

Towards systematic improvement work
in project-based organizations
An efficiency and effectiveness perspective

Erik Sundqvist

Quality Technology

Doctoral Thesis

Towards systematic improvement work in project-based
organizations
-An efficiency and effectiveness perspective-

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Abstract

Project-based organizations (PBOs) have adopted projects as a primary tool for carrying out most of their operations. By doing so, the PBO operates mainly on two organizational levels, the project level and the organizational level. For these organizations, improving project management (PM) performance is central for the survival of the organization, since PM is considered both a strategic competence and a source of competitive advantage for delivering customer value. For PBOs, prioritizing efficiency has often been described as a short-term focus meeting time and budget targets. The need to shift focus toward value creation in PM is suggested to be of importance to succeed in delivering value to customers. Project performance, and the separate but interlinked concept of project success, can be described using the two concepts of efficiency—doing things right—and effectiveness—doing the right things. However, although commonly used within the field of quality management, the application of these two concepts in the PM literature and practice has proven to be unclear which has implications on organizational improvement.

It is through the two concepts, efficiency and effectiveness, that systematic improvement work in PBOs can be understood. This thesis addresses the need for influences from other research fields, by approaching improvement work in PBOs from a quality management perspective. More specifically, the purpose is to advance our understanding of how PBOs can work systematically toward improvements, from an efficiency and effectiveness perspective. This is done by exploring challenges related to improvement work in a PBO operating as a subsidiary to the Swedish minerals group LKAB. In order to do this case study research has been used, including a combination of data collection methods: including semi-structured interviews, participant observations, and document analysis. Case study findings have continually been compared to theory in order to reach conclusions.

The findings indicate that an organizational-level improvement process is missing, and that PBOs need to link such a process to project-level processes, in order to work toward improvements. Applying an efficiency and effectiveness perspective further clarifies the division of practice and responsibility between PBO and the client. Further, it is suggested that the role of the project manager as an improvement agent in PBOs should be formalized and clarified, in order to support learning and

organizational-level improvement. Finally, the need to clarify and manage what constitutes value and value creation among stakeholders in projects is emphasized, in order to support both efficiency and effectiveness in project work.

The thesis contributes to the literature by discussing the prerequisites for PBOs to work toward improvements, and by approaching project management from a quality management perspective. From a managerial perspective the thesis emphasizes the importance of clarifying responsibilities regarding project value creation, as current practice seem to promote a separation of responsibility, in which the PBO is responsible for aspects of efficiency, and the customer is responsible for aspects of effectiveness.

Index

1. Introduction	1
1.1 Improvement Work in Project-Based Organizations	1
1.2 Purpose	6
2. Theoretical Framework	9
2.1 Project-Based Organizations	10
2.2 Quality Management, working toward improvements	12
2.2.1 Project Management & Quality Management	13
2.3 Continuous Improvement	15
2.3.1 Working with CI.....	17
2.3.2 CI in PM	20
2.4 Process View	21
2.4.1 Process View in PM.....	21
2.5 Learning	23
2.5.1 Learning in PM	25
2.6 Efficiency & Effectiveness	27
2.6.1 Efficiency and Effectiveness in PM	27
2.7 Summary	30
3. Methodology	31
3.1 Background	31
3.2 Case Study Organization	33
3.3 Research Design	37
3.4 Case Study	38
3.6 Literature Review	40
3.7 Data Collection	41
3.7.1 Observations	43
3.7.2 Interviews	46
3.8 Research Project Meetings	47
3.9 Research Limitations	50
3.10 Research Quality	51
3.10.1 Research Ethics.....	52
3.10.2 Research Reflections.....	54
3.10.3 Method Discussion.....	57
4. Studying a PBO from an Efficiency and Effectiveness Perspective	63
4.1 Short stories from the PBO	63
4.2 The Clients	64
4.3 Efficiency and Effectiveness	66
(4.3.1) SHORT- AND LONG-TERM FOCUS OF PM	68
(4.3.2) EARLY AND LATE PROJECT PHASES	72
(4.3.3) PROJECT SUCCESS AND PERFORMANCE	77
(4.3.4) LEARNING	82
4.4 Summary	88
5. SUMMARY OF APPENDED PAPERS	91
6. Conclusions & Discussion	101
6.1 Research Questions	101
6.2 Working Systematically Toward Improvements in PBOs	104
6.3 Contributions from Appended Papers	106
6.4 Theoretical Implications	108
6.5 Managerial and Practical Implications	111

6.6 Further Research.....	112
References.....	115
APPENDIX I – Interview guide #1.....	
APPENDIX II – Components of CI.....	
APPENDIX III – Interview guide #2.....	
APPENDIX IV – Interview guide #3.....	
Appendix V – Operational plans, 2013 & 2016 (edited).....	

Appended Papers

Paper I

Backlund, F., & **Sundqvist, E.**, (2018). Continuous Improvement: Challenges for the project-based organization, *International Journal of Quality & Reliability Management*, Issue 35, No. 7, 1306-1320.

Paper II

Sundqvist, E., Backlund, F., & de Bruin, J., (2017). Lean in Project-Based Organizations, Presented at the 24th EurOMA Conference in Edinburgh, July 1–5, 2017.

Paper III

Backlund, F., Chronéer, D. & **Sundqvist, E.**, (2015). Maturity Assessment: Towards Continuous Improvements for Project-Based Organisations? *International Journal of Managing Projects in Business*, 8(2), 256-278.

Paper IV

Sundqvist, E. (2018). The Role of Project Managers as Improvement Agents in Project-Based Organizations, *Project Management Journal*. Pending publication.

Paper V

Sundqvist, E. & Chronéer, D. (2018). Making Value Transparent in Project Management Work. Submitted for publication.

Conference Papers

The following papers have been presented at international conferences as part of the research project but are not appended as part of this thesis.

Sundqvist, E., Backlund, F., & Chronéer, D. (2014). What is Project Efficiency and Effectiveness? *Procedia - Social and Behavioral Sciences*, 119, 278–287.

Backlund, F., Chronéer, D., & **Sundqvist, E.** (2014). Project Management Maturity Models—A Critical Review : A Case Study within Swedish Engineering and Construction Organizations. *Procedia - Social and Behavioral Sciences*, 119, 837–846.

Sundqvist, E., Backlund, F., (2014). Continuous improvement in project-based organizations? A management perspective. Presented as the 17th QMOD Conference in Prague, Czech Republic, September 3–5, 2014.

Sundqvist, E. & Chronéer, D. (2015). Exploring the Complexity Surrounding Barriers to Learning. Presented at the 23rd Nordic Academy of Management Conference in Copenhagen, Denmark, August 12–14, 2015.

1. Introduction

1.1 Improvement Work in Project-Based Organizations

“Projectification” of the world

The popularity of using projects to organize work continues to increase, and projects have become important strategic and operative management mechanisms for firms (Söderlund, 2005). The adoption of projects has even led to the “projectification” of organizations (Midler, 1995). Organizations that adopt projects as the tool for carrying out most of their operations can be referred to as project-based organizations (PBOs) (Pemsel & Müller, 2012). These PBOs can take different forms, thus this thesis focuses on PBOs as a distinctive and permanent organizations that incorporate multiple projects (e.g. a project department or R&D), as opposed to temporary project alliances with multiple partners or project-specific legal entities that only exist for the lifecycle of a specific project (such as the Olympics) (Miterev, Manchini, & Turner, 2017). The permanent nature of this type of PBO increases the potential to improve work, as projects are carried out on an ongoing basis, both in parallel and sequentially.

