MAKE THE BEST OUT OF WHAT YOU HAVE – A LITERATURE REVIEW ON PROCESS PRIORITIZATION

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MAKE THE BEST OUT OF WHAT YOU HAVE – A LITERATURE REVIEW ON PROCESS PRIORITIZATION

Research in Progress

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Abstract

As digitalization alters industries and societies sustainably, companies increasingly rely on optimized processes. Determined and separated by their strategies, companies consist of various key and support processes that differ in regard to characteristics such as importance, dysfunctionality, and feasibility. Because companies face limited organizational resources, they must consider these characteristics as well as strategical implications when prioritizing processes for improvement. Business Process Management (BPM) is a means to improve agility, responsiveness, and quality. Most BPM concepts view process prioritization as implicit and hardly provide explanations about the conditions, strategies, and consequences pertaining to the phenomenon. This article conducts a systematic literature review to determine the current state of research on process prioritization and sketches out avenues for future research. Our results suggest that the current body of literature focuses primarily on methods for process prioritization, while lacking ample answers to the questions of why, when, and with what consequences. Consequently, future research must develop theories and explanations as a foundation for more holistic concepts and generalizable implications.

Keywords: Business Process Management, Process Prioritization, State of the Art, Literature Review
1 Introduction

A process is a sequence of activities that adds value to an enterprise. Companies are typically built upon an organizational structure with many end-to-end processes that differ in regard to various characteristics, including their relevance for business success or their execution frequency. In general, the concept of Business Process Management (BPM) describes an established management discipline that supports companies in leveraging competitiveness by streamlining operations and aligning them with customer needs (Dumas et al. 2018). With an end-to-end focus, it breaks up functional silos and departmental boundaries to accomplish improvements at company level (Becker et al. 2013). Most concepts describe BPM as a central initiative that follows a top-down design based on management commitment and the downward integration of functional managers, process owners, and operational staff (Dumas et al. 2018). While this facilitates specialization and learning effects, resource constraints limit the scope of BPM and enterprises must focus on processes that yield the highest impact. Due to its importance for successful BPM, this study seeks to shed light on the current state of research on process prioritization. We summarize our research question (RQ) as follows:

RQ: What is the current state of research on process prioritization?

To answer this RQ, we conduct a literature review. This article is structured as follows: we describe our research design in Section 2. Section 3 presents the scope of this review and the search procedure. We analyze the literature collection in Section 4 and point to shortcomings and avenues for future research in Section 5. Section 6 concludes this study with a summary of findings and limitations.

2 Research Design

As BPM has evolved to a mature discipline with various concepts, techniques, and methods, this requires a structured approach that goes beyond presenting results from a few selected contributions (Vom Brocke et al. 2009). Hence, we employ a systematic literature review, which provides the means to identify and analyze literature in a comprehensive, structured, and reproducible manner (Fettke 2006; Vom Brocke et al. 2009). Our research consists of the five phases (1) definition of scope, (2) conceptualization of the topic, (3) literature search, (4) literature analysis and synthesis, and (5) research agenda. The first phase requires us to explicate the main characteristics of our review. Subsequently, vom Brocke et al. (2009) suggest to build a broad conceptualization of the topic in order to identify relevant databases. To identify current white spots, vom Brocke et al. (2009) and Fettke (2006) propose organizing and analyzing the identified contributions. A research agenda lastly summarizes current shortcomings as and avenues for future research.

3 Literature Search

3.1 Definition of Scope

We build upon the framework of Fettke (2006) to define the scope and characteristics of our literature review. The framework distinguishes the eight dimensions type, focus, goal, perspective, literature, structure, audience, and future research. Due to the nature of the underlying research problem, we consider this review as a natural language review. We focus on research outcomes, theories, and methods. Furthermore, this study seeks to integrate the current state of research about process prioritization. We take on a neutral perspective for literature search, analysis, and synthesis, as we do not espouse a certain position. To ensure validity and reproducibility, we present the keywords and search strings used for literature search. We further describe the criteria for selecting relevant contributions and provide key figures for each step of the search procedure. We further seek to identify a representa-
tive set of articles with an adequate quality and relevancy. We address practitioners as well as general scholars and organize our findings in a conceptual manner and explicate potential for future research.

