A Dynamic Capability-based Framework for Business Process Management: Theorizing and Empirical Application

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Abstract
Both incremental and radical business process change are undoubtedly core tasks of Business Process Management (BPM) and, thus, organizational design. The competence to successfully pursue such BPM initiatives represents an important capability which is needed by organizations exposed to a dynamic business environment. While the term BPM is omnipresent, research still lacks both a clear understanding and a theoretical framework in order to explain what constitutes BPM capability. To address this research gap, we apply Dynamic Capability Theory as a helpful means to conceptualize BPM. We further build a detailed framework of sub-capabilities we identify to be relevant for BPM based on existing literature. Finally, we demonstrate the applicability of our novel framework in a single case study in the telecommunications industry. Results suggest that organizations need to sense needs and opportunities for process change, seize the change options, and transform the organization accordingly.

1. Introduction
In order to gain and sustain competitive advantage, an increasing number of companies use Business Process Management (BPM) as a holistic management principle. Accordingly, in a recent study by Gartner, improving business processes has been the number one priority by CIOs around the world [1]. BPM can be traced back to both the incremental and evolutionary Total Quality Management (TQM) philosophy and the rather radical and revolutionary approach of Business Process Reengineering (BPR) [2,3]. In combining aspects from both approaches, BPM “[...] presents a more comprehensive array of improvement options” [4] that can help a company to foster process change and overcome the downfalls of other management principles. However, the general concept of BPM has not yet been put on a solid theoretical basis [5,6]. While the term itself is omnipresent, research lacks both a clear definition and a theoretical framework. Dynamic Capability Theory could help to overcome this gap and provide an appropriate theoretical basis for future research in this area. It assumes that long-term competitive advantage cannot be achieved by a stable resource configuration, but lies within an organization’s internal capacity to facilitate change [7,8]. Furthermore, dynamic capabilities represent an organization’s specialized set of resources that provide the ability to integrate, build, and reconfigure operational capabilities for the purpose of achieving a fit with the market environment [8,9]. This theoretical perspective, when applied to BPM, could allow for better understanding of current BPM practices within organizations. Hence, the research objectives for this study are:
1) Conceptualization and discussion of BPM as dynamic capability
2) Building a comprehensive framework of sub-capabilities needed for BPM
3) Instantiation and evaluation of the framework based on a single-case study

In order to address these objectives, the remainder of the paper is structured as follows: Section 2 provides the theoretical foundations of BPM and Dynamic Capability Theory. Section 3 will build upon this related work and propose a detailed model of BPM as a dynamic capability. Section 4 will present our research methodology and justify the case selection. Next (section 5), the qualitative interview data is presented and structured according to the previously developed framework. Section 6 encompasses a discussion and interpretation of the results with respect to the research questions. The paper closes with a brief conclusion and an outlook on potential directions for future research.

2. Theory Background

2.1 Business Process Management

The origins of business process management (BPM) as a holistic management approach trace back to the 1980s and 1990s, when the process view of an
organization became especially popular through the introduction of Hammer’s [3] BPR and Davenport’s [10] process innovation concepts. Today, the management and improvement of business processes is undoubtedly a core task of organizational design [5,11,12]. The term business process refers to a complete and cross-functional sequence of timely and logically-related activities which are required to achieve a defined business outcome, i.e., generally to deliver value to customers [5,11,13]. Organizations are required to adapt their business processes to constantly changing business environments, streamline their operations, and integrate their business processes across functional silos in order to stay competitive, retain customers and to achieve a high level of efficiency while still remaining flexible and innovative [11,14].

To improve their business processes, organizations employ measures of both radical and incremental change. On the one hand, BPR is considered an approach that requires fundamental organizational change in terms of organizational structure, culture, and management processes [15,16] and has often been closely linked to large-scale IT projects like the introduction of enterprise resource planning (ERP) systems [16]. Hence, BPR rather implies a project-character of radical and revolutionary process innovation [2,3,14,17]. On the other hand, incremental change is best represented by the concepts of continuous improvement or TQM. The latter, for instance, was introduced as a highly incremental and evolutionary approach that involves the bottom-up implementation of continuous process improvement activities [18,19]. In research and practice, a lot of additional notions are also used to refer to process-based improvement endeavors like, for instance, business process improvement [14] or Six Sigma [20].

