Towards Managing Business Process Variants within Organizations - An Action Research Study

Zellner, Philipp
Muenster University of Applied Sciences
zellnerp@fh-muenster.de

Laumann, Marcus
Muenster University of Applied Sciences
m.laumann@fh-muenster.de

Appelfeller, Wieland
Muenster University of Applied Sciences
wappelfe@fh-muenster.de

Abstract

Understanding the Business Process Standardization (BPS) requirements of the operating model is one important aspect for the adequate design of the underlying Enterprise Architecture (EA). Moreover, the benefits and drawbacks of BPS have been discussed thoroughly in literature and the alignment of business processes and IT is considered to be of high importance for organizations. BPS especially deals with architecting and managing business process variants. However, there are hardly any specific methodologies available on how to identify and evaluate business process variants within organizations and how to properly design processes in this context. In order to close this gap, we develop a bi-directional rigorous procedure model that enables managers to design the organization’s business architecture in the BPS context. We apply the developed procedure model and a construct for documenting process variants in an action research study, in order to test their applicability and utility.

1. Introduction

The standardization and integration requirements of an operating model of an organization are the basis for the design of an adequate Enterprise Architecture (EA) [1]. The basics and challenges of EA have been discussed thoroughly in literature. Armour et al. for example, provide valuable insights for the development of an EA [2,3,4,5,6]. Espinosa and Armour develop a model which shows the influence of coordination and EA governance on the effectiveness of EA architecting [7,8,9,10]. Based on four different cases they highlight the importance of team knowledge for enterprise architecting and the benefits of common ground [11]. Our research aims at providing artifacts to establish this common ground in the context of Business Process Standardization (BPS).

The specification of BPS requirements is considered to be one of the major decisions while designing operating models. Therefore, BPS has received a lot of attention in academia and practice in recent years. The large number of publications in the area of BPS shows that it is one of the major topics in the field of Business Process Management (BPM) [12,13,14,15,16,17]. The basics of BPS are already well researched [18,19,20,21,22]. Current publications address more sophisticated aspects of BPS and focus for example on complexity and BPS, provide tools for the evaluation of business processes for BPS, or provide frameworks for carrying out BPS projects successfully [23,24]. Depending on the researcher’s domain the corresponding literature offers a broad variety of definitions of the term BPS. Some of these definitions focus on the technical, while others focus more on the organizational aspect of BPS. Based on a detailed literature analysis we synthesized different definitions with an organizational focus. Therefore, we understand BPS as “the definition of the exact execution of business activities in order to reduce process variants. On the basis of current knowledge, the standard process derived represents the best-known method to accomplish the business process with regard to customer expectations. Furthermore, standardized processes can be executed regardless of where or by whom they are performed”.

BPS is seen as an innovative and promising approach to enhance the operational efficiency and effectiveness of business processes (cost, cycle time, quality) [17]. Companies all around the world are spending large amounts of money on BPS projects [25]. Besides these positive effects, BPS also contains some risks. Ross et al. (2006) argue that BPS might limit local innovation. Furthermore, they argue that the transition
to a standardized process occasionally requires that processes that are working well from a local point of view are removed and replaced by the new standard process, which might be politically difficult and expensive [10].

The number of process variants is frequently applied to assess BPS requirements within organizations, since it directly impacts the overall coordination effort of the organization. Based on Tregear (2010) a process is a sequence of activities that transforms inputs into outputs using enablers and guides [26]. In line with a systems’ theory perspective we understand inputs, outputs, enablers, guides and sequence of activities as elements of a business process, which need to be coordinated. Process variants occur in one or more of these elements of a business process [27,28]. This assumption is also in line with Muenstermann & Weitzel (2008) and Kettenbohrer (2013) whose standardization activities focus on the dimensions of a business process, which are very similar to Tregear’s elements of a business process [18, 24]. Knowing these elements enables us to define the term business process variant in more detail: “A process variant is an observed or documented business process with a specific variation of at least one of the elements (inputs, outputs, enablers, guides and sequence of activities) for a defined part of the overall process”.

