

1-2015

How Do We Progress? An Exploration of Alternate Explanations for BPM Capability Development

Jens Poeppelbuss

University of Bremen, jens.poeppelbuss@uni-bremen.de

Ralf Plattfaut

European Research Center for Information Systems, University of Muenster

Bjoern Niehaves

Chair of Information Systems, University of Siegen

Follow this and additional works at: <https://aisel.aisnet.org/cais>

Recommended Citation

Poeppelbuss, Jens; Plattfaut, Ralf; and Niehaves, Bjoern (2015) "How Do We Progress? An Exploration of Alternate Explanations for BPM Capability Development," *Communications of the Association for Information Systems*: Vol. 36 , Article 1.

DOI: 10.17705/1CAIS.03601

Available at: <https://aisel.aisnet.org/cais/vol36/iss1/1>

This material is brought to you by the AIS Journals at AIS Electronic Library (AISeL). It has been accepted for inclusion in Communications of the Association for Information Systems by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

Communications of the Association for Information Systems

CAIS 

How Do We Progress? An Exploration of Alternate Explanations for BPM Capability Development

Jens Poeppelbuss

University of Bremen

jens.poeppelbuss@uni-bremen.de

Ralf Plattfaut

European Research Center for Information Systems, University of Muenster

Bjoern Niehaves

Chair of Information Systems, University of Siegen

Abstract:

Business process management (BPM) is a topic that has received immense attention in information systems research and practice. While the existing literature comprehensively covers BPM methods, techniques, and tools, the development of BPM capability in organizations remains under-researched. Existing studies mainly present maturity models with generic sequences of distinct stages that provide a rather simplistic perspective on BPM capability progress. Taking a process theory view and drawing from organizational change literature, we elaborate on alternate templates for explaining BPM capability development. By revisiting two case studies on BPM capability development, we analyze the explanatory power of four basic theories of capability development and thus advance existing approaches to explain BPM capability progress. Our analysis shows the general applicability of these theories and points to particular advantages, disadvantages, and application conditions. Using the four basic theories as alternate templates, we also offer a much more-detailed explanation of the mechanisms behind the episodes of BPM capability progress that we observed in the two case studies. In particular, the different theoretical templates allow one to better understand the influence of internal and external contexts on BPM capability progress.

Keywords: Business Process Management, Process Theory, Capability Development, Organizational Change.

Volume 36, Article 1, pp. 1-22, January 2015

The manuscript was received 18/03/2013 and was with the authors 13 months for 3 revisions.

I. INTRODUCTION

Business process management (BPM) research has a long tradition in the information systems field (Trkman, 2010) and is also a key priority for practitioners (Gartner, 2010). The concept of business processes and approaches to their management have been studied from a multitude of perspectives, such as via total quality management (TQM) and business process reengineering (vom Brocke et al., 2011). BPM is valued as a means to gain and sustain competitive advantage (Broadbent, Weill, & St. Clair, 1999) and can be considered as a dynamic capability of organizations dedicated to process improvements and, more broadly, to organizational change (Jurisch, Palka, Wolf, & Krcmar, 2014; Teece, Pisano, & Shuen, 1997; Trkman, 2010). While early research focused on conceptualizing BPM and on concrete BPM techniques, methods, and information systems, the focus has shifted to developing BPM capability in recent years (Rosemann, 2010).

Currently, the development of BPM capability has been mainly described via maturity models (Röglinger, Pöppelbuß, & Becker, 2012; Rosemann & vom Brocke, 2010). These models are static in nature because they are basically instruments to capture an organization's level of BPM capability at a specific point in time. However, BPM capability development over time is a dynamic phenomenon, which points to the some key shortcomings of maturity models. First, while many models define the different levels of capability very thoroughly, they usually remain silent about the necessary steps for—and the rationale behind—moving from a lower to a higher level. Second, existing maturity models do not explain why organizations actually move forward and how they determine their individual target state of BPM capability, especially when they do not intend to follow the implicit imperative of reaching the top-most maturity level.

Alternate approaches to explaining BPM capability progression other than maturity models are scarce. In her PhD thesis, de Bruin (2009) develops an explanatory theory for BPM progression and highlights that development paths are very much influenced by contextual variables. Similarly, our preceding studies also point to the influence of contextual contingencies and that decisions on BPM capability development should be guided by the specific organizational position (Niehaves, Plattfaut, & Becker, 2013; Niehaves, Poepelbuss, Plattfaut, & Becker, 2014). Based on these observations, we agree with Rosemann (2010, p. 283), who argues that “there is a shortage of...BPM adoption and evolution models”. With our current paper, we enhance our understanding of BPM capability development apart from maturity models.

In this research, we use alternate theories to investigate and explain episodes of BPM capability development. In searching for alternate approaches, we found help in the organizational change field. Scholars from that field find that life-cycle theories—among which also maturity models are generally counted—are only one out of several existing types of theory for explaining change processes. In their highly recognized paper¹, van de Ven and Poole (1995) present four types of process theory in total, which, in addition to life-cycle theories, also include teleological, evolutionary, and dialectic process theories. Motivated by the aforementioned shortcomings of maturity models for explaining BPM capability development, we contrast the deficient theoretical perspective with the alternate theories and evaluate them regarding their potential to explain BPM capability progress in organizations. As such, our central research question is: How can the development of BPM capability in organizations be explained using alternate types of process theory?

With this paper, we provide the following two contributions. First, we propose a set of theories that provide alternate perspectives for explaining BPM capability development in organizations apart from the variously criticized concept of maturity models. We accomplish this by adapting the four basic theories for explaining organizational change as van de Ven and Poole (1995) provide. Second, we validate the applicability of these theories to episodes of BPM capability development. We use the theories as alternate theoretical lenses to analyze the mechanisms behind BPM capability progress that we were able to observe in two case studies on BPM capability development in a private sector and a public sector organization (Niehaves et al., 2013; Niehaves et al., 2014). By revisiting the case study data, we show that the set of alternate theories offers more realistic explanations for the evolution of BPM capability when compared to the widespread but simplistic maturity models. In particular, the application of multiple theories to the same episode proves helpful for gathering a comprehensive picture of the drivers and barriers to BPM capability

¹ The paper by van de Ven and Poole (1995) received the *Academy of Management Review* best paper award in 1995 (Gorley & Gioia, 2011) and was cited more than 2,600 times according to Google Scholar (as of July 1, 2014).

development. Finally, considering implications for practice, we provide guidance to BPM decision makers in that they should not merely rely on normative recommendations provided by BPM capability maturity models. Based on our case study insights, we recommend 1) that they should identify a target state of BPM capability that suits their organization independent from predefined maturity levels, 2) that they should reflect on relevant context variables that exist internal and external to the organization, and 3) that conflicting approaches to BPM in an organization should be brought into alignment to support capability progress of the overall organization.

The remainder of this paper is organized as follows. In Section 2, we provide the research background. In Section 3, we present the alternate theories that exist for explaining organizational change and translate these to BPM capability development. In Section 4, we report on our research design. In Section 5, we present the results from applying the alternate theories on selected episodes of BPM capability change in two case organizations. Finally, in Section 6, we conclude the paper with a summary of the key findings and a discussion of implications for theory and practice.

II. RESEARCH BACKGROUND

BPM Capability

BPM as an organizational capability comprises the skills and routines necessary to successfully apply measures of both incremental and radical change with the goal to improve the effectiveness and efficiency of business processes (Armistead & Machin, 1997; Niehaves, Plattfaut, & Sarker, 2011; Wang & Wang, 2006). In this line of thought, we can understand BPM as a dynamic capability that represents a set of techniques to integrate, build, protect, and reconfigure an organization's business processes in changing environments (de Bruin, 2009; Teece et al., 1997). Teece et al. (1997) introduced the dynamic capability perspective as an extension of the resource-based view (RBV) of the firm. The RBV intends to explain how an organization's bundle of resources, which may comprise assets and capabilities (Wade & Hulland, 2004), can lead to sustained competitive advantage (Barreto, 2009). The dynamic capability theory extends this static view by suggesting a special kind of capability that allows firms to integrate, build, and reconfigure their operational capabilities (Barreto, 2009; Teece et al., 1997). Operational capabilities involve performing day-to-day activities (e.g., providing a service or manufacturing a product), and basically represent an organization's value-creating business processes. Winter (2003, p. 991) refers to these as "ordinary or 'zero-level' capabilities...that permit a firm to 'make a living' in the short term". Hence, business processes represent operational capabilities that are shaped by the dynamic capability BPM. BPM is not identical with the concept of dynamic capabilities, but it is one of several dynamic capabilities an organization may possess.

There have been several attempts to define the nature and constituents of BPM capability in more detail. Rai and Tang (2010) identify process alignment, partnering flexibility, and offering flexibility as the three elements of competitive process capabilities. Jurisch et al. (2014) consider BPM capability to be present in an organization if it collects measurements to control and monitor business processes and if it applies methods, tools, and techniques for business process design and change. Rosemann and vom Brocke (2010) identify six core areas of BPM capability, including strategic alignment, governance, methods, IT, people, and culture, which also form the basic structure of a corresponding BPM capability maturity model (de Bruin, 2009; Rosemann & de Bruin, 2005). These various conceptualizations of BPM capability illustrate that progress can happen in various but equally important areas, which are by no means restricted to process modeling and the use of software tools for process management.

Models of BPM Capability Maturity and Progress

How organizations can and should develop from lower to higher levels of BPM capability has become a central question in BPM research and practice (de Bruin, 2009; Fisher, 2004; Rosemann & vom Brocke, 2010). In this regard, de Bruin (2009, p. 1:12) refers to the term BPM progression, which she defines as "the journey of BPM that occurs within an organization over time (that) reflects, but does not measure, events, sequencing and influences that occur during this journey". According to de Bruin (2009), this is a dynamic concept that reflects the temporal aspects of adopting a BPM approach. In this paper, we refer to the term "BPM capability progression" to describe the development of BPM capability over time. "BPM capability maturity", on the other hand, is a static concept that measures BPM capability progression at a given point in time (de Bruin, 2009).