Challenges associated with performance in PBOs

Organizations’ capability to manage projects—the specific knowledge and experience required to plan and execute projects (Davies & Brady, 2000)—has been extensively studied. Improving project management (PM) performance is considered to be central for the survival of PBOs, since it is considered both a strategic competence and a source of competitive advantages for delivering customer¹ value (Killen, Jugdev, Drouin, & Petit, 2012; Kwak, Sadatsafavi, Walewski, & Williams, 2015; Mullaly, 2006; Shenhar, Dvir, Levy, & Maltz, 2001; Yazici, 2009). The ability to tailor operations to specific project tasks is described as one of the primary strengths of a PBO, yet findings show that to the contrary, PBOs tend to replicate PM practices across projects (Bakker, 2010; Hobday, 2000; Miterev, Engwall, & Jerbrandt, 2017). This could be seen as a prioritization of the efficient management of projects, at the

¹ Customer refers to the individual or department commissioning the project, i.e. project sponsor or owner.

expense of strengthening the competitiveness—delivering customer value (Keegan & Turner, 2002). Through fieldwork observations, Brady and Maylor (2010) found that PBOs tend to counteract or ignore improvement efforts as a way of dealing with the inherent uncertainty of projects, even when faced with the reality of poor performance. They termed this the *improvement paradox*. PBO members were found to maintain stability in how they managed projects in order to confine uncertainty to the project itself. These findings indicate that PBOs struggle to improve their collective PM performance, despite their acknowledgment of its importance.

Generally, PBOs operate on two levels: (1) the project level, including project management, control, and learning within projects; and (2) the organizational level, focusing on senior management, strategy, and cross-project coordination and learning (Hobday, 2000). Although they are considered strong in coping with project-specific aspects, PBOs have proven to be weaker on aspects commonly found in more functional organizations, such as performing routine tasks, achieving economies of scale, cross-project coordination, and promoting organization-wide learning (Hobday, 2000). Patanakul and Shenhar (2012) argue that organizations, in general, fail to manage projects effectively and to meet organizational objectives due to an insufficient accounting of project strategy: i.e. aligning projects with company strategy to achieve business results. Scarbrough, Swan, Laurent, Bresnen, Edelman, and Newell (2004), in turn, show that learning boundaries constrain the ability to exploit project-level benefits at the organization level of learning in order to strengthen the collective PM competence. However, project-level challenges also exist; the general success rate of projects in terms of delivery according to time, budget, or features and functions continues to be considered as low, with limited signs of improvement over time (Fernandes, Ward, & Araújo 2014; Brady & Maylor, 2010).

A dominating short-term focus

A reoccurring concern in PM research, and a common explanation for the challenges associated with performance, is the narrow focus on the single project in PM theory, education, and practice (Engwall, 2003; Karrbom Gustavsson & Hallin, 2015). This single-project focus is associated with a strong operative focus on meeting budget and

scheduling goals (Patanakul & Shenhar, 2012; Shenhar et al., 2001), as part of the “triple constraint,” or the “iron triangle,” of PM (time/cost/scope) (Jugdev & Müller, 2005; Karrbom Gustavsson & Hallin, 2015). The triple constraint is often used to evaluate project success, even though it has been shown to provide only a short-term perspective focused on project delivery and product creation (Jugdev & Müller, 2005; Shenhar & Dvir, 2007; Winter et al., 2006).

In order to move beyond this short-term focus and to grasp the more long-term implications of projects, e.g. their strategic contribution and business success, a shift in focus from product creation to value creation within PM has been suggested (Geraldi & Söderlund, 2016; Winter et al., 2006). The shift entails focusing more on the value and benefits achieved (outcome), than on e.g. the physical product (output). For example, it is not the train being produced that is important; it is the ease of transportation from A to B (the service). Value has been defined as the ratio between benefits and costs (or satisfaction of needs/use of resources); it is a highly subjective and relative concept that depends on both the situation and the parties involved (Laursen & Svejvig, 2016). Created value has further been described as dependent on “the relative amount of value that is subjectively realized by a target user (or buyer) who is the focus of value creation—whether individual, organization, or society” (Lepak, Smith, & Taylor, 2017, p. 182). Through analysis of 111 publications on value creation, Laursen and Svejvig (2016) discuss the current state and knowledge regarding project value creation and link project success to the value created. They differentiate between the evaluation of outputs and of outcomes, where project output is judged using the triple constraint, while the evaluation of project outcome is more scattered. The scattered evaluation of project outcome is argued to be a sign that value creation is not fully understood, and still developing.

What to improve?—Linking performance, success, and value

According to Merriam-Webster’s online dictionary (2018), the definition of *improvement* is “the act or process of improving,” i.e. to make something better. For the purpose of this thesis, improvement work could be described as the PBOs efforts to improve their performance in order to stay competitive and to ensure the creation of customer value. According to Bryde (2003), “performance” in project studies

includes both PM performance and project performance. At its most basic level, performance consequently includes both how the results are being delivered and what is being delivered. Bryde (2003) describes this using *quality*, as defined by the customer (and other stakeholders), where the perceived quality is based on (1) the quality of the management process (i.e. PM performance) and (2) the quality of the end product produced through the project (i.e. project performance).

Related to performance is the term *success*. In the PM literature, performance and success are considered distinct yet interrelated concepts (Mir & Pinnington, 2014), where *performance* is action-related and *success* refers to the assessment or evaluation of results. The components of project success have been described in a way that is similar to performance, dividing project success into (1) PM success, meaning meeting the triple constraint, and (2) product success, referring to the project outcome (Baccarini, 1999). In its simplest form, both performance and project success are concerned with *what* should be delivered and *why* it is important (i.e. project performance and product success), as well as *how* it should be delivered (i.e. PM performance and PM success). Patanakul and Shenhar (2012) describe this as *effectiveness*—the ability to make the right choices by defining the outcome in the best way, and *efficiency*—the ability to execute these choices in the right way. In other words, efficiency concerns the production of output, while effectiveness concerns outcome—when the results accomplish their purposes (Zidane & Olsson, 2017).

Previous research shows that PBOs need to perform in terms of both short-term project delivery (i.e. efficiency) and long-term project success (i.e. effectiveness) in order to create value. Research also shows that there is a need to move beyond the focus on time and budget to improve and create value, but research findings of generally poor project performance and challenges to improve over time indicate that PBOs struggle to do so (Fernandes et al., 2014; Brady & Maylor, 2010). The need for influence from other research fields has been identified as important in order to advance the field of PM (Söderlund, 2011); this thesis addresses that call by approaching improvement work in PBOs from a quality management (QM) perspective.