While the importance of BPS is obvious, the current debate on BPS fails to provide guidelines for properly managing the business process variants within organizations and especially aligning strategic aspects, business processes and IT in this context. Therefore, our paper is structured in the following way: In chapter 2 we discuss the findings of our literature review about approaches to align BPS and strategic aspects. We distinguish between a) bottom-up approaches (based on process models) and, b) top-down approaches (based on strategy). At the end of the chapter we explain our research questions in detail. Our research methodology is explained in chapter 3, before we explain our procedure model in chapter 4. Then, we will exemplarily test our model in a real project in chapter 5. Finally, our paper summarizes the main findings and mentions some of the limitations of our work.

2. Related Work

2.1. Bottom-up Business Process Standardization Approaches

The literature on BPM offers a limited number of bottom-up approaches for standardizing business processes:

1. Muenstermann and Weitzel (2008) provide a well-documented procedure model to standardize business processes. However, the approach fails to explicitly include management feedback while standardizing (compare chapter 3 for details) [18].

2. On the basis of three cases, Rosenkranz et al. provide relevant factors, which should be taken into account during a business process standardization initiative. A relevant factor identified is explicitly strategic commitment. At least in one of the three cases, management was integrated during process analysis [15]. However, management sometimes has problems with understanding process models. Hence, this communication gap needs to be addressed when aligning BPS with strategic aspects.

3. One promising approach is available that tries to provide transparency on existing process variants by extending the existing BPMN 2.0 notation. The approach by Hallerbach et al. (2010) can be used to identify and document process variants in a detailed way [29]. However, detailed process models are frequently not the right level of representation for management. Management frequently is not able or does not want to discuss detailed process models. A filter is required that summarizes the most important process variants for management, in order to be able to classify the different variants from a strategic perspective.

4. Kettenbohrer et al. (2013) provide a procedure model for business process standardization, but this work is still research in progress and offers rather abstract guidelines for BPS [24].

Summing up, all of these bottom-up approaches explicitly fail to provide detailed guidelines on how to link strategic aspects with BPS. These approaches fail to adequately link to strategic objectives, because they are purely bottom-up approaches..

2.2. Top-down Business Process Standardization Approaches

Strategic alignment is considered to be one of the six core elements of BPM in literature and refers to the “tight linkage of organizational priorities and enterprise processes enabling continual and effective action to improve business performance” [30]. While the importance of strategic alignment is well known, “its operationalization remains a largely open question in the
BPM community” [30]. The connection between the organization’s intended strategy and its process capabilities is often rather weak or even inconsistent [31]. There are only a few approaches available to link strategy to BPM:

1. Creating a process vision [32]: Based on the business strategy, processes are selected and a process vision is devised (process objectives and process attributes) during workshops with management.
2. Aligning Critical Success Factors (CSFs) and business processes [33]: Based on strategy and the existing structure, CSFs and business processes are identified. The CSFs are then matched to the business processes and control variables are operationalized.
3. The Balanced Scorecard [34]: The tool has an explicit process perspective and can be combined with strategy maps in order to track strategy implementation.
4. Strategy maps [35]: These can help to operationalize strategy and to define target values for processes.
5. Top-down-driven framework for standardizing global processes [36]: On the basis of an articulated strategy, suitable segments, processes and attributes of processes are identified. By taking customers expectations into consideration the identified processes are then standardized.
6. BPTrends Associates Pyramid by Harmon, Strategic process Alignment matrix [37]: A top-down approach that aligns the three levels: a) enterprise level, b) business process level and c) implementation level.
7. Matrix alignment approach [31]: A top-down approach to match process value contribution to processes.
8. Strategic Process Alignment matrix [38]: The tool links strategy on basis of Key Performance Indicators to processes.

Hardly any of these approaches (except for the last one) focuses explicitly on BPS. Furthermore, almost all of these approaches are solely unidirectional (top-down) approaches or do not provide detailed guidelines on how to elaborate on existing process capabilities. Hence, these top-down approaches are too general to link to specific objectives of BPS.

2.3. Summary and Research Questions

To conclude, there are:

- A few bottom-up unidirectional procedure models available that help to devise a standard process, but fail to explicitly match BPS with strategic aspects;
- A few bottom-up unidirectional approaches available to model existing process variants in detail with the help of standard notations that fail to address management’s communication requirements;
- Some top-down unidirectional approaches available that generally link strategy and BPM, but do not especially focus on BPS, nor do they provide detailed guidelines for managing the business process variants.