3.2 Conceptualization of the Topic

Vom Brocke et al. (2009) suggest building an initial conceptualization of the research problem. This conceptualization draws upon previous research and aligns with the results of Shahin et al. (2007) or Ma (2009). Due to the wide range of available concepts, we initially define the scope of BPM applied in this literature review. BPM describes a body of methods, techniques, and tools to identify, analyze, improve, monitor, and implement business processes (Dumas et al. 2018). Typically yielding cost reductions and improvements in various dimensions, such as quality, efficiency, and effectiveness, BPM has become increasingly relevant for enterprises seeking to achieve or ensure their long-term competitiveness. In general, we can distinguish between two types of BPM. First, Business Process Re-engineering (BPR) describes a revolutionary approach that involves radical redesign of an enterprise’s core processes in order to achieve dramatic improvements in productivity, cycle times, and quality (Hammer and Champy 1993; Grover et al. 1995). Second, we define continuous process management as an iterative process of monitoring performance, identifying improvement opportunities, and implementing them incrementally (Neumann et al. 2005). Vom Brocke et al. (2016) further emphasize that most BPM approaches are developed to fit a specific type of business context, focusing primarily on situations with structured processes and clear goals and requirements. To avoid project failure or results that do not conform to expectations, enterprises must align BPM to their overall strategies, goals, and situational requirements (vom Brocke et al. 2016). In the past, research has established multiple concepts to support enterprises in conducting BPM in practice. For example, lifecycle models describe BPM as a set of sequential activities to systematically optimize an enterprise’s structures (Dumas et al. 2018). These concepts are complemented with, primarily, practice-oriented techniques, such as Six Sigma or Lean Management. Regardless of the underlying concept or understanding, the scope of BPM is limited by resources constraints (Imgrund et al. 2017; Dumas et al. 2018). As a consequence, enterprises must prioritize processes or projects that yield the highest returns through optimization (Darmani and Hanafizadeh 2013; Adebanjo et al. 2016; Kratsch et al. 2017). We illustrate our conceptualization in Figure 1.

![Figure 1: Conceptualization of the Research Problem](image)

We conceptualize process prioritization with the constructs of drivers, causes, methods, and consequences. As it constitutes an enterprise-specific decision situation, process prioritization entails selecting the most suitable options from multiple action candidates based on an overall goal. This study seeks to identify contributions that shed light on why enterprises select certain processes for improvement. The quality of decision making depends significantly on the availability of relevant information. As a state of fully reliable and complete information is desirable but hardly feasible in a business context, decision outcomes remain uncertain and are prone to various risks (Lipshitz and Strauss 1997).
This requires enterprises to collect and analyze relevant information from multiple sources. Regarding process prioritization, we follow Lehnert et al. (2017), who distinguish between performance-based and non-performance-based approaches. On the one hand, non-performance-based or qualitative approaches provide widely subjective measures to assess a process’s improvement potential based on the perceptions and opinions of involved stakeholders. On the other hand, performance-based or quantitative concepts seek to objectify process prioritization by reducing organizational complexity to a set of quantifiable and reproducible indicators. In this literature review, we seek to identify contributions that focus on how enterprises prioritize processes for improvement. By identifying and selecting processes for optimization, companies implicitly allocate organizational resources to some processes, while neglecting others. This cannot only affect the scope of improvement, but also influence an enterprise’s long-term competitiveness. Hence, this literature review seeks to identify and analyze contributions that provide insights about the consequences of process prioritization.