An approach to improvement work in PBOs

The adoption of management approaches developed in routine environments (e.g. Operations Management) and their application to the seemingly non-routine environment of PBOs has been discussed by scholars such as Maylor, Turner, and Murray-Webster (2015) and Brady and Davies (2004). Brady and Davies (2004) argue that project-based activities are often equated with non-routine behavior, but that in reality firms undertake similar categories of projects that involve repeatable and predictable patterns of activities. In other words, similar projects are managed in more or less the same way. Bakker (2010) further concludes that when the same actors repeat similar projects, they know what to do, which consequently builds project capabilities. These project capabilities are developed and applied continuously in customer interaction, project offers, and throughout the project lifecycle of implementation, handover, and support (Brady & Davies, 2004; Davies & Brady, 2000). Although project capabilities are not a central part of this thesis, they are a key aspect for improvement work in PBOs, as they demonstrate the repetitive aspects of PM. For the PBO, where projects are the main form of production, improving the ability to deliver projects competitively becomes interesting and important as a way to build competitive advantage, reduce costs, and meet or exceed customer expectations.

Further, Maylor et al. (2015) argue that the application of management approaches from repetitive operations environments is both feasible and fruitful for PBOs striving to improve. Brady and Maylor's (2010) improvement paradox suggests that small, incremental changes are more favorable than radical changes as PBOs work toward improvement, in order to avoid disrupting the stability of PM processes. PM research has also called for a more holistic, systematic, and strategic approach to projects and PM (e.g. Görög, 2016; Lenfle & Loch, 2010; Parker, Parsons, & Isharyanto, 2015; Pollack & Adler, 2015). Continuous Improvement (CI) is one QM concept under this aegis that research has championed as more holistic, systematic, and strategic compared to improvement work in general (e.g. Bhuiyan & Baghel, 2005; Fryer, Ogden, & Anthony, 2013). CI can be defined as "an organisation-wide process of focused and sustained incremental innovation" (Bessant & Caffyn, 1997) where all members work together to improve overall performance for the customer (Fryer et al.,

2013). The CI concept has been a significant concept for practitioners and researchers for more than three decades and is considered a vital element in achieving business excellence (Sanchez & Blanco, 2014). In PM maturity models, CI is described as the highest level of PM maturity (Demir & Kocabaş, 2010; Kwak, Sadatsafavi, Walewski, & Williams, 2015), indicating that CI is considered desirable for organizations working with PM, such as PBOs. Because CI has been described as “best practice” when working with projects, it is a suitable lens for studying systematic improvement work in PBOs.

1.2 Purpose

The narrow focus on the triple constraint bears resemblance to the definition of quality as “conformance to specifications,” associated with quality inspection during the early years of mass production (first half of the twentieth century) (Reeves & Bednar, 1994; Weckenmann, Akkasoglu, & Werner, 2015). Reeves and Bednar (1994) describe conformance to specifications as an inward-focusing approach to quality leading to increased efficiency but lacking a clear customer focus, which potentially reduces the ability to adapt. In comparison, a value-based definition of quality—although multifaceted and difficult to measure—focuses on both internal efficiency and external effectiveness (Reeves & Bednar, 1994). Following the value-based definition of quality, the suggested need for project studies to shift their focus towards value creation (Gerald & Söderlund, 2016; Winter et al., 2006) would then imply the need to focus on and understand both the efficiency and effectiveness of projects in order to support organizational improvement in PBOs (Zidane & Olsson, 2017). Thus, the purpose of this thesis is:

To advance our understanding of how project-based organizations can work systematically toward improvements (i.e. from an efficiency and effectiveness perspective).

Research Questions (RQs)

To provide guidance to this purpose four research questions have been formulated targeting specific research gaps related to organizational-level improvement work in PBOs.

The first question is designed to further our understanding regarding the challenges experienced by PBOs working toward improvements.

RQ 1: *What are the challenges of working toward improvements in a project-based organization?*

Because the PM literature predominantly discusses efficiency and effectiveness on a theoretical and conceptual level, and because PM practice is described as predominantly focused on efficiency, the second question is designed to provide insight into PBO operations from the perspective of these two concepts.

RQ 2: *How can PBO operations be understood from the perspective of efficiency and effectiveness?*

Because PBOs operate on two distinct levels—the project level and the organizational level (Hobday, 2000)—it is of interest to understand how they are linked. As it is the project managers who work with the PM process on a daily basis, it is of interest to understand how experiences and lessons learned from the project level can be used in organizational-level improvement work. Hence, the third research question is designed to contribute to our understanding of the project manager’s role in terms of participating in improvement work.

RQ 3: *How can the role of the project manager be developed to support organizational-level improvement work in PBOs?*

Finally, as a focus on value creation is suggested as a way to move beyond the short-term focus and to grasp the more long-term implications of projects, such as strategic contribution and business success (Geraldi & Söderlund, 2016; Winter et al., 2006), the final question is designed to provide insight from practice regarding the application of a value perspective.

RQ 4: *How can a focus on value creation be introduced in a PBO?*

2. Theoretical Framework

This chapter describes the theoretical framework that has been applied when studying the case-study PBO. The framework has been applied both as a filter through which the PBO was studied and as a baseline or “litmus test” to understand what was observed and experienced. The starting point has always been grounded in the quality management approach of effortlessly pursuing improvements in every aspect of the company, herein exemplified through the concept of Continuous Improvement (CI). Figure 1 illustrates the theoretical framework, relating the components from Quality Management that have been used as a representation of systematic improvement work (left). The concept of CI, based on a process-based view and learning, represents systematic improvement work, and efficiency and effectiveness represent the focus of improvement initiatives. These components were then applied to understand systematic improvement work in the PM literature, both specifically related to PBOs (right) and in the wider field of project studies (Geraldi & Söderlund, 2018).

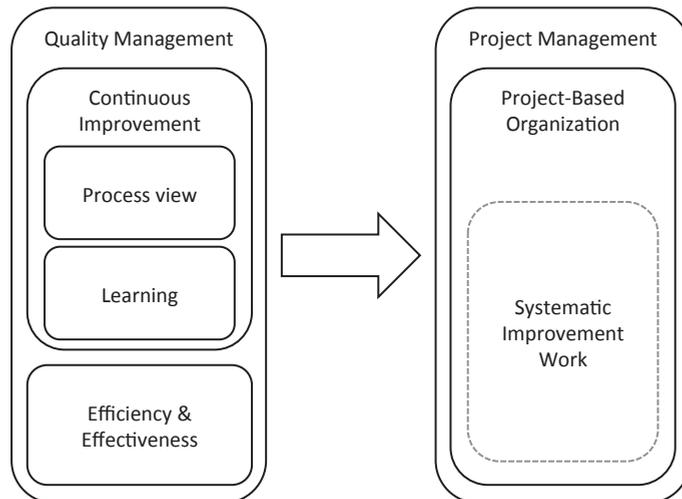


Figure 1: A theoretical framework, topics, and concepts from the field of Quality Management are used as a way to contribute to our understanding of systematic improvement work in project-based organizations. Continuous Improvement, based on a process-based view and learning, together with the concepts of efficiency and effectiveness, make up the core of the Quality Management approach taken here.