The umbrella term BPM comprises the complete continuum of such approaches [19,21]. Accordingly, BPM is a holistic approach for the management of organizations which are considered to be comprised of business processes [22,23]. The focus of BPM initiatives can range from purely organizational to more technical endeavors [23]. The competence to successfully pursue BPM initiatives represents an important capability of organizations. However, since BPM has a plethora of facets, many organizations consider the acquisition, implementation and advancement of BPM to be difficult [23]. Furthermore, research on BPM appears to be still disorganized as there are ongoing discussions what BPM actually means and what it constitutes [5]. In order to address the lack of theoretical foundation, recent research has proposed new conceptual frameworks [6], theory-informed critical success factors [5] and core elements of BPM [24]. Additional research is needed to build and validate BPM theory [6] and we aim at contributing to the current discussion by specifically adopting the Dynamic Capability Theory perspective.

2.2 Dynamic Capability Theory

Organizations can be seen as collections of resources, a perspective that is subsumed in the Resource-Based View (RBV) of the firm [25-27]. In the field of Information Systems (IS), many scholars used the RBV to explain the impact of specific IT resources on the strategy and/or performance of organizations. In this article, we understand a resource as “anything which could be thought of as a strength or weakness of a given firm” (25, p. 172). Moreover, resources are an umbrella covering both assets and capabilities. Assets are understood as anything tangible or intangible that can be used by an organization [26]. In contrast, capabilities refer to the ability of an organization to perform a coordinated set of tasks for the purpose of achieving a particular end result which reflects the common definition of a process [28]. An example of a resource configuration could be an organization having access to gold (asset), the machinery needed to mine gold (asset), and the ability to use this machinery in an efficient and effective way (capability). Hence, we understand capabilities as repeatable patterns of action that utilize assets as input [26,28,29]. The RBV argues that organizations that have certain assets and capabilities can achieve a competitive advantage as long as these resources fulfill the VRIN conditions, i.e., they must be valuable, rare, imperfectly imitable, and non-substitutable [30].

However, several authors argue that organizations should not only focus on the VRIN attributes of their resources as this view might under-emphasize market dynamics. A position of competitive advantage that an organizational resource generates today cannot be sustained as changes in the environment may lead to erosion of the resource or replacement by a different resource [31]. A stable resource configuration cannot guarantee long-term competitive advantage as organizations have to adapt this configuration to the market environment [8]. This argument is even stronger in dynamic market environments where there is “rapid change in technology and market forces, and, feedback effects on firms” ([7], p. 512). Hence, organizations need capabilities that enable them to adapt their resource configuration to changing settings. These capabilities are called dynamic capabilities [7,8,32,33].
As such, scholars have differentiated two types of capabilities from one another: First, the basic functional activities of organizations are called operational capabilities. They are needed for the operational functioning of the organizations and relate closely to the original conceptualization of capabilities [32]. With relation to the understanding of operational capabilities as the ability to perform a coordinated set of tasks for the purpose of the operational functioning of the organization [9,28,32] we understand the execution of business processes as an operational capability. Second, Teece et al. [7] introduced dynamic capabilities as the abilities of an organization to integrate, build, and reconfigure operational capabilities as well as external competences to address rapidly changing environments. Other scholars build on this conceptualization and argue that dynamic capabilities are “a learned and stable pattern of collective activity through which the organization systematically generates and modifies its operating routines in pursuit of improved effectiveness” ([32], p. 340). Based on these arguments, in this paper we will understand Dynamic Capabilities as the firm’s ability to integrate, build, and reconfigure operational capabilities for the purpose achieving a fit with the market environment. Building upon the understanding of process execution as an operational capability we can thus understand BPM as a dynamic capability.

Scholars have argued that each dynamic capability consists of sensing, seizing, and transformation activities [7,34]. In our context of BPM, sensing refers to identification of the need to change an organization’s business processes, seizing refers to the exploration and selection of opportunities for change, and transformation is concerned with the socio-technically implementation of changed business processes in the organization.


According to Teece [34] dynamic capabilities and BPM accordingly can be distinguished into three classes of activities comprising sensing, seizing, and transformation. Following recent IS research [35] we set out to identify different sub-capabilities for each of these classes from existing literature on BPM, innovation, and organizational change.