### 3.3 Literature Search

As outlined by vom Brocke et al. (2009), explicating the search procedures is an imperative to produce high-quality outcomes. We initiate literature search by selecting adequate sources of relevant contributions. To ensure a high-quality literature collection, we focus on journals that are well-established in the IS as well as in related domains. Hence, we consider all outlets listed in the AIS Senior Scholars Basked of Journals. We further draw upon the VHB-Jourqual 3 ranking and include journals with a ranking of “B” or higher as well as all outlets with a focus on BPM. Based on the list of relevant journals, we select databases that provide full-text access to contributions. In this study, we use the databases of EMERALD, EBSCOhost, and AISel, which together account for most of the relevant outlets in the IS field. We further use GoogleScholar for forward and backward search.

Subsequently, we derive search strings to query the selected databases. To narrow down potential results and to increase their relevancy for the addressed research problem, we follow vom Brocke et al. (2009), who suggest combining a set of precise keywords. Hence, we use the search terms of process selection and process prioritization and concatenate them with related keywords derived from the conceptualization in Figure 2. Table 1 summarizes the keywords used for this literature review.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Keyword I</th>
<th>Keyword II</th>
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<tbody>
<tr>
<td>Process Prioritization</td>
<td>Business Process Prioritization</td>
<td>Theory, Framework, Concept</td>
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<td></td>
<td>Business Process Selection</td>
<td></td>
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<tr>
<td>Causes and Drivers</td>
<td>Business Process Prioritization</td>
<td>Drivers, Influence Factors, Needs, Requirements</td>
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<td>Consequences</td>
<td>Business Process Prioritization</td>
<td>Impact, Consequences</td>
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<td></td>
<td>Business Process Selection</td>
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*Table 1. Keyword Construction for Literature Search*

### 3.4 Search Results

The search procedure yields a total of 39 relevant out of 12,809 identified contributions. We eliminate redundancies, screen the articles’ title, and double-check their conformance with predefined search parameters. We then analyze the contributions’ abstracts to obtain insights about their focus, research methods, and outcomes. Ultimately, we performed full-text analyses for final decision making.
4 Literature Analysis and Synthesis

We organize our findings based on the dimensions drivers and causes, strategies, and consequences.

4.1 Drivers and Causes of Process Prioritization

Bandara et al. (2015) describe process prioritization as a critical success factor for BPM and emphasize the difficulties managers face when assessing the returns and costs of an improvement projects. They note that prioritizing the right processes is inevitable to achieve strategic objectives. This is also confirmed by Burton (2015), who highlights the importance of relating BPM to objectives. Becker et al. (2005) motivate process selection from a resource perspective, whereby resource constraints require companies to prioritize high-impact processes. Their study outlines the case of a public institution with over 1,000 processes. To ensure manageability of the improvement project, they have to select a total of 10 processes that yield the most significant benefits for the organization. Kirkham et al. (2014) further highlight that it is not feasible to realize all identified improvement projects due to a lack of timely, financial, and personnel resources. Therefore, process prioritization is a key factor for successful BPM initiatives. Similarly, Manderscheid et al. (2015) point out that managers have not enough resources to analyze all processes regularly, which makes it necessary to build a system of indicators as a foundation for process prioritization. This is also confirmed by Shrestha et al. (2014), who note that “without a concentrated focus on critical processes, an organization’s energies, resources, and time will be wasted. Therefore, most companies choose to address a discrete set of processes to focus their limited resources on the most critical processes.” In the domain of Six Sigma, Hakim et al. (2016) highlight the role of risk when prioritizing improvement projects. Similarly, Kumar et al. (2009) emphasize that Six Sigma projects require enterprises to select processes that are feasible to be completed within a reasonable time span and deliver tangible business benefits in terms of financial returns and/or customer satisfaction. Adebanjo et al. (2016) further analyze decision making during process prioritization based on the institutional and resource-based theory. Institutional theory indicates that organizations compete only for resources and customers, but must also conform to shared beliefs about appropriate forms and behaviors, as violations limit their capabilities for securing resource and social support. By contrast, resource-based theory explains persistency in inter-firm performance differences by defining the combination of valuable and inimitable organizational resources as a key driver for sustainable competitive advantages.