BPM capability maturity models have received much attention (Harmon, 2009; Rosemann & vom Brocke, 2010) and claim to provide meaningful answers when trying to explain BPM capability progression (Röglinger et al., 2012). Maturity models, in general, assume that a predictable pattern of organizational development and change exists. They describe (or even prescribe) how a certain organizational capability evolves in a stage-by-stage manner along a predetermined path (Poeppelbuss, Niehaves, Simons, & Becker, 2011). Several capability maturity models for BPM (Hammer, 2007; Lee, Lee, & Sungwon, 2007; McCormack, 2007; Rohloff, 2009a; Rosemann & de Bruin, 2005)

have been proposed by academia, industry, and international consortia (Röglinger et al., 2012). These models describe the development from immature and initial towards highly developed BPM routines (Rosemann & de Bruin, 2005).

Table 1: BPM Capability Maturity Levels

Low level of BPM capability		High level of BPM capability			Reference
Initial state	Defined	Repeatable	Managed	Optimized	Rosemann & de Bruin (2005)
Process management initiation		Process management evolution		Process management mastery	Rummler-Brache Group (2004)
Siloed	Tactically integrated	Process driven	Optimized enterprise	Intelligent operating network	Fisher (2004)
Ad-hoc	Defined	Linked		Integrated	McCormack et al. (2009)
Initial	Managed	Standardized	Predictable	Innovating	Weber, Curtis, & Gardiner (2008)

BPM capability maturity models typically distinguish three to five maturity levels (also termed stages, groups, or levels). Table 1 gives exemplary maturity levels taken from a small selection of five maturity models (please refer to Röglinger et al. (2012) for an extensive review of BPM capability maturity models). At immature stages, BPM practices are typically described as ad-hoc, siloed, uncoordinated, and unstructured where individuals work—or “fire-fight”, as Weber, Curtis, and Gardiner (2008) put it—to optimize their own piece of the organization (Röglinger et al., 2012; Rosemann & de Bruin, 2005). Organizational structures are still based on traditional functions and, accordingly, processes are not designed on an end-to-end basis (Hammer, 2007). In contrast, at mature stages, BPM practices are characterized as proactive, systematic, and co-ordinated activities that are deeply embedded into an organization and its strategy (McCormack et al., 2009; Rosemann & de Bruin, 2005).

Despite their popularity, BPM capability maturity models have been criticized for various reasons. First, their typical design with linear sequences of life-cycle stages that follow an underlying logic of predetermined growth has been characterized as oversimplifying reality and lacking empirical foundation (De Bruin, Rosemann, Freeze, & Kulkarni, 2005; McCormack et al., 2009). In contrast to the standard layout of capability maturity models, researchers have already concluded that there are multiple ways in which BPM capability can progress and that there is no universal path (de Bruin, 2009; Ittner & Larcker, 1997; Niehaves et al., 2013; Pritchard & Armistead, 1999). Indeed, de Bruin (2009, p. 10:362) concludes that “progression is not always linear nor in a forward-direction and does not universally follow the same stages”. Second, the value of applying BPM capability maturity models in organizations for explaining and guiding capability progress has also been deeply questioned (Niehaves et al., 2014). The steps an organization needs to take to take its BPM capability from level to level are seldom explicit from those models. Instead, advice for selecting improvement measures can only be derived from the implicit difference that exists between the descriptions of two subsequent levels (Röglinger et al., 2012). Moreover, according to Röglinger et al. (2012), none of the existing BPM capability maturity models provide decision support for selecting improvement measures (e.g., under consideration of cost-benefit relations or organization-specific objectives). Moreover, maturity models are silent about how to determine organization-specific target states of BPM capability. In contrast, “all models implicitly expect organizations to eventually reach the top of the maturity ladder” (Röglinger et al., 2012, p. 339).

Alternate approaches to explaining BPM capability progression other than maturity models are scarce. One of the few examples is the PhD thesis by de Bruin (2009), who develops an explanatory theory for BPM progression. Her theory contains statements about BPM progression paths that she finds to be influenced by contextual variables and by the scope and approach of the BPM initiative in an organization. de Bruin (2009) categorizes her theory as a punctuated equilibrium theory, which implies that periods of gradual change are punctuated by rapid and revolutionary change that can be the result of changing environmental influences. In our own previous work, we have analyzed BPM capability development in a private sector and a public sector organization through the lens of established theories (Niehaves et al., 2013, 2014). Looking at the case of the private sector organization, we analyzed to what extent contingency theory can provide an alternative logic for guiding BPM capability progress. For this organization, we concluded that drivers of capability development are not inherent to the concept of BPM per se. Instead, contingency factors such as environmental variables or organizational characteristics have an important

impact on the fit between BPM capability and an organization, but are not included in existing maturity models (Niehaves et al., 2014). Analyzing the case of the public sector organization, we compared the applicability of convergence and divergence theory for guiding BPM capability progress. Convergence theories argue that all entities of the same class (e.g., organizations that employ BPM) move towards a general model or an ideal state, while divergence theories argue that such an ideal state does not exist and that the entities in question develop according to choices made during their individual developmental path (Niehaves et al., 2013). As maturity models provide the imperative to follow a sequential and uniform path towards higher maturity, this approach is understood as a convergence theory. While maturity models implicitly suggest developing the capabilities to the highest level possible, a divergence theory perspective suggests that the BPM capability should fit to the organization-specific position and traits. As for our specific case organization from the public sector, we concluded that the guidance given by divergence theory appears to be significantly more comprehensible and adequate compared to convergence theory and maturity models (Niehaves et al., 2013). However, while the alternative perspectives provided by our previous studies obviously point to shortcomings of maturity models, they still do not deliver a clear picture of the mechanisms behind BPM capability progress over time that would be needed to provide for explanatory theory (Pentland, 1999). First, contingency theory in general intends to explain the interactions between contingency and performance variables, but does not consider processes over time (Weill & Olson, 1989). Hence, it is a variance theory in nature. Second, convergence/divergence theory gives a general tendency of how a set of entities develop (i.e., whether they are becoming more similar (convergence theory) or increasingly heterogeneous and specialized (divergence theory)), but without looking at the underlying mechanisms in detail.

BPM Capability Progress from a Process Theory Perspective

To advance our current understanding of BPM capability progress over time, we apply a process theory perspective. Process theories “provide explanations in terms of the sequence of events leading to an outcome.” (Langley, 1999, p. 692) They explain how and why an organizational entity changes and develops over time (van de Ven & Poole, 1995). Despite variance theories still being the dominant theory type, process theories also have gained significant attention in IS research (Crowston, 2000; Markus & Robey, 1988; Montealegre & Keil, 2000; Newman & Robey, 1992). The key of developing a process theory is understanding patterns in events (Langley, 1999). One such pattern can be a temporal sequence that represents the order of events in an organization’s development (Abbott, 1990). In addition to patterns, the driving mechanisms and the meaning of changes for the people involved can be subject of process theorizing (Langley, 1999).

In this study, we describe and explain processes of BPM capability progress. Pentland (1999, p. 722) points out what is needed for such an endeavor: “to describe a process, one needs event sequences [, whereas] to explain a process, one needs to identify the generative structures that enable and constrain it”. At the same time, he also emphasizes that this is not easily achieved. While it is already demanding to create a largely objective description of a particular set of events from informants’ narratives, explaining of the underlying generative mechanism is even more demanding (Pentland, 1999).

As a meaningful approach to investigate the generative structures and mechanisms of change processes, Langley (1999) suggests the alternate templates strategy. This sensemaking strategy involves discussing alternative interpretations of the same events based on different a priori theoretical premises. The confrontation of the different interpretations can reveal the contributions and gaps in each (Langley, 1999). Often, “each explanation taken alone is relevant but insufficient” (Langley, 1999, p. 699). This sensemaking strategy has previously been used in the IS field to analyze implementation processes (Lee, 1989; Markus, 1983). Because this strategy draws from accepted theories to make sense of process data, it is deductive in nature (Langley, 1999).

III. ALTERNATE TEMPLATES FOR EXPLAINING BPM CAPABILITY DEVELOPMENT

Van de Ven and Poole (1995) propose four different basic types of process theories for explaining organizational change processes that “offer a helpful taxonomy of prototypical generating mechanisms” (Pentland, 1999, p. 719) and which we therefore consider as meaningful alternate templates for explaining BPM capability progress. These four basic theories include lifecycle, teleology, dialectics, and evolution theories. They represent different event sequences and driving mechanisms, and they can be distinguished according to the unit (single or multiple entities) and mode of change (prescribed or constructive). Adopted from van de Ven and Poole (1995), Table 2 overviews the characteristics of the four types.

Generally, linear sequences of stages or phases are the most common pattern to describe a sequence of events leading to an outcome (Langley, 1999). According to van de Ven and Poole (1995), this would fall into the category of a life-cycle theory. Change is considered to be imminent to the entity (i.e., each entity has a deterministic, linear, and irreversible developmental logic) (van de Ven & Poole, 1995). The driving mechanism is a preconfigured program or rule that is regulated by nature, logic, or institutions (van de Ven & Poole, 1995). Indeed, “life-cycle

theory explains development as a function of potentials immanent within the entity” (van de Ven & Poole 1995, p. 521). Different organizational contexts are not considered important and it is assumed that changes take place along the same path or stages in all organizations (Sabherwal, Hirschheim, & Goles, 2001). This is also observable from the BPM domain with BPM capability progress explained using maturity models with a linear and one-fits-all sequence of levels. Maturity models assume a predictable and stage-by-stage pattern of organizational change and thus provide a preconfigured program along which an organizational entity is expected to develop until it reaches the highest level of maturity. BPM capability progress is considered beneficial and is expected to occur as long there exists a BPM capability level that is generally accepted as being superior to the organization’s current level.