2.1 Project-Based Organizations

From the perspective of the practitioner, Project Management (PM) is ‘the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements’ (PMI, 2008, p 6). From a research perspective, PM focuses on research related to projects and temporary organizations (Geraldi & Söderlund, 2016), including both the project itself and the organizations that manage projects. Organizations that use projects as their primary unit for production, organization, innovation, and competition are referred to as project-based organizations (PBOs) (Hobday, 2000). PBOs exist both as temporary legal entities with a specific project outcome and as permanent structures incorporating numerous projects (Miterev et al., 2017). For the purposes of this thesis, including the appended papers, PBO refers to the latter: the permanent structure in which multiple projects are managed.

Pemsel and Müller (2012, p. 866) provide a suitable definition of what constitutes PBOs and their operations, defining PBOs as “organisations in which the majority of products or services are produced through projects for either internal or external customers.” They also emphasize that PBOs may be standalone organizations or subsidiaries of larger corporations. While standalone PBOs primarily serve external customers, subsidiary PBOs often operate within a larger corporation, focusing on managing and delivering projects to other departments and acting in a support role. It has been shown that in general, standalone PBOs serve external customers through a contractual relationship while subsidiary PBOs serve internal customers without a contractual relationship (Hobbs & Besner, 2016). Hobbs and Besner (2016) show that the lack of a contract between the PBO and the customer can have a considerable effect on project performance, as projects with internal customers are generally less well defined. This thesis focuses on subsidiary PBOs serving internal customers (such as other departments or divisions), which means that both the PBO and the customer belong to the same parent company and are consequently guided by the same overarching strategy. Because the subsidiary PBO operates under limited or no competition, the goal in every project is ultimately to provide value to the parent company (owner) (Patanakul and Shenhar, 2012). In addition, PBOs operate on two distinct levels: the project level and the organizational level (Hobday, 2000). For PBOs, PM capability—the ability to plan and deliver projects—becomes important,

as it is the PBO's main way of competing. Consequently, strengthening and improving the PM capability of the entire PBO is important when it comes to building competitive advantage.

Projects and how to manage them are at the center of operations in PBOs. Although examples of projects exist throughout history—the pyramids of ancient Egypt, for example (Söderlund, 2005), the study of projects in terms of PM has seen a surge in interest during the 2000s (Padalkar & Gopinath, 2016). Projects can also be found in any and all contexts, such as construction, engineering, entertainment, sports, and so on. As the PM field has been and still is largely driven by practitioners (Cimil, Williams, Thomas, & Hodgson, 2006), with a strong focus on project success and failure (Jugdev & Müller, 2005), much of the field's attention has been aimed at understanding how to best manage and deliver projects. Through quantitative data analysis, Pollack and Adler (2015) show that PM research has developed from its traditional technical focus to an emphasis on the interpersonal aspects of PM, as well as PM as part of the broader organizational context. While some researchers strive to unify the field of PM studies, others argue that focusing too much on theoretical unification risks losing important linkages to related fields, such as management and organization studies (Söderlund, 2011).

The setting and context of this study—a subsidiary PBO providing PM services to its parent company—is illustrated in Figure 2. The PBO operates as a support unit within the company, providing PM services to deliver project outputs that meet various client needs.

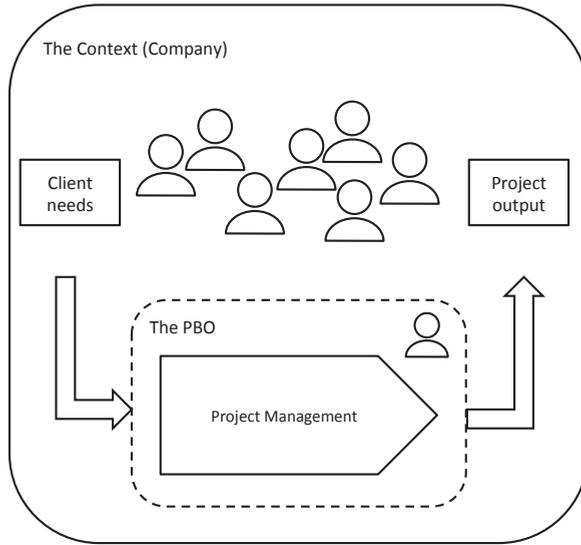


Figure 2: Basic illustration of a PBO providing internal clients with PM competence to produce the best possible project output.

2.2 Quality Management, working toward improvements

Reeves and Bednar (1994) provide a comprehensive discussion of the term ‘quality’ throughout history, starting with ancient Greece and ending in the 1990s. The general conclusion from their study is that there is no, nor should (or could) there be, one single definition, since quality has become a multi-faceted concept. The identified definitions include the dimensions of excellence, value, conformance to specifications, and meeting and/or exceeding expectations. They further illustrate the complexity of quality in relation to the variables of price, market share, and cost, as well as how quality is perceived in relation to organizational output, time, and multiple constituencies. Depending on for example the dimension, the context, and the variables from which quality is discussed the construct will change, and how individuals interpret *quality* might differ.

One could say that the multifaceted construct of quality makes up the core of the quality management (QM) philosophy (Sousa & Voss, 2002) and the QM research field (Klefsjö, Bergquist, & Garvare, 2008). Sousa and Voss (2008) describe QM as a distinguishable strategy aimed at organizational improvement, with the immediate output being product quality. Similarly, Klefsjö et al. (2008, p. 120) describe the core

purpose of QM as the “management of quality to provide customer satisfaction.” With its roots in the manufacturing industry (the accredited originators are e.g. Deming, Juran, and Ishikawa) the development of QM has been largely practitioner-driven but has developed towards a mature field of study (Sousa & Voss, 2002). With the growing popularity of QM, application of its core ideas and values has spread to other industries and business areas that include the production of both goods and services. The key principles of QM can be understood as *having a customer focus*, *making continuous improvements*, and *working collectively* (cooperation and teamwork) (Eriksson et al., 2016; Giroux, 2006).

For the purpose of this study the primary focus has been to study and understand continuous improvements in the context of a project-based organization. However, because aspects of customer focus and the collective are difficult to separate from continuous improvement, they too are present in the study. For an account of how they are connected, please refer to section 2.3, “Continuous Improvement.”

2.2.1 Project Management & Quality Management

One way that the PM field has approached structuring and improving PM is through the adoption of QM principles, e.g. by creating standards such as the Project Management Body of Knowledge (‘PMBOK’, PMI, 2008), by adopting capability models (Kwak et al., 2015), and by developing Lean PM (Pons, 2008). As a whole, the process approach to production and organizing commonly found in QM has also been adopted within PM. One of the most common examples of a process approach in PM is the numerous, but often similar, PM models in existence, roughly consisting of the stages (1) Initiating, (2) Planning, (3) Executing, (4), Controlling (monitor & control), and (5) Closing (where 2, 3, and 4 are described as a loop) (e.g. PMI, 2008).