However, strategy defines the requirements for organizational design and implementation and at the same time processes form the fundamental basis for strategy [39]. Specific process capabilities could inform strategic positioning, thereby differentiating the organization from competitors [31]. Furthermore, existing process design might influence strategy, because too fundamental process changes might lead to significant costs. In order to overcome the identified shortcomings, we aim at developing a rigorous bidirectional approach for aligning BPS and strategic aspects in BPM. In the context of BPS, special attention needs to be paid to identifying and reducing process variants whenever possible (bottom-up), while still providing the right amount of variants for adding value to customers based on strategy (top-down). Thereby, we combine BPS with the strategic part of BPM. We will address the following research questions:

1. How can business process variants (standardization requirements for the operating model) be identified and documented for management in the first place? How can the communication gap for management be closed in this context?
2. How can management review and architect the business process variants identified in a structured way by taking strategic aspects into account?

Our research also aims at demonstrating the applicability and utility of the developed procedure model and management view on process variants. We would like to assess some benefits and limitations of these artifacts in a systematic way by applying them to an action research study.

3. Research Method

In 1999 Benbasat and Zmud discussed the practical relevance of IS research [40]. They pointed out that information systems research frequently fails to produce
relevant output for practitioners [40]. The goal of design science research is utility [41]. Utility lies in creating new and innovative artifacts, in order to solve an organizational problem that has been identified. In our action research study, we will test the usefulness of a procedure model.

We decided to apply action research, in order to deal with relevant questions. Action research originates in the social sciences. It addresses current practical problems and at the same time aims at improving scientific knowledge [42]. We aim at understanding in-depth how strategic aspects and BPS can be aligned. Therefore, qualitative modes of research are valid methods, in order to address this practical issue with scientific methods. Action research is therefore considered a suitable approach to solve practical problems while applying a rigorous method. We will now briefly explain the five steps (diagnosing, action planning, action taking, evaluation and specifying learning) of an action research cycle [42]:

**Diagnosing:** Firstly, the researcher explains the aim and the steps of the action research approach to the practitioners [43]. We are convinced that no decision can be understood “[...] apart from the perceptions of the actors and the mindsets and cultures of the contexts in which they are embedded” [44]. Therefore, the researcher must actively create an understanding of the socially constructed organizational setting and meanings [45]. We focus on understanding the micro-practices while strongly aiming at understanding meanings, ideas and practices of everyday life [36]. We are aware of the fact that data is the result of construction and interpretations [46]. The process of understanding the meaning is an ongoing process of negotiations between the practitioners and the researcher about meaning as truth is inter-subjectively constituted [44].

**Action Planning and Action Taking:** Organizational actions are planned based on a theory and subjective understanding of the researcher in order to solve the identified problem. The theoretical framework thereby guides the process of finding an appropriate action plan. The actions are then implemented by the practitioner causing changes in the organization. The proper documentation of the actions carried out is of importance.

**Evaluating:** The interventions are evaluated with outcomes being compared to project objectives, expectations and theoretical hypotheses. It is checked whether the problems have been solved or improvements made. We will also evaluate our procedure model with the help of guidelines provided by Hevner [41].

specifying learning: This phase refers to the “ongoing process of documenting and summing up the learning outcomes of the action research cycle.” [47]. The extracted understanding may also serve as a starting point for a new cycle of inquiry. The action research cycle can be repeated until the objectives defined in phase 1 have all been accomplished. The existing theories must be (re)informed according to the outcome of the action [42].

4. Towards Managing Business Process Variants Within Organizations

We use the procedure model developed by Muenstermann und Weitzl [18] as a basis for our procedure model, since the analysis of existing processes (bottom-up) is a good starting point for standardizing business processes. Figure 1 gives an overview on our procedure model:

![Figure 1: Procedure model for managing business process variants within organizations](image)