4.2 Strategies for Process Prioritization

Due to the large number of contributions with a focus on methods, we organize them based on their central focus. Consequently, we distinguish the subdimensions of value-based management, BPM, process performance measurement (PPM), BPR, and six sigma.

In general, the notion of value-based management builds upon the concept of shareholder value and serves as an orientation for enterprises that seek to maximize their value in terms of their long-term discounted cash flow (Hillman and Keim 2001). Karhade et al. (2015) analyze portfolio prioritization in IS from a general perspective. They propose a decision rationale to examine why organizations conduct some initiatives, while rejecting others. They argue that decision making for project prioritization depends on the strength of three influence factors: (1) communicability, (2) consistency, and (3) risk appropriateness. Buhl et al. (2011) further point out that most decision criteria in BPM do not comply with the premises of market economy. The authors propose a value-based management approach to design well-founded objective functions for BPM. Vom Brocke et al. (2010) propose a value-oriented approach for the case of process modeling. The study is based on the assumption that most of a process’s business value is determined during build time. In fact, enterprises pre-determine the future value of a process by making decisions about its control flow and stakeholder responsibilities. To support enterprises in choosing an adequate process design, the authors define a framework that builds upon the three perspectives: (1) operations, (2) budgets, and (3) corporate. The operational lev-
el captures a process’s design and estimates its expected outcomes. While the budgeting level aggregates the economic value of these outcomes over time, the corporate level reduces the data to a set of performance indicators as decision support for managers.

In regard to BPM, Burlton (2015) analyzes process prioritization from a strategic perspective. He observes that in most cases, BPM does not align with strategy. Hence, the author provides a method to formalize organizational goals and to evaluate the contribution of processes to an enterprise’s business success. Among other factors, the method accounts for environmental pressure, intent, stakeholder interests, strategy, and processes. Kettinger et al. (1997) provides a general perspective on process prioritization. By conducting multiple case studies, they collect methods and tools for process redesign. Furthermore, they propose a multi-level framework to capture the main influence factors on process change and provide suitable techniques to support activities on each stage. As process prioritization is pivotal for BPM success, they recommend performing a careful assessment of the benefits and risks associated with process change. In addition, enterprises should construct a prioritization matrix, map processes to their critical success factors (CSF), and quantify the strength of relationships. Bandara et al. (2015) observe that enterprises face improvement opportunities, which require more organizational resources than available. Hence, they introduce the Business Value Score Model, which builds upon value-based management approaches and supports enterprises in assessing the risk and returns of improvement projects. The model comprises the six dimensions reputation, clients, business processes, financial opportunity, regulation and compliance, and human resources. To assess the business values score of a change project, enterprises must estimate its costs and evaluate each dimension based on the scenarios of (1) no impact, (2) impact if implemented, and (3) impact if not implemented. Kratsch et al. (2015) point out that most approaches take single processes as the unit of analysis and thus neglect structural and/or stochastic dependencies in process networks. The authors propose the Data-driven Process Prioritization approach to address this shortcoming. The approach comprises the three steps (1) extract the dependency-adjusted risky process performance, (2) predict the risky future process performance, and (3) schedule processes for an in-depth analysis. Similarly, Lehner et al. (2017) present a method that accounts for structural and stochastic interdependencies of processes by drawing upon Google’s PageRank algorithm. Framed as the ProcessPageRank, the method prioritizes processes based on their network-adjusted need for improvement. The approach is initiated by transforming an enterprise’s process architecture into a network structure. Subsequently, it computes a set of properties within the network. The PageRank algorithm then determines the centrality and importance of a process based on its connections to other important processes. Shrestha et al. (2014) propose a structured method as well as a decision-support system to support enterprises in selecting IT service processes. The approach is theoretically grounded and balances business and IT objectives. It prioritizes processes based on a four-step procedure. First, enterprises must construct an initial list of IT management processes and define their purpose and expected outcome. Second, they must derive a set of CSF for business success by drawing upon the dimensions of the Balanced Scorecard. These factors then serve as a foundation to evaluate the impact of each process on an enterprise’s overall business strategy. Hence, enterprises can rank their processes according to their relevancy for business success. Third, they recommend categorizing processes based on the service gap perceived by their stakeholders. Ultimately, enterprises must utilize business drivers and service gaps to construct a process prioritization matrix, which returns a final ranking as decision support for managers.