Table 2: Four Basic Theories (van de Ven & Poole, 1995)

	Life-cycle	Evolution	Dialectic	Teleology
Key metaphor	Organic growth	Competitive survival	Opposition, conflict	Purposeful cooperation
Logic	Imminent program, preconfigured sequence, compliant adaptation.	Natural selection among competitors in a population.	Contradictory forces; thesis, antithesis, synthesis.	Envisioned end state, social construction, equifinality.
Event sequence	Linear and irreversible sequence of prescribed stages in unfolding of immanent potentials present at the beginning.	Recurrent, cumulative, and probabilistic sequence of variation, selection and retention events.	Recurrent, discontinuous sequence of confrontation, conflict, and synthesis between contradictory values or events.	Recurrent, discontinuous sequence of goal setting, implementation, and adaptation of means to reach desired end state.
Driving mechanism	Prefigured program/rule regulated by nature, logic, or institutions.	Population scarcity, competition, commensalism.	Conflict and confrontation between opposing forces, interests, or classes.	Goal enactment, consensus on means, cooperation/symbiosis.
Mode of change	Prescribed	Prescribed	Constructive	Constructive
Unit of change	Single entity	Multiple entities	Multiple entities	Single entity

In this regard, the other three basic theories offer alternate templates for explaining BPM capability development:

- The term evolutionary theory subsumes different (and partly contradictory) theories originally used by natural scientists to explain the origin of species. The key of all interpretations of evolutionary theory is that entities need to survive in a competitive environment and therefore engage in a recurrent sequence of capability variation, selection, and retention (van de Ven & Poole, 1995; Zollo & Winter, 2002). Variations are novel forms of organization or capability that emerge. Selection happens through competition for scarce resources because the survival of an entity is dependent on its fit with the environment. Retention involves forces that maintain certain organizational forms and counteract further variations and selections. Regarding the unit of change, evolutionary forces have an impact on multiple entities (i.e., populations of organizational entities across communities, industries, or society at large), but they “have no meaning at the level of the individual entity” (Van de Ven & Poole, p. 521). However, we build on Lamarck (1809), who argues that entities acquire traits in a generation through learning or imitation (Nelson & Winter, 1982; van de Ven & Poole, 1995). This viewpoint involves directed variation (i.e., entities react not only blindly but also purposefully to environmental changes) (Nelson & Winter, 1982; Stoelhorst & Huizing, 2005). Still, evolutionary systems follow a prescribed mode of change (van de Ven & Poole, 1995). Despite being able to react purposefully, organizational entities are subject to predetermined probabilistic laws and do not actively drive the change themselves. Transferring this basic type of theory to BPM capability progress means that organizational entities vary their BPM capability to be able to compete with other entities in a specific environment. Changes in the environment (i.e., external entities and their interplay) can be a key trigger for capability variation. The organizational entity varies its BPM capability endowment in a way that is hoped to better fit the changed environment.
- Dialectical theory relies on the assumption that an organization is subject to diverging forces and contradictory values that compete for dominance (Benson, 1977; van de Ven & Poole, 1995). The struggles created by the forces explain the occurrence of change. More precisely, dialectical theory operates on at least two entities that fill the role of thesis and antithesis. The mode of change is constructive because the



sequence by which the thesis and antithesis confront each other in a conflict is uncertain, as is the result in a synthesis. Concerning BPM progress, this theory implies that different opinions exist between a set of organizational entities how the BPM capability of the organization should be like (thesis and antithesis). The different conceptions of adequate BPM capability cause a conflict that needs to be resolved. The new capability endowment is negotiated between the opposing entities (synthesis). Depending on their individual power, one entity may dominate the other and thus carry through the approach it prefers.

- Teleological theory assumes that the development of an entity is based on “goal-directed movement” (Polley, 1997, p. 451) and can be interpreted as an attempt to overcome the linearity, determinism, and predictability of lifecycle theories (De Rond & Bouchikhi, 2004). Organizations are considered as being purposeful and adaptive and, hence, can construct an envisioned end state by themselves (Polley, 1997; van de Ven & Poole, 1995). Thus, the mode of change is constructive. The unit of change is a single entity that enacts an envisioned end state. Therefore, BPM capability progress is triggered by goals that the organizational entity envisions. The envisioned goals require the current BPM capability to be adapted. The change in BPM capability is dependent on the capability progress necessary for achieving the goals.

Table 3 summarizes how we understand the four basic theories in relation to BPM capability progress: the table provides the general sequence of events, the driving mechanisms, and a brief example each. Additionally, Figure 1 illustrates the typical event sequences as we explain above (adapted from van de Ven & Poole 1995, p. 520). The different BPM capability maturity levels given for the lifecycle theory (lower left quadrant in Table 3) are just one possible example as the levels vary from maturity model to maturity model (see also Table 1).

Table 3: The Four Basic Theories Adapted to BPM Capability Progress

	Life-cycle	Evolution	Dialectic	Teleology
Event sequence	Linear and irreversible sequence of BPM capability levels that is perceived as natural/typical for organizational entities.	Recurrent, cumulative and probabilistic sequence of variation, selection and retention of BPM capability.	Recurrent, discontinuous sequence of confrontation, conflict, and synthesis between contradictory views about adequate BPM capability.	Recurrent, discontinuous sequence of goal setting, implementation, and adaptation of means to reach desired BPM capability.
Driving mechanism	Prefigured program as given in maturity models that depict a sequence of different levels of BPM capability maturity. BPM capability is improved until highest level is reached.	Competition between different entities with different BPM capability.	Conflict and confrontation between opposing BPM capability enactments or visions.	Cooperative definition of BPM capability target states and their enactment.
Example	BPM executives select a BPM capability maturity model and align their capability improvement initiatives with the path provided by that model towards the highest maturity level defined in that model.	BPM capability develops as BPM executives in an organization try out a new BPM method. The BPM executives retain this new method if they think it is successful.	BPM capability develops in a decentralized manner as different people and units perform BPM differently. This leads to conflicts among units or individuals that need to be resolved.	BPM executives envision a target state of BPM capability that fits to the organization's objectives. They then select improvement initiatives that appear relevant to achieving these objectives.

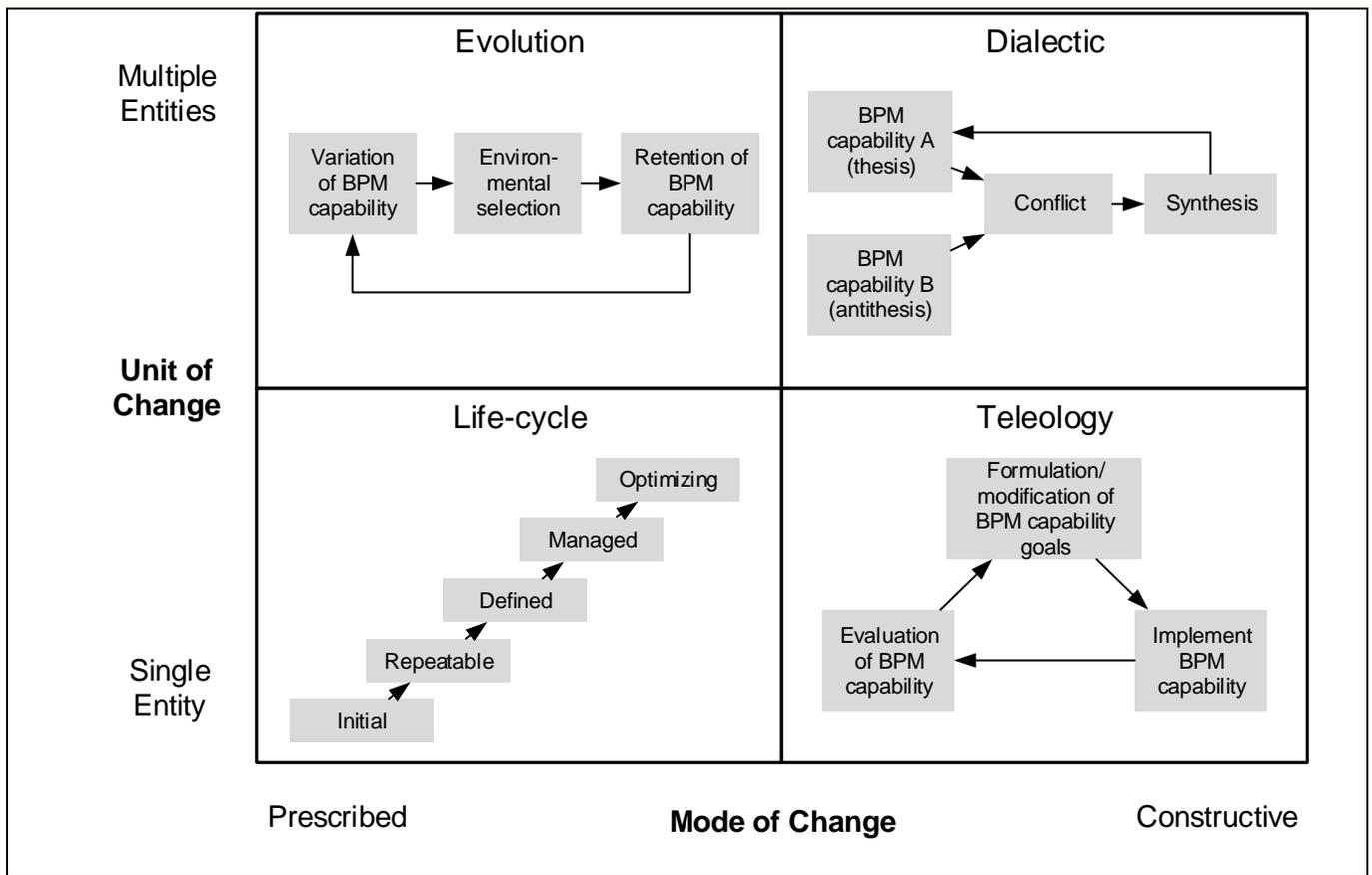


Figure 1. Typical Event Sequences of the Four Theories (Adapted from van de Ven and Poole, 1995)

IV. RESEARCH DESIGN

Method Overview

To investigate the dynamic phenomenon of BPM capability progress in organizations, we selected sequences of events as our unit of analysis. The process theory perspective that we adopt in this study and which is inherent to all alternate basic theories necessarily requires the analysis of event sequences (Pentland, 1999; van de Ven & Poole, 1995). We present a multiple embedded case study (Yin, 2003) in line with the rich tradition of qualitative IS research (e.g., Kern & Willcocks, 2002; Mingers, 2003; Remenyi & Williams, 1996; Silverman, 1998). Such an approach allows us to compare between (multiple) and within (embedded) organizations. For our study, we revisited two of our earlier case studies (Niehaves et al., 2013, 2014) to analyze multiple event sequences of BPM capability progress each (which we term episodes henceforth).