First of all, we document existing processes with the help of business process modeling tools (Step 1: Model process). The step can be skipped if all processes have already been documented properly. The first step helps to generate a joint understanding of the business processes in focus (bottom-up approach). Integrating all process variants within one model can be cumbersome and highly complex. Management did not want to discuss detailed BPMN models and explicitly asked for a customized view on process variants after the first intermediate presentation. Therefore, we document all variants in a separate table (Step 2: Identify variants) that briefly describes the variant and highlights which of the business process elements varies.
<table>
<thead>
<tr>
<th>No.</th>
<th>Which part of the process is concerned?</th>
<th>Input</th>
<th>Output</th>
<th>Enabler or guidance (IT, process actor, infrastructure or guides)</th>
<th>Process sequence</th>
<th>Reason for the variant (legal reason, customer, product, location, IT system, acting person (ability or willingness))</th>
<th>Categorization of the part of the business process (column 2): Non-value adding/ Business-value adding/ Customer-value adding</th>
<th>Measures for improvement (organization- and IT-based)</th>
<th>Business- and Enterprise architectural implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Establishing customer contact</td>
<td></td>
<td></td>
<td>1. Telephone 2. Fax 3. Letter/email 4. Face-to-face appointment</td>
<td>Establishing first customer contact</td>
<td>Missing guidelines: Customer's preferences Sales representative decides on his own</td>
<td>Customer-value adding</td>
<td>Makes different channel per customer segment New process variant to be included for important customers</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Preparing an offer</td>
<td>Customer requirements</td>
<td>1. Written offer 2. Verbal offer</td>
<td>1. Telephone 2. Fax 3. Letter/email 4. Face-to-face appointment</td>
<td>Customer's preference miss</td>
<td>Preparing verbal offer Communication of verbal offer</td>
<td>Customer-value adding</td>
<td>Clear guidelines not missing Preparation should be supported by the IT system</td>
<td>Provide clear instructions Method of using the CRM system needs to be defined (training needs)</td>
</tr>
<tr>
<td>3</td>
<td>Documenting the customer information</td>
<td>Personal information of customer</td>
<td>1. documented customer information (CRM) 2. Documented customer information (non-CRM-based) 3. No documented customer information</td>
<td>1. CRM-based documentation 2. non-CRM-based documentation 3. No documentation</td>
<td>Document customer information Clear guidelines are missing</td>
<td>Customer-value adding</td>
<td>Clear guidelines necessary</td>
<td>Make instructions necessary Preparing should be supported by the IT system</td>
<td>Provide clear instructions Method of using the CRM system needs to be defined (training needs)</td>
</tr>
<tr>
<td>4</td>
<td>Additional acquisition attempt after customer rejection</td>
<td>Customer rejection</td>
<td>1. Additional acquisition attempts 2. No additional acquisition attempts</td>
<td>1. Telephone 2. Fax 3. Letter/email 4. Face-to-face appointment</td>
<td>1. Additional customer acquisition 2. No additional acquisition attempts</td>
<td>Depends on the willingness of the sales representative and preference of the customer Clear guidelines are missing</td>
<td>Customer-value adding</td>
<td>Depends on many different aspects Standardization is not needed</td>
<td>Customer-value adding</td>
</tr>
<tr>
<td>5</td>
<td>Additional acquisition attempt after a &quot;maybe&quot;-reaction</td>
<td>Customer reaction (&quot;maybe&quot;)</td>
<td>1. Additional acquisition attempts 2. No additional acquisition attempts</td>
<td>1. Telephone 2. Fax 3. Letter/email 4. Face-to-face appointment</td>
<td>1. Additional customer acquisition 2. No additional acquisition attempts</td>
<td>Depends on the willingness of the sales representative's decision</td>
<td>Customer-value adding</td>
<td>Depends on many different aspects Standardization is not needed</td>
<td>Customer-value adding</td>
</tr>
<tr>
<td>6</td>
<td>Entering the order into the CRM system</td>
<td>Customer order</td>
<td>1. Documented order 2. No documented order</td>
<td>1. CRM system 2. No CRM system</td>
<td>1. Documentation of order in CRM system 2. No documentation of order in CRM system</td>
<td>Depends on the willingness and skills of the sales representative</td>
<td>Business-value adding</td>
<td>Provide clear instructions for entering the order into CRM system Additional training needed</td>
<td>Business-value adding</td>
</tr>
<tr>
<td>7</td>
<td>Entering order into second IT system</td>
<td>Order</td>
<td>1. Second documentation 2. No second documentation</td>
<td>1. second IT system 2. No second IT system</td>
<td>1. Documentation of online advertising 2. No documentation</td>
<td>Depends on the product (necessary for online ad)</td>
<td>Non-value adding</td>
<td>Second-time publication automatically by the CRM system for online ads Additional interface required</td>
<td>Non-value adding</td>
</tr>
<tr>
<td>8</td>
<td>Order confirmation</td>
<td>Order confirmation</td>
<td>1. final order confirmation 2. No final order confirmation</td>
<td>1. Fax 2. Letter/email</td>
<td>1. Send order confirmation 2. No order confirmation sent</td>
<td>Depends on the willingness of the sales representative and customer preference There are no clear guidelines</td>
<td>Customer-value adding</td>
<td>Customer-value adding by the CRM system May be necessary for all orders</td>
<td>Customer-value adding</td>
</tr>
</tbody>
</table>
For each variant the process elements (inputs, outputs, enablers, guides and sequence of activities) that differ for a part of the process are documented. The variants are identified via interviews with process actors. We use a table for documentation (compare especially columns of Table 1 in the attachment), in order to bridge the communication gap for management. Input and output refers to the input and output of the part of the process in focus. However, we also need to identify the reason for the process variant (Step 3: Identify reasons), in order to be able to define adequate measures for improvement later on. Based on literature, there are different reasons for process variants [25,26,27,48]. Reasons might include: a) legal aspects, b) different customer requirements (input or output differs), c) different products, locations or IT systems, d) changes in policies, and e) lack of skill on the part of actors.

