BPM-related aspects that occur in later stages like process modeling techniques and notations (see e.g., [21]) as well as model ontologies (see e.g., [7]) are not considered in this paper.

Literature research as well as informal interviews with business process management consultants indicated the possibility as well as supported the assumption that there are topics that recur in the scenarios of business process management initiation. These topics were summarized here to a reusable framework that can be applied in organizations that are about to introduce the BPM approach. This framework can be applied and therefore reused for decision making independently from the target industry or enterprise type in the context of BPM implementation. Next steps can include development of a method framework for decision support as well as deeper exploration of the different entities of the identified organizational decision topics.

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