One of the more central and commonly discussed topics within the PM field is the strong focus on what is commonly called the *triple constraint* or *the iron triangle* of PM. The triple constraint refers to the project variables of time, cost, and scope (this last concept referring to features, functions, and quality, as well as the work required, as defined for the project). The triple constraint is often used as the basis for evaluating project performance, although it only constitutes a short-term perspective focused on project delivery (Jugdev & Müller, 2005; Shenhar & Dvir, 2007). The

success of a project, i.e. the outcome of the project, cannot be fully understood at project delivery, as it is subject to change over time (Jugdev & Müller, 2005; Shenhar et al., 2001). Project success is not only time-dependent but also context-dependent and is not entirely within the control of the project manager (and the team). Senior management's and project sponsors' provision of support and governance is important to achieving project success, since they have the authority to align the project and its organizational context (Crawford et al., 2008).

Turner (2018) argues that in order to achieve project success one should focus on stakeholder satisfaction, and that time, cost, and scope constraints will be met as a consequence. It is thus suggested that project success should be judged based primarily on customer satisfaction and only secondarily according to the triple constraint (Shenhar et al., 1997). Winter et al. (2006) provide another interesting perspective on the topic, stating that the triple constraint is limited to a narrow focus on product creation and calling for a broader concept of value creation. A recent literature review regarding the evolution of understandings of project success show that this concept includes both PM success—meeting the triple constraint—and product success—achievement of company goals and project purpose, customer satisfaction, and product value creation (Albert, Balve, & Spang, 2017). Nevertheless, project success continues to be judged primarily based on cost, time, and scope (Fernandes et al., 2014).

Popular PM handbooks and training teach that value-related aspects such as project outcome, effect, and strategic alignment are the responsibility of the project owner (customer) (Karrbom Gustavsson & Hallin, 2015; Lock, 2012; Tonnquist, 2008). However, both research and empirical evidence indicates that not all situations are managed through a traditional contractual relationship between the project manager and customer (Hobbs & Besner, 2016). As Hobbs and Besner (2016) show, it is common for projects with internal clients to be managed without a contractual agreement, resulting in poorer project definition that ultimately affects PM performance. This is especially interesting in subsidiary PBOs serving internal customers, since the PBO and the customers ultimately belong to the same parent organization.

2.3 Continuous Improvement

Continuous Improvement (CI) can be seen as a quality management philosophy or concept. The core idea of CI is to create a culture of ongoing improvement that includes everyone in the organization (Bhuiyan & Baghel, 2005) and builds on the idea that the whole is greater than the sum of its parts. The accumulation of individual, primarily incremental, improvements amounts to more significant results overall (McLean, Antony, & Dahlgaard, 2017). CI commonly focuses on seeking increased productivity and competitiveness (Jørgensen et al., 2003). CI can also be considered a dynamic capability that builds and maintains competitive advantage (Anand, Ward, Tatikonda, & Schilling, 2009; Bessant & Caffyn, 1997; Bessant & Francis, 1999).

The evolution of continuous improvement (CI) has been accredited to Imai (1986) and the Japanese term *Kaizen* (Sanchez & Blanco, 2014), but examples of formal CI programs can be found at least from the mid–nineteenth century (Bessant et al., 1994), and it is considered a philosophy (Bhuiyan & Baghel, 2005) or concept (Lilja, Hansen, Fredrikson, & Richardsson, 2017; Ni & Sun, 2009). CI can be defined as “an organization-wide process of focused and sustained incremental innovation” (Bessant et al., 1994, p. 18). Bhuiyan and Baghel (2005, p. 761) provide a more production-oriented definition of CI as: “... a culture of sustained improvement targeting the elimination of waste in all systems and processes of an organization.” This includes both incremental and radical change, and they state that major improvements often take place over time as a result of numerous incremental improvements. This thesis applies the broader description of CI as an iterative step-by-step process of moving from a current condition towards a target condition (Lilja et al., 2017; Rother, 2010), since it does not limit CI to a concept solely focused on exploitation and the elimination of waste.

Summarizing these definitions, in practice CI takes place when all members of the organization contribute to improving performance by continuously implementing small changes in their work processes (Jørgensen et al., 2003). CI has mainly been applied and explored in repetitive task environments, such as manufacturing and production settings (see e.g. Bessant et al., 1994; Jørgensen et al., 2003; Meiling et al.,

2012; Savolainen, 1999), where the attraction of applying CI is its low entry barriers and its potential to utilize the creativity of all members of an organization (Bessant et al., 1994).

The iterative approach of CI can be illustrated using the Plan-Do-Study-Act (PDSA) cycle (cf. Deming, 1986; Bessant et al., 1994; Starkey, Brewin and Owen, 1996), which includes both the structure and continuity of CI (see Figure 3). The PDSA cycle is also referred to as the PDCA cycle, where *check* replaces *study*, although as Moen and Norman (2010) note, Deming did not see them as interchangeable. According to Moen and Norman (2010), Deming considered the PDCA cycle to be a lower-level cycle for problem-solving, while the PDSA cycle was a higher-level management concept. Deming replaced *check* with *study* in order to emphasize the importance of learning as part of the evaluation of changes made.

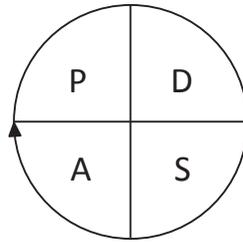


Figure 3: The Plan-Do-Study-Act cycle.

According to Lilja et al. (2017) the “Toyota Kata,” as described by Mike Rother (2010) in the book *Toyota Kata*, represents current QM best practice for working with CI. By focusing on the managerial routines behind Toyota’s success with CI, Rother (2010) identified two approaches, one being the improvement approach (*improvement kata*), based on rapid iterative steps towards the desired state, and the other being the coaching approach (*coaching kata*). This coaching approach focuses on teaching the improvement kata through a master-apprentice relationship in order to achieve sustained CI (Lilja et al., 2017; Rother, 2010). What Rother (2010) describes, and Lilja et al. (2017) emphasize, is the approach of continuously revising the journey towards a target condition one step at a time, in which each step involves learning and potentially affects the current situation. By acknowledging the potential effect that each change may have on the current state of operations, Rother (2010) discards the

use of long action-item lists for improvements that are commonly used. Rother (2010) describes that action-item lists tend to contain all identified improvement opportunities, rather than identifying the first and most relevant to be addressed in order to move towards the target condition. In other words, he argues for the need to differentiate between what *can* be done and what *needs* to be done.

2.3.1 Working with CI

Research has been conducted to understand the generic levels of CI capability that organizations working with CI can achieve. Bessant et al. (2001) describe CI practice and performance as an evolution from level 0, where no CI activity takes place (random problem solving) to level 5, “the learning organization,” where learning is automatically captured and shared. This shows that CI is not an either/or phenomenon but something that evolves and requires effort in order to be achieved. There are a number of key criteria (Table 1) (Kaye & Anderson, 1999) and behaviors (Table 2) (Caffyn, 1999) described that increase the likelihood of achieving CI.

Table 1: Ten criteria for working according to Continuous Improvement (Kaye & Anderson, 1999).

Kaye and Anderson's (1999) ten criteria for CI			
1	Senior management commitment and involvement	6	Focusing on people
2	Leadership and active commitment to CI demonstrated by all managers at all levels	7	Focusing on critical processes
3	Focusing on the needs of the customer	8	Standardizing achievements in a documented quality management system
4	Integrating CI activities into the strategic goals across the whole organization, across boundaries, and at all levels	9	Establishing measurement and feedback systems
5	Establishing a culture of CI and encouraging high-involvement innovation	10	Learning from CI results, and automatic capturing and sharing of learning

Table 2: Ten behaviors describing work according to Continuous Improvement (Caffyn, 1999).