In our analysis, we applied the alternate templates strategy as described above (Langley, 1999) to investigate the driving mechanisms of BPM capability progress in organizations. This sensemaking strategy involves discussing alternative interpretations of the same events based on different a priori theoretical premises and, hence, is deductive in nature. The theoretical premises that we drew from are the basic theories (i.e., the alternate templates) adapted to BPM capability change, (see Figure 1 and Table 3). The coding scheme for our qualitative data analysis is not limited to the different types of events according to these theories, but also considers contextual variables in the organization and in the environment that can have an impact on BPM capability development (de Bruin, 2009; Niehaves et al., 2014) and that are needed “to tell a whole story” (Pentland, 1999, p. 721).

The Examined Cases

The two cases that we re-analyze in this paper are about the organizations SAVINGS and PUBLIC (both organizations are pseudonymized for anonymity):

- SAVINGS is a German savings and loan association/building society with over two million customers and 1,000 employees in Germany. SAVINGS works in a network with other building societies using the same brand. Each network partner operates in a single region. Due to existing contracts, network partners will not enter other regions. SAVINGS sells their services mainly through collaboration with other partners such as



local banks and independent contractors. It is a private organization and is positioned in a rather steady to moderately dynamic market.

- PUBLIC is a local government in the western part of Germany. With more than 6,000 employees in about 50 departments, the organization is one of the larger public bodies in Germany. The financial situation of PUBLIC is dramatic. On the one hand, management expects BPM to contribute to consolidating this deficit through cost-cutting and improved efficiency. On the other hand, the organization faces new challenges, such as e-government or the E.U. service directive, which requires BPM to contribute to major structural changes and to increased effectiveness. The case organization can be considered representative for most public administrations in Europe, and its current environment, in contrast to the past, is considered rather turbulent.

We chose these two case organizations for the following reasons. First, we wanted to cover both a private and a public organization. Second, because the importance of contextual influences have been described in recent studies (de Bruin, 2009; Niehaves et al., 2014), we wanted to cover settings that exhibit different contextual pressures. The two case organizations reflect “polar types” (Eisenhardt, 1989, p. 537) in these categories (Table 4). Finally, we expected the organizations to exhibit prior experiences with BPM initiatives to ensure that they knew the basic philosophy of managing organizations in a process-oriented manner and that we are able to learn about episodes of BPM capability progress that already occurred in the past. Both case organizations have already been analyzed by the authors in previous studies (Niehaves et al., 2013, 2014). Similar to the work by Sarker, Darker, and Sidorova (2006), we revisited these cases and analyzed them using new theoretical perspectives. Moreover, revisiting these cases enabled us to perform the analysis both within and between the two organizations.

Table 4: Case Organizations

	SAVINGS	PUBLIC
Type of organization	Private financial institution	Public municipality
Organization-internal pressures	Low: Organization is successful although business model has remained almost unchanged for decades	High: Dramatic financial situation, cost cutting is inevitable.
Environmental pressures	Low: Steady market environment	High: Regulatory requirements (e.g., E.U. service directive)
Experience with BPM initiatives	Since the 1980s	Since the early 2000s

Data Collection

In both organizations, we collected data from multiple sources to exploit the synergetic effects of triangulation (Capaldo, 2007; Yin, 2003): we used focused individual interviews (primary method), comprehensive documentary information, and direct observations (Niehaves et al., 2013, 2014). Table 5 presents the data-collection facts of each case. At SAVINGS, we interviewed members from the organization department, an operations department, internal auditing, revision, and IT. At PUBLIC, our partners came from various departments, including the BPM unit, IT, organization, quality management, and accounting. The difference in the number of interviews was due to organizational variance: at SAVINGS, the BPM efforts were less fragmented than at PUBLIC. We complemented our interview data by analyzing several materials produced by or about the organization (e.g., business process documentations, organization charts, press articles, Internet sources, research reports, project documentations, project meeting minutes, or other reports). We also directly observed the settings throughout several site visits. This included, for instance, observing the working procedures and the BPM tools applied.

Table 5: Data Collection Fact Sheet

	SAVINGS	PUBLIC
Number of individual interviews	5	12
Number of site visits	4	16
Main period of data collection	AUG 2008 to FEB 2009	JUN 2009 to JAN 2010

Data Analysis

We performed the data analysis in the following sequence of phases:

1. Identification of relevant episodes: Based on our qualitative data, we searched for episodes of events related to BPM capability progression in each of the two organizations. In this regard, we followed a temporal bracketing strategy to achieve a temporal decomposition and structuring of the overall events that are present in the interviews and additional data. Following Langley (1999), such episodes exhibit a certain continuity of events or contextual variables (e.g., market dynamics). The resulting episodes offer us a unit of analysis for exploring the applicability of the four alternate theoretical lenses. For this first step, we applied a coding frame (Fereday & Muir-Cochrane, 2008) that helped us to identify the key elements of a process theory and the variables that may have an influence on sequences of events (Table 6). In this regard, van de Ven and Poole (1995) introduce the abstract concept of organizational entity. They also refer to change as one type of event. Langley (1999) further mentions the event types of activities and choices. Two authors read the data individually and coded it according to the coding frame (Table 6) using the software tool Atlas.ti. Next, the two authors discussed their results. In case of unresolved differences, we consulted the third author. This phase resulted in the identification of six episodes to be analyzed further (see Section 5).

Table 6: Coding Frame Used for Identifying Episodes

Code label		Source	Description in relation to BPM capability progress
Organizational entities		van de Ven & Poole (1995)	The organizational entity is an abstract concept that represents an actor involved in BPM capability progress. It may be an individual's job, a work group, an organizational strategy, a program, a project, a product, a department or the overall organization.
Events	Change	van de Ven & Poole (1995)	Observation of difference in form, quality, or state of BPM capability over time in an organizational entity.
	Activity	Langley (1999)	Action performed by an organizational entity in relation to BPM capability progress (e.g., training in using BPM methods).
	Choice	Langley (1999)	Decision made regarding BPM capability by an organizational entity.
Context	Organizational variable	de Bruin (2009), Niehaves et al. (2014)	Contextual variable that is internal to the organization and that has an influence on the sequence of events relevant to BPM capability progress.
	Environmental variable	de Bruin (2009), Niehaves et al. (2014)	Contextual variable that is external to the organization and that has an influence on the sequence of events relevant to BPM capability progress.

2. Coding of episodes according to the alternate templates: In line with our sensemaking strategy of alternate templates (Langley, 1999), we followed a deductive approach to qualitative data analysis. The constituents of the four basic theories (van de Ven & Poole, 1995) provided us with a coding frame (Table 7) that we applied in our data analysis. Again, two authors independently coded the data according to these theoretical concepts and consulted the third author in case of diverging interpretations. This phase resulted in alternate interpretations of the six episodes according to the different basic theories.

Table 7: Coding Frame Used for Analyzing the Episodes

Alternate theories	Code label	Description in relation to BPM capability progress
Evolution	Variation	Organizational entities vary their BPM capability (i.e., they change the way they perform BPM).
	Selection	The environment selects the organizational entity whose BPM capability helps to compete in this environment against other entities.
	Retention	Forces internal to the organizational entity maintain specific BPM capability.
Dialectic	Thesis	An organizational entity enacts or envisions BPM capability in its specific way.
	Antithesis	Another organizational entity enacts or envisions BPM capability in an opposing way.
	Conflict	The different approaches to BPM lead to confrontation between the opposing organizational entities.

	Synthesis	An agreement is achieved about how to enact BPM capability.
Teleology	Evaluation	Individuals in an organizational entity evaluate the level of BPM capability with regard to the achievement of goals, which can lead to dissatisfaction and the need to update goals.
	Goal formulation or modification	Individuals in the entity define goals regarding BPM capability.
	Goal implementation	Individuals in the entity implement BPM practices in order to reach the defined goals.

3. Analysis in and across case organizations: Finally, we compared the interpretations of episodes between and in the two case organizations. Because we could identify three episodes in each organization, we were able to look for patterns on both organizational and cross-case level. Here, we focused on a connection between the characteristics of episodes and case organizations with specific theoretical templates being more or less applicable.

V. RESULTS

Episodes of BPM Capability Progress

We analyzed six episodes from the two case organizations using the alternate templates. The following descriptions briefly overview the organizational entities involved, the sequence of events, the context of the particular episode, and the BPM capability progress that was achieved (see also Table 8):

- SAVINGS I (standardization of business process descriptions across the network): SAVINGS was part of a network of building societies. The head of a functional department explained that SAVINGS had made attempts to benchmark business processes across the network for decades until they finally developed a common process map in the mid-1980s. This process map structured the processes according to the life-cycle of a building savings contract, covering sales and distribution at the beginning, followed by the savings phase, and the loan phase at the end. Standardized textual descriptions were jointly developed documenting all sub-processes in detail. These descriptions now form the basis of requirement definitions for IT, manpower requirements planning, activity-based costing, and benchmarking of process performance with the other building societies of the network.
- SAVINGS II (inconsistent use of graphical modeling notations): As we indicate above, SAVINGS had a standardized approach for process documentation in place. Their approach, however, mainly relies on textual descriptions. In addition, they used a high-level graphical depiction (process map) of different functions and processes. All these documents were not intended for continuous process improvement, but rather served for management accounting purposes and as job descriptions. SAVINGS neither used graphical notations nor advanced software tools for modeling their business processes completely and in detail. In some occasions (i.e., in individual process improvement projects), modeling tools such as ARIS, Prometheus, and Microsoft Visio were used for as-is and to-be modeling. Because there was no defined standard for graphical business process modeling, employees decided based on their individual knowledge and previous experiences. The executives of SAVINGS were also aware about the existence of these contemporary and widely accepted process modeling notations, according software tools, and their potential (e.g., in process analysis and simulation), but they chose to go on with textual modeling. They consider textual modeling to be easier understood by the organization's employees.
- SAVINGS III (implementation of a requirements-management unit): At the time of data collection, SAVINGS had just introduced a new central unit for requirements management that was formally part of the organization department. Previously, employees from the operating departments joined the IT department to determine the business process design and the requirements for IT systems. The new unit was supposed to form an interface between the operating departments that "live the processes" (quote from an interview), the organization department, and the IT department that supported the processes with IT. The new unit comprised requirements architects that had expert knowledge about the operational process and formulating IT requirements and process instructions in a semi-formal manner. Precisely, these requirements architects did not code, but developed the system specifications that the IT department then turned into working IT systems. One interviewee mentioned that this change could be interpreted as a reaction to IT system failures in the past when systems were developed without intensive involvement of the users. Hence, a key objective of the new unit was a better and earlier user involvement into IT design.