In regard to PPM, Leyer et al. (2015) present a framework that provides multiple dimensions and criteria for measuring process performance. In general, the performance of a process is a function of its productivity, efficiency, and effectiveness. To deploy improvement initiatives, the authors suggest building a detailed understanding of the root causes for process performance deficiencies. As this requires analyzing a process’s behavior under various conditions, they must identify relevant internal and external influence factors and derive hypotheses about their impact. To validate or falsify corresponding hypotheses, enterprises rely on statistical tests based on performance-instance combinations. To account for the behavior of processes, Levina and Hillmann (2012) draw upon metrics adapted from social network analysis. The authors seek to define a set of quantitative process types that explain the interaction and behavioral structure of processes in a network. The approach converts a set of
process models to a connected and interdependent networks and collects data on their structural properties, communication behavior, sub-grouping, and connectivity. The metrics are then used to determine process types, which include core processes, automatable processes, information intensive processes, distributed processes, and flexible processes.

In the context of BPR, Evans et al. (1999) provide an integrated probability analysis of the relationship between BPR scope and project success. The authors conceptualize scope based on the properties of breath, width, and depth. The dimension of width refers to the material, information, cash, and capacity flows necessary to conduct a project. Breath specifies if BPR applies to isolated workflows, processes, supply chains, or holistic supply networks. Ultimately, the depth dimension incorporates potential effects on people, software, and organizational adoption processes. As these dimensions are essential to accomplish performance improvements, enterprises must consider them carefully when determining the scope of a BPR project. According to Hanafizadeh and Osouli (2011), many BPR projects fail because enterprises focus only on a limited set of decision criteria when prioritizing change projects, such as technological and profit-related characteristics. Hence, they neglect soft factors, such as employee expectations or their attitude toward change. Against this backdrop, the authors define a model for selecting processes for BPR by evaluating their feasibility for adaptation. The model comprises 5 soft and hard dimensions, as well as 19 factors and 44 indicators for measuring organizational change. Among others, soft dimensions include change management concepts and management competencies. By contrast, an enterprise’s organizational structure, its project management capabilities, and IT systems describe hard dimensions. In a similar approach, Hakim et al. (2016) introduce a method based on fuzzy decision making to support enterprises in selecting appropriate processes for BPR. The method consists of the four steps (1) identify and categorize processes, (2) derive business goals related to BPR, (3) assess the effect of processes on goals, and (4) select processes. The authors implement a fuzzy quality function deployment approach, which is capable of operationalizing qualitative and quantitative data in order to estimate the relation between processes and objectives. The data is then combined with other BPR criteria, such as costs, time, and complexity and used as input for a multi-objective goal-programming model for process selection.

In the area of Six Sigma, Aqlan and Al-Fandi (2018) introduce a method for prioritizing improvement projects in manufacturing environments. The method accounts for process variables, resources, organizational constraints, and operator skills and returns a priority list of improvable workplace areas. Thus, enterprises must identify and analyze key attributes of processes, including their cycle times, defects, and task-time-ration. For data collection, the authors recommend incorporating multiple data sources, such as databases, time studies, and surveys. Subsequently, they calculate an improvement score for each workplace area. To ensure high-qualitative and consistent results, enterprises should repeat this procedure and evaluate resulting implications with decision makers and workplace area managers Kumar et al. (2009) perform a comprehensive literature review and conduct a case study to derive a hybrid method for the prioritization of Six Sigma projects. The method combines the analytical hierarchy process (AHP) with project desirability matrices and consists of five steps. First, enterprises must identify potential effort and impact variables. While the former include resources, project duration, and required capital, the latter refers to cost reductions, increases in return of investment, and improved delivery timeliness. Second, enterprises must identify Six Sigma projects that relate to their overall business goals and strategies. In the third step, AHP is applied to weight the predefined variables and assess the potential benefits and costs of each project. Ultimately, the authors recommend calculating and evaluating the prioritization ratio to initiate project selection.