Sensing sub-capabilities. As for the sensing activities a differentiation has to be made between externally and internally stimulated recognition of possible areas of business process change. The externally stimulated identification focuses on market opportunities [36] and is in line with the original sensing perspective as described by Teece [34]. Such an external impulse could lead to the speculative redesign of business processes in order to depart into completely new business areas. In addition, to this external perspective, the internally stimulated recognition of needs [36] for change has to be considered an important aspect of sensing as well. Adapted to BPM, this concept implies that business processes might experience inefficiencies and thus need to be changed. Usually such process weaknesses are identified by employees within the organizations thanks to their advanced process knowledge. Both the internal and external perspective mainly include three sub-capabilities: 1) scanning, 2) evaluation, and 3) detailing. Scanning has been described as a major driver for innovation (e.g. [4,19]). While most publications speak of environmental scanning and thus take a rather external perspective, we generalize this capability to fit the theoretical view of need and opportunity recognition. Following Basadur et al. we define the concept as a process of “[…] continuously and deliberatively discovering and surfacing new and useful problems to be solved” [38]. Evaluation refers to the capability of an organization to quickly screen a particular opportunity or need for process change with regard to business objectives [39] or general feasibility [40]. The detailing capability refers to precisely defining the need or opportunity and elaborating side conditions that need to be taken into account within the development of possible solutions, i.e. new business process designs [19]. All three sub-capabilities are not to be seen in strict sequence since they may just as well be utilized in an iterative manner.

Seizing sub-capabilities. For the seizing abilities, we could also identify three sub-capabilities from literature: 1) solution development, 2) solution evaluation and selection, and 3) solution detailing. Here, solution development refers to a company’s capability to generate different potential solutions and thus to identify possible paths companies could take in redesigning their business processes. This is referred to by constructs such as, e.g., process design, concept development, idea refinement, definition or description. Basadur and Gelande state that the innovation process involves both convergent and divergent thinking and distinguish the rather divergent task of coming up with options for business process redesign from the more convergent activities of selecting a particular alternative [42]. Accordingly, solution development can be considered a more divergent activity. On the other hand, the second sub-capability of solution evaluation and selection
focuses more on convergent tasks. Here, a company needs established procedures to allow for informed decision making and thus for selecting the most adequate solution for a specific problem. Research found that e.g. team sizes and participation are important factors that influence this sub-capability [43]. Similar to the third sub-capability in sensing, a detailing capability is also required in seizing. Here,

![Business Process Management Capability Framework](image)

the development of a comprehensive BPM project plan needs to be put forward and project teams as well as control mechanisms have to be set up [39].

**Transformation sub-capabilities.** Following Lewin [44], we divide the transformation capability into the three sub-capabilities unfreezing, changing, and (re-)freezing. Breaking up existing work structures is an important aspect when implementing a new business process. The acceptance has to be fostered, e.g., by actively communicating the changes and benefits that result from them [45]. Furthermore, different types of resistance [46] have to be addressed. The changing sub-capability on the other hand refers to the actual implementation of the process change. The key question here is how fast and by what means business processes are adapted. The last sub-capability (freezing) relates to all tasks necessary to foster internalization of the newly implemented processes. Here, for instance, continuous motivation [47] and trainings have been identified as possible drivers. For the latter, Bashein et al. [48] state that once a new process is established “[…] the people who will perform the processes need training – not only in the redesigned jobs but in new ways of working together.”

Innovation literature frequently suggests a differentiation between ‘ideas’ occurring within the early phases of an innovation process (sensing) and ‘concepts’ which are relevant later on in the process (seizing/transformation) [35,49]. However, we see idea generation and concept development as relevant for both sensing and seizing and thus propose a

differentiation based on knowledge types. In their paper on metacognition and problem solving Berardi-Coletta et al. [50] differentiate problem knowledge from solution knowledge. From a dynamic capability perspective, sensing includes mostly problem knowledge due to its focus on identifying that a business process needs to be changed. In seizing, on the other hand, primarily solution knowledge is of

4. Methodology

Qualitative research has a long and rich history in the field of IS [52-54]. To achieve our research objectives we follow this stream and conduct a single case study. In the remainder of this chapter, we discuss the case setting and report the processes of data collection and analysis.