It is of special importance for management to understand the underlying reason for each process variant in order to define the appropriate measures for organizational change (Step 4: Provide transparency). Based on feedback during interviews, the willingness of actors was added as a possible reason for a process variant. We assume that strategy and strategic aspects have been defined and documented beforehand. Strategic aspects are indicators, which help management to evaluate business activities according to corporate strategy. Now top management can match the identified process variants with strategic aspects (e.g. continuous availability (strategic aspect) in the case of a differentiation corporate strategy). This matching is a precondition for the categorization (Step 5: Categorize variants). Process steps can generally be classified in terms of the following categories: customer-value adding, business-value adding or non-value adding [49]. This classification is very helpful, since it allows us to a) eliminate unnecessary variants (in the case of non-value-adding variants), b) improve the efficiency of business-value-adding variants, and c) elaborate on extending competitive advantages with customer-value-adding variants. In this paper we transfer this existing classification to our context. Based on feedback by management each variant can thereby be reviewed in detail. Then, management defines possible measure for improvement per variant (Step 6: Define measures). With the help of a simple matrix: a) costs estimated (low, medium, high) and b) benefits reaped (low, medium, high), the measures are prioritized (Step 7: Prioritize measures). Figure 2 sketches the matrix. The prioritization should be carried out anonymously and should then be consolidated and discussed.

After having discussed all process variants, management is able to identify and add missing process variants (Step 8: Add variants) based on missing customer-value adding variants. This step is optional. For each process variant top management needs to agree whether the variant eventually is to be accepted, should be adapted or eliminated entirely (e.g. by automating the steps with the help of IT). Thereby business processes and IT can be aligned. This step (Step 9: Document variants) is the last step in our procedure model. This top-down review process ensures that variants can be understood in detail by management. In general, non-value-adding variants should be eliminated, business-value-adding variants should aim at a lean implementation (to reduce costs and/or cycle time) and customer-value-adding variants need to consider the specific requirements of the customer. Management needs to pay special attention to the customer-value-adding variants, since these variants might provide the basis for competitive advantages. The entire procedure model should be carried out every year, in order to be able to react to changes in strategy.

5. Action Research Cycle for the Sales Process

5.1. Diagnosing

The project in focus was carried out at a publishing house in Germany. The company that was founded in 1720 has published a local daily newspaper since 1946. For several years the local newspaper industry has been looking for ways to further increase revenues. Therefore, especially the advertising department of the company in focus initiated a strategic project in 2013. The aim of this project was primarily to find and implement measures to increase sales and hence to review their existing operating model in view of increasing online competition. Furthermore, the order-fulfillment and innovations process had to be reviewed and optimized. In reference to our procedure model, steps 1-3 were carried out within this phase.