Caffyn's (1999) ten CI behaviors	
1	Employees demonstrate awareness and understanding of the organization's aims and objectives.
2	Individuals and groups use the organization's strategic goals and objectives to focus and prioritize their improvement activities.
3	Individuals and groups use the organization's strategic goals and objectives to focus and prioritize their improvement activities.
4	Ongoing assessment ensures that the organization's structure, systems, and procedures, as well as the approach and mechanisms used to develop CI, consistently
5	Managers at all levels display active commitment to, and leadership of, CI.
6	Throughout the organization, people engage proactively in incremental improvement.
7	There is effective work across internal and external boundaries at all levels.
8	People learn from their own and others' experiences, both positive and negative.
9	The learning of individuals and groups is captured and deployed.
10	People are guided by a shared set of cultural values underpinning CI as they go about their everyday work.

Although each source is different, there are several common attributes here. For one thing, both lists stress the importance of management's commitment and involvement, pointing out that CI is not to be delegated but instead has to be embodied. Responsibility is, however, not solely placed on managers, since the involvement and engagement of all individuals and groups are also emphasized. Both lists also emphasize the need to strive for CI on all levels and across boundaries throughout the whole organization, as well as integrating CI with the strategic goals. 'All levels' refer to the organizational levels of individual, group, and management, which all have to be managed in order to obtain companywide CI (Bhuiyan & Baghel, 2005). Furthermore, Kaye and Anderson (1999) emphasize focusing on people, processes, and customer needs. Caffyn (1999) similarly refers to *customer focus*, *process improvement*, *total involvement*, and *CI* as critical elements central to all quality programs. Finally, the element of learning is emphasized, indicating that both individuals and the organization need to foster, capture, and disseminate learning from both positive and negative experiences. Julian (2008) stresses the importance of learning and CI in a PM context as a means to avoid repeating the same mistakes and reinventing the wheel from one project to the next.

Researchers have not only described what constitutes CI behavior but also identified a number of barriers to implementation. For example, Singh and Singh (2015) identify 35 barriers to successfully achieving CI. Their list includes poor planning, lack of

management commitment, short-term focus, insufficient customer focus, and having an incompatible organizational structure. They also point out that despite numerous examples of successful achievement of CI throughout history, the literature also reveals several attempts that fell apart within a few years (focusing on Europe and the United States during the 1980s and 1990s). To avoid this sort of stagnation, they suggest the use of self-assessment. A reoccurring source of failure in CI initiatives is when organizations try to implement a ready-made package instead of following the recommended approach of aligning and adapting the organization and CI to each other (Jurburg, Viles, Jaca, & Tanco, 2015; Savolainen, 1999; Singh & Singh, 2015).

Although seemingly simple in nature, implementing a CI process is not an easy task (Jurburg et al., 2015). By studying ten companies defined as top performing based on quality and business excellence, Jurburg et al. (2015) identified a number of gaps keeping the organizations from reaching level 5 CI. These gaps include not having a person in charge of CI (a process owner) and having poor measurement system (insufficient basis for understanding the CI process and progress). Insufficient measurement results in an inadequate basis for making decisions, and thus also affects management's decision-making process.

In a literature review, McLean et al. (2017) identified eight themes in the various causes for failed CI implementation: motives & expectations, culture & environment, management leadership, implementation approach, training, project management, employee involvement levels, and feedback & results. Their literature review also identified indications of differences in impact among the themes (not verified), with culture & environment and motives & expectations being the most critical themes to address when implementing CI.

Further, CI is commonly associated with minimizing risk and variability, but Lilja et al. (2017) argue that since modern CI focuses on learning, the concept is broader than a zero-defects approach and is aligning with the innovation management field. Steiber and Alänge (2013) also highlight the similarities between CI and innovation by emphasizing that both quality and innovation approaches share "soft" aspects such as employee empowerment, strong culture, and a holistic approach. One of the drivers of

this change is argued to be the increasingly complex and dynamic nature of systems to be managed in organizations (Lilja et al., 2017). Complex and dynamic systems also happen to be one of the more common ways to describe projects.

2.3.2 CI in PM

From a project management perspective, CI is primarily found as a suggested best practice in project management maturity models (PM3s), which describe the highest level of PM maturity as working with continuous improvement and learning (Demir & Kocabaş, 2010; Kwak et al., 2015). CI is further included in the PMBOK® Guide as a suitable component of PM work (PMI, 2008, pp. 190-191). There seems to be no specific or established line of research concerning CI within the PM research literature, although work does seem to exist, focusing on both the concept of CI in general and more specifically on the PDSA cycle. Based on a survey study (n = 37) Gieske and ten Broeke (2000) argue that organizations in the construction industry are not oriented towards CI and learning, as they focus on project completion, i.e. the project level. And using interviews (n=20), Julian (2008) shows that project management office leaders facilitate learning and CI on both a project and organizational level. Julian (2008) also argues that this facilitation can be developed by enhancing the social capital of these leaders, together with enabling reflective practice during the course of a project. Saier (2017) has further attempted to develop the PDSA cycle for Lean PM after failing to find any studies concerning the inclusion of the PDSA cycle in Lean PM. Saier (2017) emphasizes the need to apply a PDSA approach at not just the project level but also the organizational level (for example, through standards) in order to achieve improvement from one project to the next. Finally, Mullaly (2006) discusses the criticism of PM3s, pointing out that PM3s tend to presume that PM is universal, control oriented, and consistent, and that maturity is linear—something the empirical findings contradict. Assessment, and consequently the improvement approach, should instead be contingent and contextual, in order to adhere to the variation in PM found in practice. From a CI perspective, this criticism is not new, as discussed in section 2.3.1. This highlights the need to align both CI and the organization to each other, rather than to apply the concept in a one size fits all fashion (Jurburg et al., 2015; Savolainen, 1999; Singh & Singh, 2015). This thesis employs the PDSA cycle to represent CI and learning (Figure 3).

2.4 Process View

At the center of CI is the process, since it is an organization's processes that should be improved (e.g. Bhuiyan & Baghel, 2005; Caffyn, 1999; Kaye & Anderson, 1999). Some have described the rise of the process-oriented view as an answer to many of the perceived problems that functional and product-oriented structured organizations face (Garvin, 1998). Kiraka and Manning (2005) argue that adopting a process-based perspective allows for a holistic, multidimensional view of the organization. A process describes how value is being created within organizations (Hellström & Eriksson, 2008) and can be defined on a general level as a collection of tasks and activities that together—and only together—transforms inputs into outputs (Garvin, 1998). There are several definitions of *process*, most of them quite similar (Palmberg, 2009). However, a process has to have (1) predictable and definable inputs, (2) a linear, logical sequence or flow, (3) a set of clearly definable tasks or activities, and (4) a predictable and desired outcome or result (Zairi, 1997). Palmberg (2009) recognizes six components that can be found in most definitions, namely: (1) input and output, (2) interrelated activities, (3) a horizontal and cross-functional view, (4) purpose or value for customer, (5) the use of resources, and (6) repeatability. There are different kind of processes based on the overall purpose (strategic management, operational delivery, supportive administrative) and level of hierarchy (process, sub-process, activity, task) (Palmberg, 2009). The most prominent difference between functional organizations and process-based organizations is that the former tend to work vertically (within functions) while the latter work more horizontally (between functions) (e.g. Kohlbacher, 2010).