**Case Setting:** PhoneServ is among the five biggest telecommunication companies in Germany with an annual turnover of nearly 1.2 billion Euros (2008) and a total of 2,300 employees at four major locations. With a variety of products in communication including DSL and VDSL as well as (mobile) telephony and IPTV, PhoneServ now has around 2.3 Million customers in the DSL and more than 630,000 in the mobile communication market. After reorganization efforts in 2007/2008, BPM is now dealt with in three departments focusing on 1) customer residential services, 2) business services,
and 3) network services. All BPM activities are coordinated by one department currently having 24 employees and operating as a center of excellence.

Data Collection. The data for this study was collected between 2008 and 2009. We (with the help of student assistants) collected data from three distinct sources to be able to exploit the synergetic effects of combining them via triangulation [55]: focused individual interviews (primary method), direct observations, and documentary information.

Focused individual interviews: Our primary source of evidence consists of interview transcripts with the key actors in PhoneServ’s service process management efforts. Interview partners originated from several departments, including IT, organization, business process management, sales, controlling, and quality management. The interviewees came from various organizational levels, e.g., department head or managing director. As a result, we conducted nine interviews which led to a total of 625 minutes of recording time and more than 54,000 words of transcript. An interview lasted more than 1 hour on average. Each interview was guided by an interview guideline specifically adapted to the corresponding interviewee.

Documentary information: Supplementary source of evidence included, for instance, information material produced by or about the organization such as process documentations, organizational charts, press articles, internet sources, or other reports.

Direct observations: We were able to directly observe the settings and relevant events throughout multiple site visits and informal (not transcribed) meetings. This included, for instance, observing the teams in (re-) designing services. These direct observations yielded additional understanding of the case study setting.

Data Analysis. Two of the authors started to code the data with regards to the presented theoretical framework. We did not only concentrate on the interview transcripts but reviewed all data in the light of available documentary information and case observations. Afterwards, the resulted codes were discussed among all authors to resolve possible differences. Then, the codes were interpreted and re-structured with the help of the theoretical framework.

5. Findings

The investigated case offered a variety of insights into how the specific sub-capabilities are utilized and which methods and tools are important constituents. These will be presented within the following paragraphs, structured with regard to the general dynamic capabilities sensing, seizing, and transformation. To fit our theoretical sub-capability model, we will focus our analysis on the specific sub-capabilities as developed in section 3.

Sensing. The scanning sub-capability at PhoneServ is characterized by two major mechanisms. On the one hand, the company has established an internal suggestion system called ‘Improve Our Company’ which is used by the employees to point out problematic or inefficient steps within the daily processes. On the other hand, customers are consulted directly in order to identify possible shortfalls of the offered services. For instance, customers would be asked to fill out questionnaires about the perceived service quality subsequent to the service provision. However, this customer input is regarded as rather limited. One interviewee stated:

“I think the opinion of the customer is important especially with regard to the enhancement of products and customer services in general. But I also think this input is limited because there are a lot of side conditions that need to be considered that the customer does not know about.” (Employee in Strategic Process Management)

PhoneServ thus mainly focuses on internal scanning mechanisms. These are not limited to the mentioned suggestion system but also incorporate periodic quality audits used to discover both bottlenecks and errors within the service processes. However, these aspects of KPI-based process controlling are not the main focus. The quality manager stated:

“The best feedback always comes from the participants of a process. […] They would give hints etc. This leads to either a completely new process or to its improvement. The two main channels [for this feedback] thus are the suggestion system and the notification of a process owner or manager.” (Head of QM)

Meanwhile, benchmarking as a tool to identify possible areas of improvement is only sparsely used as it is considered to create a high amount of additional workload while only generating minor benefits. The divergent capability of identifying opportunities and needs is not seen as bottleneck within the innovation process. The chief of the BPM department told us:

“We have tons of ideas and thoughts in backlog that we can only realize slowly and step by step. We don’t really need a benchmark with other countries to see how they do it.” (Head of BPM)
At present, a major focus of PhoneServ lies on improving process efficiency. Here, KPIs are used as a primary tool to evaluate the importance of particular problems. Statistics concerning e.g. costs and process runtime play a major role in determining the most urgent needs and most promising opportunities. However, the company recently experiences some major issues with this sub-capability of problem evaluation. One interviewee stated:

"There are way too many KPIs. At the moment, we have reached a point in time, where we analyze too much but don’t know any longer what the important aspects are. We are moving towards such a state. We really need to turn around. Less may be more! We just need to find appropriate KPIs.” (Employee in Strategic Process Management)

After receiving a particular requirement through one of the described channels, a process manager is appointed to coordinate the evaluation. While this evaluation can be conducted autonomously in some cases, some others require the participation of other process stakeholders. Based on ARIS process models, the evaluation team distinguishes whether or not a particular problem is worth considering. The next step involves specifying the individual main goals and side conditions all possible solutions would have to comply with. This is especially important for IT based processes due to their tight interaction with IT systems and the infrastructure of the company. Here, process changes usually go hand in hand with adapting the coded workflows and sometimes even requires hardware upgrades. The head of IT stated:

"If complex functional changes need to be done, these are specified by requirements. These contain both the overall goal and the use of the change. [...] These requirements are then combined within a priority list and afterwards ranked by different stakeholders.” (Head of IT)

This detailing of the proposed opportunities and needs ensures that the following development of solutions will take into account all relevant aspects and additionally focus on the most important ones. However, this sub-capability is not used for all problem proposals but is mainly relevant for IT-based processes. In most other cases, detailing of the problem is skipped and the solution development has to work with a rough outline.

Seizing. The capability of solution development at PhoneServ is characterized by a high amount of collaboration. All major process stakeholders are involved to guarantee that the solutions will be developed with respect to all relevant perspectives. Concerning this, one employee told us:

"On the other hand we have certain methodologies that guide us regarding this mission. They tell us that we always need to involve all stakeholders within process identification, process optimization and the development of completely new processes.” (Head of Strategic Process Management)

The process of developing solutions usually starts with a detailed description of the actual situation. Whenever this description is agreed upon by all stakeholders, a possible future implementation of this process is developed based on the previously identified requirements and side conditions. Oftentimes, this happens within workshops. Here, the development of completely new processes is a rather rare scenario. Usually the solutions are strongly related to the current situation and only feature minor adaptations. One employee stated:

"Based on this [the requirements] we will develop a process proposal taking into account the current processes. Of course, we would not try to reinvent the wheel e.g. by creating a completely new accounting process for a new product, but design it similarly to the existing ones and adapt it to the individual requirements. It will then be presented to the involved business units and needed changes will be applied until a consensus is found.” (Head of BPM)

This iterative approach also utilizes the capability of solutions evaluation and selection. Here, team size has been found a major influencing factor for the success of the whole seizing capability. The company has experienced a lack in evaluation efficiency whenever team sizes within improvement projects reached a certain level. The chief of the strategic process management department told us:

"We now have a total of 24 people [in the department] and we have paid close attention to the team sizes not exceeding 7 people. Otherwise we would be discussing too much and get fewer actual results. With this we have found a level that works pretty well.” (Head of Strategic Process Management)

The two sub-capabilities of solution development and evaluation are thus utilized in an iterative manner, thereby continuously refining the possible solution to fit all stakeholder perspectives. Put differently, detailing the ‘best’ solution – and thus the third sub-capability of seizing – is an iterative
process. However, in addition to the solution specification based on requirements, it also accounts for interdependencies between different projects. These are oftentimes key factors that determine success of failure of an improvement process. One employee stated:

“Despite of organizational barriers that result from someone not wanting a particular solution, pretty much everything is possible from a technical view point. From a benefit perspective, however, there are always several arguments against a specific change because it interferes with other things. Seen by themselves, many process changes are easy to implement, in combination, however, they negatively influence each other.” (Head of Operational Process Management)

Thus, taking into account these interdependencies is a critical aspect for PhoneServ whenever specifying a detailed solution.