One of the objectives of this project was to analyze the current state of the aforementioned processes and to document them with the help of BPMN 2.0. Additionally, first ideas for improvement in IT had to be devised. The project team consisted of four students and a researcher who were present on average three days per week in the company. In order to document the process flows, the project team carried out 28 semi-structured interviews and 3 workshops during October 2013 and February 2014. The interviews were conducted in groups of two. One of the team members asked the
questions while the second team member documented the answers. Each interview lasted between 45 and 60 minutes and produced in total approximately 80 pages of documentation. At the beginning, interviewees were asked to match their part of the process to the overall process map. Then, they were asked to explain their activities and especially interfaces to other departments. The researcher coached the team once per week and participated when results were presented. The team had full access to all internal documents and was allowed to use internal email addresses to establish contacts with interview partners. The management team initiated this project and stated at the beginning of the project that they assumed that especially the sales process might contain too many unnecessary variants. They also assumed that there were many issues related to IT systems within this process. However, they did not know how to verify this perceived misalignment between strategy defined, business process variants and the underlying IT systems.

Because of the predefined size of this article, our action research cycle in focus will only focus on the sales process. This process is initiated by the first contact of the salesperson with the potential customer and might eventually lead to an order. For prioritization of areas of improvement, a workshop with the management team was initiated. Based on the devised process map, every manager was asked to anonymously highlight the area on the process map with the highest potential for improvement. The team agreed anonymously that the team should pay special attention to process variants within the sales process.

Every process participant was interviewed separately, in order to establish an open atmosphere and to allow direct feedback on possible reasons for process variants. Firstly, it was clarified for which part(s) of the process the interview partner was responsible. Then, each interview partner was asked to explain the process flow chronologically. At first just the “happy path” (no exceptions) was in focus and then each variant (especially in terms of different guides and the use of IT systems) was discussed and documented. After every interview the project team integrated the new information into the latest version of the process model and process map. Additionally, the identified variants were documented in a separate spreadsheet in order to bridge the gap between management and process actors. The focus was especially on documenting the variants and on understanding the reasons for them (compare Table 1 in the attachment). Eventually, each interviewee was asked to confirm the validity of the devised models. At this stage the possible reasons for variants had to be extended, since the willingness of actors had not been considered as a possible process variant reason in the first place. After having carried out all interviews, the project team organized a workshop with the aim to review the process models and process map with all participants. The team was able to validate the models and it became possible to include missing activities and process variants.


In a final workshop the results of the process model were discussed with the management team. In order to make the processes easier to understand for management, the project team explained the devised a process map. By discussing the high-level process map with the management team, the entire model was validated and last changes were documented. Secondly, the sales process was presented together with the help of the second variant document (compare Table 1 in the attachment). In reference to our procedure model, steps 4-9 were carried out within this phase of our action research cycle.

With the help of Table 1, management was quickly able to categorize the identified process variants (compare Table 1 in the attachment) into non-, business-, and customer-value-adding activities. Based on this categorization the management team was able to define measures to better align strategy, process variants and IT systems of the sales process.

1. Customer-value-adding variants: Especially, the performance of customer-value-adding variants was in focus. Sometimes it was agreed to increase customer satisfaction by providing additional variants for certain customer segments. Thereby, additional variants had been identified. Without providing transparency on existing variants it would not have been possible to identify these missing variants (top-down). Additionally, clear guidelines were established on how to handle customer-value-adding variants for different products and/or services provided.

2. Business-value-adding variants: For some of the purely business-value-adding activities standards were defined in order to improve the overall efficiency of these variants. Theses measure were sometimes connected to IT systems (compare Table 1).

3. Non-value-adding variants: Since non-value adding activities do not result in any added value at all, the management team decided to eliminate them in order to lower the cycle time and/or costs of the sales process (e.g. automatic order confirmation provided by IT system, automatic transfer of order from one IT system to second IT system).
5.3. Evaluating

The procedure model helped to analyze given business process variants in detail and to challenge underlying assumptions of management. The models revealed a large number of process variants. By using a filter to present the results to management, it was possible to categorize all variants. Management confirmed that the tool helped to review strategy defined in the context of BPS. Each process variant was checked and measures were defined and prioritized for each identified variant. Therefore, our procedure model helped to architect business processes in the context of BPS. The defined actions are currently being implemented.