2.4.1 Process View in PM

In a PM context, it is common for project managers to rely on process models to plan and coordinate work (Browning, 2010) and the project is considered to be a value-creating process (Geraldi & Söderlund, 2016; Winter et al., 2006). While business and manufacturing processes strive to do the same thing repeatedly, the project process often seeks to do something new and to do it only once (Browning, 2010). The PMBOK Guide® describes a PM process as applying tools and techniques to transform input into output through five basic PM processes: (1) initiating, (2) planning, (3) executing, (4) controlling, and (5) closing, where 2-4 are repeated in a cyclical pattern (PMI, 2008). Further, it is generally not the project that is unique but

rather the output of a project (i.e. the product). Given the nature of the project, PM is considered to contain repeatable activities that concern knowledge and instruction on how to set up and execute similar projects, which are called project capabilities (Brady & Davies, 2004).

With the acknowledgment of PM capabilities, capability models were adopted into PM practice in order to understand and improve the PM capability of an organization. Through adaptation to and implementation in the PM context, several project management maturity models (PM3s) have since been developed. Because PM3s stem from process maturity, they are founded on the notion of repeatable tasks (Görög, 2016; Kwak et al., 2015; Eskerød & Riis, 2009). The use of PM3s as a means to produce value has been criticized. Mullaly (2014) argues that the underlying assumption of uniformity of maturity models (associated with standards, for example) clashes with the degree of flexibility and choice needed to manage differing projects. In order to account for the divergence in PM practice, maturity models—and consequently the process approach—need to consider different types of projects, variation in practice and processes, and the influence of variation in context (Mullaly, 2014). Similarly, Görög (2016) emphasizes the challenge and importance of establishing a project (and program) management process that allows for a certain degree of uniformity in terms of the management process while at the same time supporting flexibility in the use of different tools and methods to complete certain tasks. The challenge with PM processes is thus to define a process containing repeatable elements for management that stills allow for flexibility based on project type, practice, and context.

On a project level, the process description of PM, as represented by PM models, is considered to be limited to the project lifecycle and consequently often excludes the demonstrably critical post-project phase (Eskerød & Riis, 2009). This means that the process only accounts for the “production” of the output (i.e. the project lifecycle) but not the product lifecycle (Jugdev & Müller, 2005) (often ascribed to the project owner), implying a focus on product creation rather than value creation (Winter et al., 2006).

Projects can then be considered to be value-creating processes that produce a unique output. The project process is dependent on the type of project carried out and needs to allow for variation in practice and process, as well as the influence of variation in context (Mullaly, 2014). In a PBO setting, where several projects are carried out simultaneously and consecutively, the PM process needs to be considered not only on the project level but also on the program and organizational levels (e.g. Görög, 2016). At a basic level of illustration, the PM process can be understood as shown in Figure 4, in which the general PM process contains the steps *initiate*, *plan*, *execute*, *control*, and *close* (PMI, 2008), as described above.



Figure 4: Process view of project management, in which an input is transformed into an output with the intent to create value based on the client's needs.

2.5 Learning

Becoming a learning organization has been described as the highest level of CI (Bessant et al., 2001). However, that does not preclude learning at lower levels of CI, since “lessons learned” act as inputs to improvement efforts, as exemplified by the Plan-Do-Check/Study-Act cycle. The learning organization (LO) is commonly associated with Senge’s (2006) work *The Fifth Discipline*. When discussing learning in relation to organizations, there are two approaches to take: organizational learning (OL) and learning organizations (LO). Yeo (2005) describes OL as the process of learning—the question of “how”—while the LO describes the organization itself in terms of characteristics that allow it to learn—the question of “what.” Several definitions of both LOs and OL have evolved over time (see Sun and Scott [2003] for a more comprehensive account). In this thesis the definitions provided by Yeo (2005) are applied. Learning can also be viewed as an ongoing process and not a static state, since “the more you learn, the more acutely aware you become of your ignorance” (Senge, 2006, p. 10).

Learning can be studied on multiple levels in an organization: individual, team, and organizational (Scarbrough et al., 2004; Yeo, 2005). At the individual level, it could

be argued that learning occurs naturally (Senge, 2006). Most of us have learned how to walk, talk, and provide for ourselves. Senge (2006) argues that since individuals not only can learn but also want to learn, so too can organizations (since they are composed of individuals). The challenge is to learn together toward a common goal. Senge (2006) further argues that it is team learning, i.e., the interaction between individuals based on dialog, that is the fundamental unit of learning in modern organizations. Learning can also take place in different ways, commonly called single- and double-loop learning (Argyris & Schön, 1978; Dodgson, 1993; Flores et al., 2012; Sun & Scott, 2003; Örtenblad, 2004), as well as triple-loop learning (Sun & Scott, 2003; Wang & Ahmed, 2003; Yeo, 2005). Sun and Scott (2003) describe single-loop learning as changes to the organization's current norms and assumptions, while double-loop learning questions and changes these norms and assumptions. Örtenblad (2004) refers to Argyris and Schön (1978) when describing single-loop learning as continuously improving current ways of doing things and double-loop learning as questioning this current course of action. Argyris and Schön (1978) also refer to *deutero learning*, which is the ability to become aware of how one learns in a single- or double-loop. Triple-loop learning, in turn, is described as the ability to constantly question existing products, processes, and systems by strategically asking where the organization should stand in the future marketplace (Wang & Ahmed, 2003).

Senge (2006) presents five disciplines that have to be developed and managed simultaneously in order to become a learning organization: personal mastery, mental models, building shared vision, team learning, and systems thinking. Personal mastery is an individual's commitment to learning, while team learning focuses on dialog, particularly on cultivating constructive dialog, since defensiveness can undermine learning. Mental models involve questioning assumptions and generalizations in order to avoid getting stuck in a rut, and allowing one's thinking to be influenced by others. The fourth discipline is building shared vision, which is the ability to rally all individuals to work in a common direction. Systems thinking is described as the discipline that is needed in order to integrate the first four disciplines and create a coherent body of theory and practice. Senge's (2006) description of learning in organizations uses a soft approach to knowledge, compared to a hard approach

regarding knowledge as explicit and transmittable (Yeo, 2005). According to Yeo (2005) the hard approach to learning uses a “capture and disseminate” strategy, where learning is something to be added onto existing practice. The soft approach instead views learning as something integrated into everything individuals do and centers on the interaction between individuals, adopting a more organic approach to organizational learning.