Transformation. One key factor for unfreezing existing work routines at PhoneServ is the effective communication of both overall goals and specific benefits the company aims to achieve with a particular process improvement project. There is an own department that focuses on internal communication of relevant process changes especially in big improvement projects. One interviewee referred to the change management efforts as follows:

“In the context of change management we have prepared the employees both communicatively and with regard to emotional aspects for the upcoming changes. We have used SWOT-analyses to prepare the executives and developed individual communication packages for the employees. Those things, of course, are always dependent on the size of the project.” (Head of Strategic Process Management)

The utilization of change management methods to unfreeze the organization and prepare for the change is thus determined by the size of the improvement effort. There is no unified methodology to tackle typical barriers like refusal or resignation. The way a change is communicated differs from project to project:

“There is no pool of methods that we could use. For every project we would start again thinking about how to do it. We use the communication department for many things. It is involved in all major changes.” (Head of Strategic Process Management)

Similarly, PhoneServ does not have a standardized process for the actual implementation of improvements and thus the sub-capability ‘changing’. Concerning this, an employee of the strategic BPM department told us:

“Regarding measures we are still in an orientation phase. Currently, this is done individually from project to project. The frame is set by the interfaces e.g. to the training or reporting department. Therefore, options are limited. However, there is no set process that would determine how to implement an improvement effort. There might be a recommendation but there is no standardized process.” (Employee in Strategic Process Management)

Hence, the interfaces of a process are a very important aspect influencing the change. Especially trainings or specific changes in the infrastructure are dependent on the particular interfaces a changed process has. Here, review meetings are used to determine ideal concepts. One employee told us:

“Whenever process changes are implemented, there are so called review calls with the interface partners. All involved stakeholder sit together and the changes are discussed. Of course, the new processes are provided either as PDF or within Business Publisher. After this, necessary steps like the development of training concepts and system changes are discussed.” (Employee in Strategic Process Management)

Trainings are a vital element in ‘freezing’ the newly developed processes within the company. Especially in complex change scenarios process manager would call for specialized trainings in order to establish the different work routines. However, there is no method to monitor the success of a change project:

“We do not have a quality controlling instance that monitors compliance [with the new processes]. We don’t have an instance that conducts audits from an external and neutral perspective. Such audits I would like to see in the future.” (Head of Strategic Process Management)

6. Discussion and Conclusions

In our case study at PhoneServ we could find evidence for all sub-capabilities conceptualized in the presented framework. The organization has the abilities needed to sense process change needs and
opportunities, to explore and select possible solutions (seizing), and to implement these solutions in the organizational environment in the form of new business processes (transformation).

Contribution for theory. First, we introduced our understanding of BPM as a dynamic capability: BPM is the ability of an organization to integrate, build, and reconfigure business processes to address rapidly changing environments. Moreover, we discussed the importance of all three sensing, seizing, and transformation abilities for successful BPM. This understanding opens for a novel theoretical understanding of BPM. Thus, our contribution is valuable for future research in this field as, e.g., the development of BPM capabilities [57] (ad research objective 1). Second, we built a comprehensive framework covering the sub-capabilities needed for BPM. This framework is structured in the three abilities of sensing, seizing, and transformation and comprises nine different sub-capabilities (ad research objective 2). Third, we instantiated our framework based on a single-case study in the telecommunication industry. The evaluation of the results confirmed our framework: It is applicable and valuable for structuring the understanding of BPM in organizations (ad research objective 3).

Contribution for practice. Our research has several contributions for practitioners. First, the notion of BPM as a dynamic capability helps organizations to assess and evaluate their BPM efforts with the background of the corresponding market environment. The dynamic capability framework suggests that the abilities needed depend highly on the structure and dynamics of the environment. Second, organizations designing information systems to support BPM in organizations can either specialize on the support of single sub-capabilities as presented in this study or strive for a support of the complete dynamic capability. Here, further studies can help to identify other instantiations of these capabilities in organizations.

Limitations and outlook. This article presents an early stage of research and is thus limited by certain factors. First, the generalizability of our case study could be questioned. Further analyses of other cases with varying sizes, industries, and from different cultural backgrounds can increase the reliability. Second, the qualitative data used in our study is open for interpretation. However, we relied on rigorous methods which lead to consensus among all authors. Other research following this article can thus work on further operationalizing the constructs as a preparation for quantitative studies in the field. Moreover, future research could discuss our framework with the background of developmental models for BPM.

7. References