Non-value-adding variants have been eliminated and transparency has been provided, e.g. on missing work instructions. It was also possible to identify missing process variants. The tool proved to provide useful insights for leaders within the organization. In some cases, employees did not stick to work instructions and intentionally bypassed rules. It is important for management to understand these organizational problems in detail. In our case management was able to identify training needs, for example. Furthermore, in some areas the incentive system needed to be changed, since employees were complaining about “unfair incentives” and were not willing to stick to certain policies. Summing up, management was able to understand the “why” behind organizational behavior. To conclude, the procedure model helped to design business process variants within a given organization. However, it was sometimes difficult to define exactly necessary process variants. We will now briefly evaluate the procedure model on the basis of Hevner’s guidelines for design science [41]:

1. Design as an artifact: The generic table (compare the first two lines of the table in the attachment) represents a construct, which makes it possible to assess and manage the business process variants within any organization. Furthermore, the procedure model represents a method for structuring the overall information. The results of the action research study show that the designed artifacts are viable.
2. Problem relevance: BPS is currently a very relevant topic in BPM. The practical relevance of the problem has been highlighted in the introduction and the case.
3. Design evaluation: Utility, quality and efficacy is ensured via our action research study. At the publishing company the designed artifact led to a better joint understanding of process variants. However, our procedure model needs to be tested in additional cases in order to further improve its utility.
4. Research contribution: The developed artifact is the research contribution, since it allows companies to assess their current business process variants in a structured way. Furthermore, it allows management to compare them to strategical aspects and devise measures for designing the organization and underlying IT. Based on detailed literature research, we developed a new procedure model by combining different existing models.
5. Research rigor: Our research relies upon rigorous methods (action research and design science). Our research results have been discussed carefully with colleagues.
6. Design as a search process: The identified procedure model has been discussed several times with research colleagues and practitioners, before applying it in a real project. However, we still need to test our artifact in additional cases.
7. Communication of research: We argue that our findings are relevant to more technology-oriented as well as to management-orientated audiences. From a technological point of view, it might be possible to implement the procedure model via IT to guide management decisions on variants in the future. From a managerial point of view, guidelines have been provided to quickly scan organizations in terms of business process variants.

5.4. Specifying Learning

It is strongly recommended that strategy is documented prior to discussing the process variants. Based on the workshop we had already extended our procedure model and included a column that allowed us to define concrete objectives for customer-value-adding variants that are in line with strategy. Management confirmed that they were eventually able to better understand the issues in the organization and the tool even provided transparency on existing and sometimes not yet known capabilities of the organization. The result of our procedure model is a table (compare Table 1) that documents the current and future standardization requirements of the operating model. The expected high number of variants within the sales process proved to be valid. However, only a few of these process variants were based on IT issues (missing interfaces, etc.). But it
was surprising to management, that many work instructions were simply missing and that some sales representatives were simply not able or willing to use the underlying IT system. Our tool allowed management to better understand these issues.

6. Conclusion and Future Research

In this paper we developed a procedure model for managing business process variants within organizations in a structured way. With regard to our guiding research questions we developed two artifacts (procedure model and table) that helped management to better understand their operating model in terms of standardization requirements. We tested our tool via an action research study, in order to ensure its applicability and utility. The results show that our tool leads to useful results in practice. Mismatches between the existing and necessary business process variants were identified, intentionally accepted, changed or eliminated. Management was able to check strategical aspects against business standardization requirements and to devise measures for changes in IT and the operating model.

Obviously, our qualitative approach limits the validity of our results. The results of our study mostly depend on our judgments and interpretations. Therefore, the results might have been biased by our experience or expectations. Furthermore, our artifact was only applied to one specific setting. However, we tested the model for three different business processes. To improve the validity of our procedure model, it still needs to be tested in additional quantitative studies. Furthermore, we gained some important insights on how to improve the procedure model in a next version of it: the link between the business architecture and EA needs to be documented in more detail. Furthermore, we would need to evaluate in the long-term, whether the identified measures really led to the expected results. However, the procedure model and the table definitely proved to provide transparency on misalignments within the organization, thereby improving the overall coordination of business processes. In the future, we plan to carry out a more quantitative study with a larger population of interviews in order to measure how many times interviewees mention different process elements.

7. References