- PUBLIC I (ISO 900x certification in municipal adult education center): PUBLIC had a municipal adult education center (AEC), which decided to become ISO 900x certified in 2006. At that time, it was a trend among German educational providers to promote themselves as “certified educators”. For this purpose, AEC needed to acquire certain BPM capabilities. The quality manager stated that AEC “documented and defined 22 processes in the ISO certification process” using text- and spreadsheet-modeling. Several employees were trained in the corresponding methods, and a process- and quality-oriented culture emerged. In 2009, AEC became re-certified and the auditor stated that “the system is lived and developed by all employees. It covers all customer-oriented, legal, and internal requirements and has reached a high degree of perfection.”.
- PUBLIC II (introduction of a new approach to process modeling): In the past, PUBLIC modeled their business processes using textual descriptions and spreadsheets. These models were used to train new employees in the corresponding processes and to calculate time and costs for the resulting governmental services. In 2008, a local government association started an initiative to build reference processes for local administrations. This collection was supposed to be represented in a specific graphical modeling notation. Due to the involvement in this project, PUBLIC’s organization department became familiar with this notation. For reasons of comparability with the reference processes, the organization department intended to introduce this notation as the new standard to PUBLIC. A small project team was formed that tried to inform and convince other departments and employees. During the course of this project, a functional department (building inspection office) indicated that they had used a different graphical notation for years. The organization department (formally responsible for all BPM-related activities) had had no knowledge about this fact. PUBLIC finally agreed on using both of the two graphical modeling approaches. The mentioned functional department kept the notation it was used to while the rest of the organization built up capabilities in applying the new notation.
- PUBLIC III (implementation of the E.U. service directive): In 2004, the European Commission published a first draft of the European service directive. It became obvious that such a directive would require public sector organizations to radically change their business processes and improve BPM capability. In 2006, the draft was transformed into a legally binding directive (2006/123/EC). The date for the directive to-be completely implemented was the end of 2009. Hence, public sector organizations knew about this directive for years prior to its obligatory implementation. As with all local governments in the European Union, PUBLIC had to react to this directive and changed some process interfaces. However, according to our data, the processes had only been changed pro forma and these changes resulted in fundamental deficiencies of the new processes. Still, in 2010, one of PUBLIC’s interviewee said: “Currently, we do not really implement the service directive. However, we hope that we can use the directive as a driver for process change in the future.”. According to PUBLIC representatives, this missing change was a direct result of a lack of BPM capability.

Table 8: Synopsis of the Organizational Entities, Events, and Contexts of the Six Episodes

Episode	Org. Entities	Events	Context
SAVINGS I (standardization of business process descriptions across the network):	<ul style="list-style-type: none"> • Different building societies within the network. 	<ul style="list-style-type: none"> • Development of a common process map for all building societies that were part of the network. • Standardized textual descriptions were jointly developed documenting all sub-processes in detail. 	<ul style="list-style-type: none"> • Internal: There had been attempts at SAVINGS to benchmark its business processes with the other building societies within the network for decades.
SAVINGS II (inconsistent use of graphical modeling notations):	<ul style="list-style-type: none"> • Process improvement projects • Organization department 	<ul style="list-style-type: none"> • In specific process improvement projects, modeling tools like ARIS, Prometheus and Microsoft Visio had been used for as-is and to-be modeling. • SAVINGS’ organization department chose to maintain textual process descriptions and not to define an organization-wide standard for a graphical notation. 	<ul style="list-style-type: none"> • Internal: Existing process descriptions were not intended for continuous process improvement, but served for management accounting purposes and as job descriptions.
SAVINGS III (implementation of a requirements-)	<ul style="list-style-type: none"> • Different operating departments • Organization 	<ul style="list-style-type: none"> • Introduction of a new central unit for requirements management. • New role: requirements architects 	<ul style="list-style-type: none"> • Internal: IT system failures



management unit)	department • IT department	that define to-be processes and formulate IT requirements.	
PUBLIC I (ISO 900x certification in municipal adult education center)	• PUBLIC's AEC • Employees • Certifying institution	• PUBLIC's AEC decided to become ISO 900x certified. • Employees were trained in BPM methods. • 22 processes were certified according to the ISO standards using text- and spreadsheet-modeling.	• External: There was a trend among German educational providers to promote themselves as "certified educators".
PUBLIC II (introduction of a new approach to process modeling):	• Project team at PUBLIC • Building inspection office	• PUBLIC took part in an initiative for which a specific graphical modeling notation was defined. • PUBLIC decided to introduce this graphical modeling notation. • PUBLIC finally agreed on using two different graphical modeling approaches.	• External: Initiative to build reference processes for local administrations. • Internal: PUBLIC used to model their business processes using textual descriptions and spreadsheets, except for one functional department (building inspection office) that had used a modeling notation for years.
PUBLIC III (implementation of the E.U. service directive)	• PUBLIC	• PUBLIC changed some process interfaces pro forma. • Changes resulted in deficiencies of the new processes.	• External: Draft of the European service directive was transformed into a legally binding directive.

BPM Capability Progress Viewed From the Life-Cycle Logic

First, we analyzed the six episodes in light of the life-cycle theory, which means that BPM capability progress would follow a predetermined logic (e.g., a logic that is reflected in BPM capability maturity models). None of the respondents from the two case organizations indicated that their BPM related activities were actually guided by such maturity models. Nevertheless, most of the episodes represent steps in BPM capability progress as typically described in BPM capability maturity models and, as such, they potentially reflect the immanent logic of organizations concerning BPM capability progress.

As for SAVINGS, the development of network-wide standardized process descriptions (episode SAVINGS I) is in line with the path from a department-oriented towards organization-wide and collaborative BPM as depicted in many maturity models (Fisher, 2004; Röglinger et al., 2012; Rosemann & vom Brocke, 2010). Also, the institutionalization and formalization of BPM and IT requirements management (episode SAVINGS III) is generally considered an improvement to BPM capability maturity (Rohloff, 2009b). However, looking at episode SAVINGS II, the general recommendation of capability maturity models would be to implement more sophisticated modeling methods that exhibit fewer deficiencies compared to textual descriptions in terms of redundancy, excess, or overload. This improvement in BPM capability, however, is currently not considered to be of economic advantage.

As for PUBLIC, the generation of process documentations and the training of employees to become ISO 900x certified (episode PUBLIC I) also reflects a typical step forward in BPM capability maturity. In episode PUBLIC II, the organization advanced further from textual process descriptions to a graphical notation, which is generally considered as a superior BPM capability, too. However, maturity models cannot explain why PUBLIC decided to maintain two different graphical modeling notations because a single standardized modeling approach would generally be considered to reflect a higher level of BPM capability maturity. Looking at episode PUBLIC III, several actors in the organization realized that there was a stage of superior BPM capability maturity that could be reached when implementing the E.U. service directive seriously. Still, this path was not followed.

Application of the Alternate Templates

Episodes at SAVINGS

In this section, we interpret the episodes at SAVINGS in the light of the alternate theories of BPM capability development we introduce earlier (see Table 9 for overview).

Taking an evolutionary perspective, the three episodes reflect variations in that different organizational entities (different departments or SAVINGS as a whole) have changed the way they perform BPM (e.g., in standardizing process descriptions across the overall network of building societies) (episode SAVINGS I). We also see that single project teams deviated from the overall BPM approach of SAVINGS in that they used notations for graphical process modeling (episode SAVINGS II). In episode SAVINGS III, the organizational structure was changed in order to achieve a better user involvement in business process and information system design. However, we can hardly identify an environmental selection occurring. SAVINGS operated in a very stable market environment and had a strong market position. The interviewees did not consider any change in the environment as the trigger for these variations, neither did they purposefully strive to better fit SAVINGS with its environment. The constellation of different regional building societies forming a network had not been new; neither did other external forces (e.g., regulatory requirements that are generally perceived as quite strong by SAVINGS) lead them to standardize their processes. If we look at single BPM projects as organizational entities and at their environment in terms of the overall organization, we can evaluate the reluctance of the latter against graphical process modeling as an environmental selection not to adopt these variations. Hence, we can identify strong retaining forces at SAVINGS. In episode SAVINGS I, the organization considered the standardized process description a success and had maintained it for more than 20 years. In episode SAVINGS II, we identify the settled opinion that textual process descriptions are sufficient.

Following the dialectic theory, we identify theses and opposing antitheses, conflicts, and syntheses in parts of the three episodes at SAVINGS. In episode SAVINGS I, we can say that the business processes differed in the network and, thereby, formed competing theses. We can see a conflict in that these different process descriptions inhibited benchmarking across the network. The desire of all network societies to achieve comparability of their business processes led to a synthesis in terms of a common process map. In episode SAVINGS II, the thesis of the organization department was that graphical modeling was of no additional value for SAVINGS. Individual employees and project teams already formed different antitheses when they decided to exploit the opportunities of graphical modeling in specific projects. However, there seemed to be no conflict between the organization-wide standard of textual descriptions and the individual use of graphical tools that would lead to BPM capability progress. We can see the synthesis in the fact that the organization department only promoted textual process descriptions, but tolerated the use of other approaches in specific projects. In episode SAVINGS III, we were not able to identify competing views prior to the formation of the requirements-management unit. The new unit seemed to be well accepted right from the start.