4.3 Consequences of Process Prioritization

Only a few articles focus on the consequences of process prioritization. For example, Benner and Tushman (2003) highlight the natural conflict between productivity on the one hand and flexibility and innovativeness on the other. In fact, they argue that BPM typically yields reductions in process variability due to standardization and automation. The authors further propose a theoretical model that explains how BPM affects an enterprise’s capabilities to generate technological innovation and how it
changes its responsiveness to changing environmental conditions. Thereby, they distinguish between exploitative and exploratory innovations. 

**Exploitative innovations** lead to performance improvements and cost reductions by streamlining processes in their current organizational setting. By contrast, **explorative innovations** refer to new technologies or disruptive developments. They recommend prioritizing processes that correlate with an enterprise’s exploitative capabilities, while neglecting processes that facilitate explorative innovations. Furthermore, Evans et al. (1999) examine the scope paradigm in BPR and point out that successful projects require an adequate breadth, depth, and width. In case of insufficient width, enterprises fail to synchronize the flow of information, material, and capacities. If depth is too shallow, the authors argue that internal conflicts can arise and that enterprises can fail to create an appropriate culture. Ultimately, insufficient breadth can yield conflicts between external players and mismatches at interfaces.

## 5 State of Research, Limitations, and Research Opportunities

Our literature review suggests that process prioritization is a pivotal part of various types of improvement projects. Thus, research has designed and introduced numerous concepts, techniques, and tools to support enterprises in identifying and selecting their most important processes in practice. In general, the task of process prioritization relates closely to value-based management approaches, which seek to quantify and maximize the impact of improvement initiatives by viewing them as capital investments. While most concepts analyze a process’s value contribution from an ex-post perspective (Hillman and Keim 2001; Buhl et al. 2011), vom Brocke et al. (2010) formulates recommendations for decisions during built-time. As a conceptual foundation, Davenport (1993) introduces the properties of strategic importance, dysfunctionality, and feasibility to assess a process’s improvement potential. This is adapted by several authors, who measure these characteristics with performance-based or non-performance based indicators. Central to these approaches are concepts of PPM, which enable enterprises to capture the performance of processes in different contexts based on statistical data analysis (Leyer et al. 2015) or to analyze process behavior based on techniques for graph analysis and pattern matching (Levina and Hillmann 2012). Although we found numerous articles that analyze process prioritization in multiple contexts, most of them focus on methods, while widely neglecting drivers and consequences. The literature also lacks a theoretical foundation that provides generalizable implications for different contexts. Only Adebanjo et al. (2016) explain project selection for Six Sigma by linking it to the resource-based view theory, which defines enterprises as actors with the goal of building competitive advantage. In line with vom Brocke et al. (2016), we further argue that established concepts mainly provide a one-size-fits-all approach which neglects several influence factors, including an enterprise’s process architecture, degree of process orientation, and available IT support.

## 6 Conclusion

This article analyzed a total of 39 contribution to determine the current state of research on process prioritization. Most contributions focus on methodical aspects and provide enterprises with indicators and measurement approaches for process prioritization. However, our results suggest that the current body of literature does not provide ample answers to the questions of why, when, and with what consequences. Given the importance of process prioritization for BPM initiatives, future research should especially shed light on theoretical concepts as well as methodical aspects that provide more general implications. This research is not without limitations. First, we widely neglected implications that result from a company’s strategy. Although the applied literature search procedure drew upon established guidelines and concepts, we cannot eliminate the possibility that we missed contributions that might have offered additional insights for our study. To develop a more general approach, requirements of processes and a company’s must be considered individually. As most contributions focus on methodical concepts, the current body of literature lacks a generally accepted knowledge base. The necessity of determining the maturity level of a company with regard to process prioritization thus represents an essential basis for the selection of the methodology.
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