Table 9: Interpreting Episodes at SAVINGS Using Alternate Templates

Code label		SAVINGS I	SAVINGS II	SAVINGS III
Evolution	Variation	Development of standardized process description for the network.	Different BPM projects: Graphical business process modeling was useful.	Introduction of a central unit for requirement management.
	Selection	n/a	Organizational resources were limited and the organization-wide use of graphical notations was not supported.	n/a
	Retention	The descriptions have been maintained for more than 20 years.	Organization department promoted textual process descriptions.	n/a
Dialectic	Thesis	Process descriptions at SAVINGS.	Organization department: Textual descriptions are sufficient.	Introduction of a central unit for requirement management can help to mitigate IT failures.
	Antithesis	Process descriptions at the other building societies in the network.	Different projects: Use of graphical business process modeling is useful.	n/a
	Conflict	Deviating process descriptions inhibited benchmarking across the network.	Different approaches to describing processes, but this was not perceived as a conflict.	n/a
	Synthesis	Development of standardized process description for the	Organization department only promoted textual process descriptions, the	n/a



		network.	use of other approaches in specific projects was tolerated.	
Teleology	Evaluation	The organization department was dissatisfied because it was not able to compare the processes at SAVINGS with those at the other building societies in the network.	Textual process descriptions were sufficient for the dedicated purposes at SAVINGS.	Dissatisfaction at SAVINGS due to several IT failures.
	Goal formulation or modification	Enable benchmarking of processes across the network.	n/a	Ensure adequate user involvement in business process and IT systems design.
	Goal implementation	Development of standardized process description for the network.	n/a	Introduction of a central unit for requirement management.

Analyzing the episodes from a teleological perspective, we can identify dissatisfactions in SAVINGS I and SAVINGS III that led to the formulation of new goals. In episode SAVINGS I, the new goal was to enable benchmarking of processes across the network, which was achieved through the network-wide standardization of processes. In episode SAVINGS III, the new goal was to improve user involvement in business process and information system design, which was achieved through the new requirements-management unit. In episode SAVINGS II, no new goals regarding an improved way of documenting business processes were formulated.

Looking at the episodes that occurred at SAVINGS, we see that the teleological theory can explain the implementation of both standardized process descriptions (SAVINGS I) and the new requirements-management unit (SAVINGS III). We can apply the dialectical theory to explain the BPM capability progress in SAVINGS I and SAVINGS II because there had been different approaches to process documentation that we interpreted as competing theses. Because the interviewees at SAVINGS never referred to purposeful variations in order cope with changing environmental influences, the evolutionary logic seems not well applicable at SAVINGS.

Episodes at PUBLIC

In this section, we interpret the episodes at PUBLIC in the light of the alternate theories of BPM capability progress we introduce in Section 3 (see Table 10 for overview).

Applying the evolutionary lens, we see variations in BPM capability in episodes PUBLIC I and PUBLIC II. In both episodes, PUBLIC made capability progress in reaction to changes in the environment. In the first episode, this was the trend towards becoming certified educators. We can see the introduction of corresponding capabilities as a reaction to environmental change and an imitation of other educators that compete in the same environment. In episode PUBLIC II, the change in the organizational environment is observable from the initiative by a local government association develop reference processes. PUBLIC felt the need to comply with this new collection by adopting the same graphical modeling notation for process documentation. In both episodes, PUBLIC perceived that environmental selection was dependent on its BPM capability. The employees accepted and maintained the approaches to document processes for ISO certification and for the reference process initiative. In episode PUBLIC III, however, we cannot identify a real variation in BPM capability. The retaining forces to stick with the status quo were too strong. BPM capability advancement had not occurred, but there were plans for enhancing BPM capabilities in the future.

Taking a dialectical view, we can identify theses and opposing antitheses, conflicts, and syntheses in parts of the three episodes at PUBLIC. In episode PUBLIC II, the organization department formulated a new thesis to use the graphical modeling notation. However, the reluctant department, unwilling to adopt the new approach, formed the antithesis by using a different modeling approach that it had used before. The resulting conflict was resolved with the synthesis of using both approaches in different areas of PUBLIC. In episode PUBLIC III, we argue that the continuance of the status quo constitutes a thesis most employees of PUBLIC agreed on. In this case, only a minority was willing to propose the antithesis that new capabilities were actually needed to really comply with the E.U. service directive. In episode PUBLIC I, we cannot identify opposing theses as there was great agreement among all actors involved.

Analyzing the episodes from a teleological perspective, we can identify the setting of ambitious goals in PUBLIC I and PUBLIC II. PUBLIC had the goal to become ISO certified and, hence, built the corresponding capabilities to reach this goal. Also, the unit formally responsible for BPM at PUBLIC formulated the goal of using one single graphical modeling notation in the organization that complied with the method used for the reference processes. This goal, however, was not reached in the course of episode PUBLIC II. Finally, in episode PUBLIC III, the goal of fulfilling the service directive was formulated. Though only pro forma, this goal was achieved using existing BPM capability and, hence, there was no perceived need to progress in BPM capability. At the time of our data collection, the organization was discussing whether to formulate the new goal of a real BPM capability progress that would fulfill the true intention of the E.U. service directive.

Analyzing the episodes at PUBLIC, we see that the teleological logic can again be meaningfully applied to deliver potential justifications for the two cases where BPM capability progress really occurred (i.e., PUBLIC I and II). And also, in episode PUBLIC III, the goal of complying with the E.U. service directive was achieved, but only with minimum effort. The applicability of the teleological logic to PUBLIC II, however, is somehow limited because it must be considered that the actual goal was not to maintain two different modeling techniques. Regarding PUBLIC I and II, the corresponding BPM capability changes can also be explained via the evolutionary logic because we observed variations that had the goal to achieve a fit with changing environments. The dialectical logic is best applicable to episode PUBLIC II where a single department declined to adopt the new organization-wide standard of graphical process modeling, which resulted in a conflict.

Table 10: Interpreting Episodes at PUBLIC Using Alternate Templates

Code label		PUBLIC I	PUBLIC II	PUBLIC III
Evolution	Variation	Documentation of 22 processes according to ISO certification requirements.	Adoption of the graphical modeling notation for process documentation as suggested by the local government association.	Only limited pro forma variations.
	Selection	AEC was now able to also promote itself as a “certified educator” which was expected to be important to potential customers.	Only through using this modeling notation, PUBLIC was able to take part in the reference process initiative.	n/a
	Retention	The documentations were maintained by all employees.	The building inspection office kept the notation it was used to while the rest of the organization applied the new notation.	Although the changed environment required more drastic changes in BPM capability, most employees appreciated the status quo.
Dialectic	Thesis	ISO certification would be beneficial.	New quasi standard should be followed.	Intentions to utilize present BPM capability to comply with the E.U. service directive.
	Antithesis	n/a	Building inspection office wanted to retain its approach.	Intentions to build up improved BPM capability.
	Conflict	n/a	Building inspection office disagreed with new overall standard for process modeling.	Some considered E.U. service directive as chance to make a real step forward in BPM capability, but most of the others intended to keep up the status quo.
	Synthesis	n/a	Deviation by single department was tolerated.	Utilized present BPM capability and performed only minimal changes just about to comply with E.U. service directive.
Teleology	Evaluation	ISO certification would be beneficial	Participating in the reference model project was beneficial.	Current processes did not comply with E.U. service directive.



	Goal formulation or modification	Become an ISO certified educator	New quasi standard should be followed in the whole organization.	Comply with E.U. service directive.
	Goal implementation	Building up of corresponding capability and documentation of processes	New quasi standard was implemented into the organization, except for one department.	Minimal changes just about to comply with E.U. service directive.

Cross-case Analysis of the Alternate Templates

Comparing SAVINGS and PUBLIC, differences in the explanatory power of the theories for specific episodes become particularly obvious when analyzing them through the evolutionary perspective. At SAVINGS, the case study data does not suggest that variations were made in reaction to environmental changes at all. However, in episode SAVINGS II, the organization’s reluctance to adopt more-sophisticated modeling approaches and the intention to retain the existing way of doing can be well explained by the stable environment. At PUBLIC, in contrast, BPM capability progress seemed to be very much initiated by external rather than internal impulses, such as recommendations from a local government association or common trends in municipal institutions. The evolutionary theory explicitly directs the view to such external context variables. At SAVINGS and PUBLIC, we were able to observe episodes where the dialectical logic provided a reasonable lens for explaining BPM capability development. Here, the dialectical theory helps to identify at least different if not even conflicting BPM approaches, and therefore helps to consider internal context variables. The resolution of such conflicts, however, is not always straightforward as episode PUBLIC II shows. Here, finally the competing approaches were both maintained. The applicability of the teleological theory is similar for both case settings. This theory perspective focuses less on the external or internal context in which BPM progress occurs but helps to relate changes to an organization’s goals.

VI. DISCUSSION AND CONCLUSIONS

Implications

We studied whether alternate theoretical templates apart from life-cycle oriented maturity models may contribute to explaining BPM capability development. And, indeed, evolutionary, dialectic, and teleological theory can shed light on the driving mechanisms behind BPM capability change. In most episodes, we were able to apply more than a single theoretical perspective in a meaningful way to explain BPM capability progress. In episode PUBLIC II, for instance, the evolutionary theory helps to understand the environmental context of BPM capability progress, which was the recommendation by a local government association, whereas the dialectical theory helps to explain the outcome, which was the existence of two different instead of one agreed-on modeling approach. However, none of the different theories can give fully sufficient explanations to all episodes we analyzed. The explanatory power of the evolutionary theory and the dialectical theory is superior in cases where external and internal contextual influences had a relevant impact. The teleological theory is superior in explaining BPM change where the to-be BPM capability was independent from such influences but was derived based on corporate goals, which we mainly encountered at SAVINGS. This is in line with van de Ven and Poole (1995) who emphasizes that hybrids of the four ideal-types can be particularly useful. To conclude, the theories focus on different variables that have an influence on change over time and that may well complement each other (e.g., internal and external context).

Limitations and Directions for Future Research

This study is beset with certain limitations that motivate future research on BPM capability development. First, while the set of basic theories proposed by van de Ven and Poole (1995) is widely accepted in the organizational science literature and has been characterized helpful for identifying generating mechanisms of change processes, they have also been described as “extremely simple” (Pentland, 1999, p. 721) and as providing only limited accuracy for describing any particular situation. This is also reflected in our results because we found applying a combination of these basic theories—and not only a single one—particularly informative. Therefore, we see great potential for future research to combine and extend the alternate theories. Future research on BPM development should also strive for exploring the limits of these theories’ explanatory power more clearly.

Second, the case study data that we were able to analyze are only “data from the surface” (Pentland, 1999, p. 721). This is not surprising because “the data we collect are always limited to the surface. We have no direct access to the underlying structure of the phenomena we want to explain” (Pentland, 1999, p. 712). Explanatory theory, however, requires one to uncover exactly the deep structures that are not directly observable. To uncover these deep structures, we applied the alternate template sensemaking strategy (Langley, 1999), also termed “template matching” by van de Ven and Poole (1995, p. 533). We found this approach very helpful for our research endeavor because it forced us to view every episode from varying theoretical perspectives. We also tried to resolve conflicting indicators on the surface level through two authors independently coding the data and triangulating data sources

(Pentland, 1999). However, the episodes as presented in this manuscript remain our versions of the stories that happened at the case organizations, which creates an inherent subjectivity of the presented results. Therefore, future research could develop guidelines that support a rigorous “template matching” (van de Ven & Poole, 1995, p. 533).

Third, our interpretations are grounded in data on BPM development from only two case study organizations. While having at least two cases allows for a cross-case comparison of findings and while Langley (1999) argues that an alternate patterns strategy is potentially able to achieve high generalizability with a low number of cases (as a result of the use of theory-based patterns), we see the need to complement our current insights with results from additional cases. We consider it a potentially fruitful avenue, too, to complement the insights of our qualitative approach with quantitative measurements (e.g., based on the multi-dimensional, formative model for measuring BPM maturity as proposed by de Bruin (2009)).

Finally, this research is based on case study data that has been analyzed in two earlier studies (Niehaves et al., 2013, 2014) and which we revisited with different theoretical perspectives. Although our original objective was to collect data on episodes of BPM capability progress, we did not specifically consider the four alternate theories in interview guidelines in the first place. The data collection in potential future cases should therefore be adapted.

Contributions to Theory and Practice

With this study, we add to the so far limited theoretical explanations of BPM capability progression in organizations. Just a few years ago, de Bruin (2009, p. 10:397) contributed the “first theory on the progression of BPM Initiatives within organisations”. Our analysis confirm some of her statements—for example, that “progression is not always linear nor in a forward-direction and does not universally follow the same stages” and that “changes to the structure of the BPM Initiative and the organizational context in which it occurs will advance and / or constrain progression over time by redirecting, inhibiting or enabling the development of BPM capability areas along the progression path” (de Bruin, 2009, p. 10:362).

As for the former, we were, for instance, able to identify episodes of BPM capability change (SAVINGS II and PUBLIC III) where actually no progress in BPM capability maturity was made. As for the latter, we offered a closer look on the context variables that advance or constrain BPM capability progression. With this research, we also extend our own previous studies. While our previous analyses of the cases (Niehaves et al., 2013, 2014) already point to the shortcomings of maturity models for guiding and explaining BPM capability progress on a relatively abstract level, the re-analysis of the two cases using the alternate templates offers a much more-detailed explanation of the mechanisms behind the observed episodes. In particular, the different theoretical templates allowed us to focus on the influence of particular context variables from the internal and the external of the organization. This way, we also follow the advice by Langley (1999) not to artificially separate variables and events as the building blocks of variance vs. process theories. In line with Pentland (1999), our analysis emphasizes the need to include contextual variables to be able to explain event sequences in a holistic manner.

Our study also bears several implications for practitioners. First, BPM decision makers should not only rely on predetermined paths (underlying prevalent BPM maturity models) to derive normative advice for capability change. While maturity models explicate interesting paths for development and ideal target states, the intermediary stages could be suitable, too. Second, decision makers need to study changes and developments in the external and internal context of BPM initiatives because they can form triggers on which organizations have to react (“environmental scanning”). Third, practitioners should see potential BPM-related conflicts as chances for change and work on synthesizing different opinions. Such syntheses should be formulated and announced as organizational goals. To summarize, a combination of and reflection on different theoretical explanations of BPM capability development can help business process managers in practice to find guidance for BPM capability progress in their organization.

REFERENCES

Editor’s Note: The following reference list contains hyperlinks to World Wide Web pages. Readers who have the ability to access the Web directly from their word processor or are reading the paper on the Web, can gain direct access to these linked references. Readers are warned, however, that:

1. These links existed as of the date of publication but are not guaranteed to be working thereafter.
2. The contents of Web pages may change over time. Where version information is provided in the References, different versions may not contain the information or the conclusions referenced.
3. The author(s) of the Web pages, not AIS, is (are) responsible for the accuracy of their content.

4. The author(s) of this article, not AIS, is (are) responsible for the accuracy of the URL and version information.

- Abbott, A. (1990). A primer on sequence methods. *Organization Science*, 1(4), 375-392.
- Armistead, C., & Machin, S. (1997). Implications of business process management for operations management. *International Journal of Operations & Production Management*, 17(9), 886-898.
- Barreto, I. (2009). Dynamic capabilities: A review of past research and an agenda for the future. *Journal of Management*, 36(1), 256-280.
- Benson, J. (1977). Organizations: A dialectical view. *Administrative Science Quarterly*, 22(1), 1-21.
- Broadbent, M., Weill, P., & St. Clair, D. (1999). The implications of information technology infrastructure for business process redesign. *MIS Quarterly*, 23(2), 159-182.
- Capaldo, A. (2007). Network structure and innovation: The leveraging of a dual network as a distinctive relational capability. *Strategic Management Journal*, 28(6), 585-608.
- Corley, K. G., & Gioia, D. A. (2011). Building theory about theory building: What constitutes a theoretical contribution? *Academy of Management Review*, 36(1), 12-32.
- Crowston, K. (2000). Process as theory in information systems research. In *Proceedings of the IFIP 8.2 Working Conference on the Social and Organizational Perspective on Research and Practice in Information Technology* (pp. 149-66).
- De Bruin, T. (2009). *Business process management: Theory on progression and maturity* (PhD thesis). Queensland University of Technology. Retrieved from http://eprints.qut.edu.au/46726/1/Tonia_de_Bruin_Thesis.pdf
- De Bruin, T., Rosemann, M., Freeze, R., & Kulkarni, U. (2005). Understanding the main phases of developing a maturity assessment model. *Proceedings of the Australasian Conference on Information Systems*.
- De Rond, M., & Bouchikhi, H. (2004). On the dialectics of strategic alliances. *Organization Science*, 15(1), 56-69.
- Eisenhardt, K. M. (1989). Building theories from case study research. *The Academy of Management Review*, 14(4), 532-550.
- Fereday, J., & Muir-Cochrane, E. (2008). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International Journal of Qualitative Methods*, 5(1), 80-92.
- Fisher, D. M. (2004). The business process maturity model: A practical approach for identifying opportunities for optimization. *BPTrends*. Retrieved from <http://www.bptrends.com/publicationfiles/10-04%20ART%20BP%20Maturity%20Model%20-%20Fisher.pdf>
- Gartner. (2010). Leading in times of transition: The 2010 CIO agenda. Retrieved from http://blogs.gartner.com/mark_mcdonald/2010/01/19/leading-in-times-of-transition-the-2010-cio-agenda/
- Hammer, M. (2007). The process audit. *Harvard Business Review*, 85(4), 111-123.
- Harmon, P. (2009). Process maturity models. *BPTrends*. Retrieved from http://www.bptrends.com/bpt/wp-content/publicationfiles/spotlight_051909.pdf
- Ittner, C., & Larcker, D. (1997). The performance effects of process management techniques. *Management Science*, 43(4), 522-534.
- Jurisch, M., Palka, W., Wolf, P., & Krcmar, H. (2014). Which capabilities matter for successful business process change? *Business Process Management Journal*, 20(1), 47-67.
- Kern, T., & Willcocks, L. P. (2002). Exploring relationships in information technology outsourcing: The interaction approach. *European Journal of Information Systems*, 11(1), 3-19.
- Lamarck, J. (1809). *Philosophie zoologique*. Dentu, Paris, France.
- Langley, A. (1999). Strategies for theorizing from process data. *The Academy of Management Review*, 24(4), 691-710.
- Lee, A. (1989). A scientific methodology for MIS case studies. *MIS Quarterly*, 13(1), 33-50.
- Lee, J., Lee, D., & Sungwon, K. (2007). An overview of the business process maturity model. In *Proceedings of the International Workshop on Process Aware Information Systems* (pp. 384-395).
- Markus, M. L. (1983). Power, politics, and MIS Implementation. *Communications of the ACM*, 26(6), 430-444.

- Markus, M. L., & Robey, D. (1988). Information technology and organizational change: Causal structure in theory and research. *Management Science*, 34(5), 583-598.
- McCormack, K. (2007) *Business process maturity—theory and application*. Booksurge Publishing, USA.
- McCormack, K., Willems, J., van den Bergh, J., Deschoolmeester, D., Willaert, P., Stemberger, M. I., Skrinjar, R., Trkman, P., Ladeira, M. B., de Oliveira, M. P. V., Vuksic, V. B., & Vlahovic, N. (2009). A global investigation of key turning points in business process maturity. *Business Process Management Journal*, 15(5), 792-815.
- Mingers, J. (2003). The paucity of multimethod research: A review of the information systems literature. *Information Systems Journal*, 13(3), 233-249.
- Montealegre, R., & Keil, M. (2000). De-escalating information technology projects: Lessons from the Denver international airport. *MIS Quarterly*, 24(3), 417-447.
- Nelson, R. R., & Winter, S. G. (1982). *An evolutionary theory of economic change*. Cambridge, MA: Harvard University Press.
- Newman, M., & Robey, D. (1992). A social process model of user-analyst relationships. *MIS Quarterly*, 16(2), 249-266.
- Niehaves, B., Plattfaut, R., & Becker, J. (2013). Business process management capabilities in local governments: A multi-method study. *Government Information Quarterly*, 30(3), 217-225.
- Niehaves, B., Plattfaut, R., & Sarker, S. (2011). Understanding dynamic IS capabilities for effective process Change: A theoretical framework and an empirical application. *Proceedings of the International Conference on Information Systems*.
- Niehaves, B., Poepplbuss, J., Plattfaut, R., & Becker, J. (2014). BPM Capability Development—a matter of contingencies. *Business Process Management Journal*, 20(1), 90–106.
- Pentland, B. (1999). Building process theory with narrative: From description to explanation. *Academy of Management Review*, 24(4), 711-724.
- Polley, D. (1997). Turbulence in organizations: New metaphors for organizational research. *Organization Science*, 8(5), 445-457.
- Poepplbuss, J., Niehaves, B., Simons, A., & Becker, J. (2011). Maturity models in information systems research: Literature search and analysis. *Communications of the AIS*, 29(27), 505-527.
- Pritchard, J., & Armistead, C. (1999). Business process management—lessons from European business. *Business Process Management Journal*, 5(1), 10-32.
- Rai, A., & Tang, X. (2010). Leveraging IT capabilities and competitive process capabilities for the management of interorganizational relationship portfolios. *Information Systems Research*, 21(3), 516-542.
- Remenyi, D., & Williams, B. (1996). The nature of research: Qualitative or quantitative, narrative or paradigmatic? *Information Systems Journal*, 6(2), 131-46.
- Röglinger, M., Pöppelbuß, J., & Becker, J. (2012). Maturity models in business process management. *Business Process Management Journal*, 18(2), 328-346.
- Rohloff, M. (2009a). Process management maturity assessment. *Proceedings of the Americas Conference on Information Systems*.
- Rohloff, M. (2009b). Case study and maturity model for business process management implementation. In U. Dalay, J. Eder, J. Koehler, & H. A. Reijers (Eds.), *Business process management (LNCS 5701)*, pp. 128-142). Berlin: Springer.
- Rosemann, M. (2010). The service portfolio of a BPM center of excellence. In J. vom Brocke & M. Rosemann (Eds), *Handbook on business process management 2* (pp. 267–284). Berlin: Springer.
- Rosemann, M., & vom Brocke, J. (2010). The six core elements of business process management. In J. vom Brocke & M. Rosemann (Eds.), *Handbook on Business Process Management 1* (pp. 107-122). Berlin: Springer.
- Rosemann, M., & de Bruin, T. (2005). Towards a business process management maturity model. *Proceedings of the European Conference on Information Systems*.
- Rummler-Brache Group. (2004). *Business process management in U.S. firms today*. Retrieved from http://rummler-brache.com/upload/files/PPI_Research_Results.pdf

- Sabherwal, R., Hirschheim, R., & Goles, T. (2001). The dynamics of alignment: Insights from a punctuated equilibrium model. *Organization Science*, 12(2), 179-197.
- Sarker, S., Sarker, S., & Sidorova, A. (2006). Understanding business process change failure: An actor-network perspective. *Journal of Management Information Systems*, 23(1), 51-86.
- Silverman, D. (1998). Qualitative research: Meanings or practices? *Information Systems Journal*, 8(1), 3-20.
- Stoelhorst, J.-W., & Huizing, A. (2005). Organizational learning as evolution: The promise of generalized Darwinism for organization science. *Sprouts: Working Papers on Information Systems*, 5(11).
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 509-533.
- Trkman, P. (2010). The critical success factors of business process management. *International Journal of Information Management*, 30(2), 125-134.
- van de Ven, A. H., & Poole, M. S. (1995). Explaining development and change in organizations. *Academy of Management Review*, 20(3), 510-540.
- vom Brocke, J., Becker, J., Braccini, A. M., Butleris, R., Hofreiter, B., Kapocius, K., De Marco, M., Schmidt, G., Seidel, S., Simons, A., Skopal, T., Stein, A., Stieglitz, S., Suomi, R., Vossen, G., Winter, R., & Wrycza, S. (2011). Current and future issues in BPM research: A European perspective from the ERCIS meeting 2010. *Communications of the Association for Information Systems*, 28(1), 393-414.
- Wade, M., & Hulland, J. (2004). The resource-based view and information systems research: Review, extension and suggestions for future research. *MIS Quarterly*, 28(1), 107-142.
- Wang, M. H., & Wang, H. Q. (2006). From process logic to business logic—a cognitive approach to business process management. *Information & Management*, 43(2), 179-193.
- Weber, C. V., Curtis, B., & Gardiner, T. (2008). Business process maturity model, version 1.0. Retrieved from <http://www.omg.org/spec/BPMM/1.0/>
- Weill, P., & Olson, M. (1989). An assessment of the contingency theory of management information systems. *Journal of Management Information Systems*, 6(1), 59-85.
- Winter, S. G. (2003). Understanding dynamic capabilities. *Strategic Management Journal*, 24(10), 991-995.
- Yin, R. K. (2003). *Case study research: Design and methods* (3rd ed.). Thousand Oaks, CA: Sage.
- Zollo, M., & Winter, S. G. (2002). Deliberate learning and the evolution of dynamic capabilities. *Organization Science*, 13(3), 339-351.

ABOUT THE AUTHORS

Jens Poeppelbuss is Professor for Industrial Services at the University of Bremen, Germany. In 2012, he received his PhD degree in Information Systems from the University of Muenster for his work on developing methods and tools for assessing and improving BPM capabilities in service networks. His main research interests are in the areas of service management and BPM. His work has been published in peer-reviewed academic journals and presented at major Information Systems conferences. He has been serving as associate editor and chair of tracks on service management and BPM for several years (e.g., at ECIS and AMCIS).

Ralf Plattfaut works as a management consultant. Before that, he received his PhD in Information Systems from the University of Muenster and worked as a research assistant at the European Research Center for Information Systems, University of Muenster, and as a research associate at the Hertie School of Governance. He also studied Business Process Engineering at Liechtenstein University. Ralf's research areas are process-oriented dynamic capabilities and ICT and ageing.

Bjoern Niehaves is Full Professor of Information Systems at University of Siegen, Germany, Visiting Distinguished Professor at Aalto University, Finland, and Fellow at the Hertie School of Governance, Germany. He received a PhD in Information Systems and a PhD in Political Science from Muenster University. Bjoern held visiting positions at Harvard University (USA), the London School of Economics and Political Science (UK), Waseda University (Japan), Royal Institute of Technology (Sweden), and Copenhagen Business School (Denmark). He has published more than 200 research articles

Copyright © 2014 by the Association for Information Systems. Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for

profit or commercial advantage and that copies bear this notice and full citation on the first page. Copyright for components of this work owned by others than the Association for Information Systems must be honored. Abstracting with credit is permitted. To copy otherwise, to republish, to post on servers, or to redistribute to lists requires prior specific permission and/or fee. Request permission to publish from: AIS Administrative Office, P.O. Box 2712 Atlanta, GA, 30301-2712, Attn: Reprints; or via e-mail from ais@aisnet.org.





Communications of the Association for Information Systems

ISSN: 1529-3181

EDITOR-IN-CHIEF

Matti Rossi
Aalto University

AIS PUBLICATIONS COMMITTEE

Virpi Tuunainen Vice President Publications Aalto University	Matti Rossi Editor, CAIS Aalto University	Suprateek Sarker Editor, JAIS University of Virginia
Robert Zmud AIS Region 1 Representative University of Oklahoma	Phillip Ein-Dor AIS Region 2 Representative Tel-Aviv University	Bernard Tan AIS Region 3 Representative National University of Singapore

CAIS ADVISORY BOARD

Gordon Davis University of Minnesota	Ken Kraemer University of California at Irvine	M. Lynne Markus Bentley University	Richard Mason Southern Methodist University
Jay Nunamaker University of Arizona	Henk Sol University of Groningen	Ralph Sprague University of Hawaii	Hugh J. Watson University of Georgia

CAIS SENIOR EDITORS

Steve Alter University of San Francisco	Michel Avital Copenhagen Business School
--	---

CAIS EDITORIAL BOARD

Monica Adya Marquette University	Dinesh Batra Florida International University	Tina Blegind Jensen Copenhagen Business School	Indranil Bose Indian Institute of Management Calcutta
Tilo Böhmann University of Hamburg	Thomas Case Georgia Southern University	Tom Eikebrokk University of Agder	Harvey Enns University of Dayton
Andrew Gemino Simon Fraser University	Matt Germonprez University of Nebraska at Omaha	Mary Granger George Washington University	Douglas Havelka Miami University
Shuk Ying (Susanna) Ho Australian National University	Jonny Holmström Umeå University	Tom Horan Claremont Graduate University	Damien Joseph Nanyang Technological University
K.D. Joshi Washington State University	Michel Kalika University of Paris Dauphine	Karlheinz Kautz Copenhagen Business School	Julie Kendall Rutgers University
Nelson King American University of Beirut	Hope Koch Baylor University	Nancy Lankton Marshall University	Claudia Loebbecke University of Cologne
Paul Benjamin Lowry City University of Hong Kong	Don McCubbrey University of Denver	Fred Niederman St. Louis University	Shan Ling Pan National University of Singapore
Katia Passerini New Jersey Institute of Technology	Jan Recker Queensland University of Technology	Jackie Rees Purdue University	Jeremy Rose Aarhus University
Saonee Sarker Washington State University	Raj Sharman State University of New York at Buffalo	Thompson Teo National University of Singapore	Heikki Topi Bentley University
Arvind Tripathi University of Auckland Business School	Frank Ulbrich Newcastle Business School	Chelley Vician University of St. Thomas	Padmal Vitharana Syracuse University
Fons Wijnhoven University of Twente	Vance Wilson Worcester Polytechnic Institute	Yajiong Xue East Carolina University	Ping Zhang Syracuse University

DEPARTMENTS

Debate Karlheinz Kautz	History of Information Systems Editor: Ping Zhang	Papers in French Editor: Michel Kalika
Information Systems and Healthcare Editor: Vance Wilson	Information Technology and Systems Editors: Dinesh Batra and Andrew Gemino	

ADMINISTRATIVE

James P. Tinsley AIS Executive Director	Meri Kuikka CAIS Managing Editor Aalto University	Copyediting by Adam LeBrocq, AIS Copyeditor
--	---	--