2.5.1 Learning in PM

From a PM perspective, learning has been a popular topic of interest during recent years (Bakker, 2010). More specifically, the ability to learn before a project team is dissolved, from the project level to the organizational level, has been identified as a critical issue for PBOs (Hobday, 2000; Prencipe & Tell, 2001). Although it is identified as a critical issue, PBOs still find it problematic to use knowledge and lessons learned (McClory, Read, & Labib, 2017; Pemsel, Müller, & Söderlund, 2016). Studies have shown that project members dealing with high workloads prioritize activities directly related to project progress and completion; that is, they prioritize acceptable outcomes over optimal (long-term) outcomes (Swan et al., 2010). If a sender/receiver approach (i.e. a “hard” approach) to lessons learned is applied, then organizational learning comes to a halt when project completion is prioritized. Hartmann and Dorée (2015) point this out but argue that making more time for learning activities would not resolve the problem. Swan et al. (2010) draw similar conclusions regarding time constraints but argue that reduced time pressures may still contribute to learning in situations where the project is given priority over the functional departments. Among other researchers, Carrillo, Ruikar, and Fuller (2013) found that project managers and team members feel that “lessons learned” activities—e.g. documentation—add little or no value. Instead, researchers have found that experience accumulation is the most important way to share learning, both between projects and from project to organization (Swan et al., 2010). Hartmann and Dorée (2015) argue that it is the separation of learning from project tasks, as something to be carried out as a separate activity (the “hard” approach) that leads to a neglect of learning. One example of learning as an integrated activity is problem solving, in which organizational rules and norms (written or not) are formed and revised (Koskinen, 2012).

Hartmann and Dorée (2015) also argue that learning between projects is more than “sending messages in bottles,” meaning that a capture and disseminate approach (sender/receiver as they call it), although useful, limits inter-project learning. Instead, learning should be seen as part of a project’s tasks, and they suggest that management should focus on interconnections between projects and link projects through strategic goals, consequently placing each project in its larger context. They also suggest interaction as key, since individuals and documents embody knowledge and it is through interaction that knowledge is enacted (Hartmann & Dorée, 2015; Cacciatori, 2008).

Boundaries to learning have also been identified; for example, Scarbrough et al. (2004) found that learning on a project level might inhibit learning on an organizational level. Swan et al. (2010) argue that organizations only learn from projects through accumulated learning or experience among project groups and individuals. They furthermore show that project-centered organizations (such as PBOs) where PM capabilities are well developed are better suited to accumulate PM experience. Keegan & Turner (2001) identified time pressures, centralization, and deferral as key factors that impede learning in PBOs. They conclude that an emphasis on centralization may signal that learning is not the responsibility of everyone but rather of a few enlightened people, e.g. people (often managers and experts) with authority to implement change. Focusing or placing learning activities at the project completion point—deferral—was found to hamper or even suspend reflection throughout the project.

As previously described, learning (and CI) can be illustrated using the PDSA-cycle depicted in Figure 3.

2.6 Efficiency & Effectiveness

When talking about improvements it is important to determine what constitutes an improvement: that is, when something can be considered to have been enhanced or made better than before. From a QM perspective, the terms *efficiency* and *effectiveness* have been applied in relation to process evaluation and improvement in order to understand how processes work. The most basic definition of the concepts is the popularly used description of efficiency as *doing things right* and effectiveness as *doing the right things*, adopted from Peter F. Drucker (Zidane & Olsson, 2017). A more detailed definition is found in DeToro and McCabe (1997, p. 56) where *efficient* is defined as meeting “internal requirements for cost, margins, asset utilization... and other efficiency measures” and *effective* as “satisfies or exceeds all customer requirements.” The distinction between these concepts supports management in focusing on different parts of the business, since the two concepts highlight both how results are produced and to what extent results are in line with needs and expectations. In other words, the definitions of the concepts highlight the “inward” focus of efficiency (how the process is performing), and the “outward” focus of effectiveness (how the output is meeting the customer’s needs).

2.6.1 Efficiency and Effectiveness in PM

As mentioned above, the concepts of efficiency and effectiveness can be used in order to understand how a process is performing, including its value creation. PM scholars and practitioners often uses the terms *efficiency* and *effectiveness*, but often in a confusing manner and as interchangeable concepts (Zidane & Olsson, 2017). However, one exception is Jugdev and Müller (2005), who applies the definition of “doing things right” (efficiency) and “doing the right things” (effectiveness) to show how the PM literature tends to describe PM as an operational concept (efficiency) rather than as both operational and strategic (effectiveness).

Zidane and Olsson (2017) approach the use of the terms *efficiency* and *effectiveness* (as well as *efficacy*) in PM literature through a literature review that included the *International Journal of Project Management*, *Project Management Journal*, and *International Journal of Managing Projects in Business*. They found that the concepts are dynamic, flexible, and dependent on the perspective from which they are discussed (e.g. users, sponsor, commissioner, or project participants). By relating the

terms to the project process, Zidane and Olsson (2017) describe efficiency as focusing on the production of (project) output based on the triple constraint and effectiveness as being subjective and focusing on stakeholders in a medium to long-term perspective. Of the two, effectiveness is also described as harder to measure, due to its subjective nature and association with the purposes of the project (which is subject to change). It is worth noting that Zidane and Olsson (2017) also address the concept of *efficacy*, which they identify as referring to an inherent potential of the product (output) to lead to an effective outcome. However, this thesis does not include efficacy, since it is used far less frequently compared to efficiency and effectiveness.

Figure 5 is an adaptation of Zidane and Olsson’s (2017) model of efficiency, efficacy, and effectiveness; this adaptation downplays efficacy, since the concept is not part of in this thesis. Zidane and Olsson’s (2017) work illustrates how project effectiveness becomes somewhat tangible primarily after project closeout and handover, and consequently is more difficult to grasp and affect in the middle of the project process.

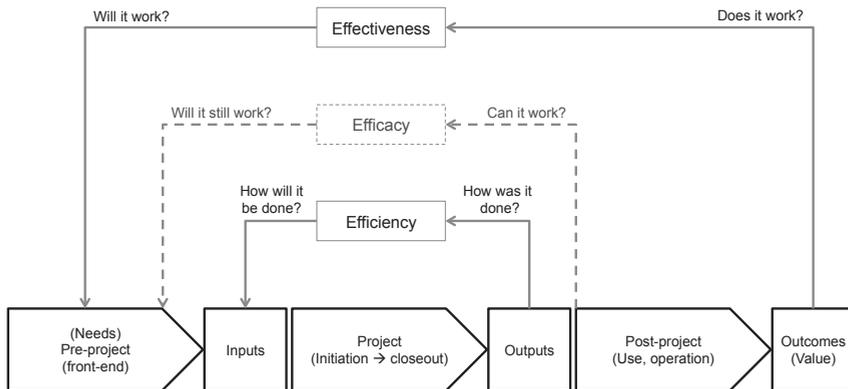


Figure 5: Efficiency, (Efficacy), and Effectiveness in Project Management, illustrated based on a process view of project management (adapted from Zidane & Olsson, 2017).

By combining Figure 1 and Figure 5 and following common descriptions in PM handbooks (e.g. PMI, 2008; Lock, 2012; Tonquist, 2008), efficiency becomes the responsibility of the project manager (PBO internal), while effectiveness is the responsibility of the project owner (client, PBO external). This is illustrated in Figure 6, where the dashed lines represent the separation of responsibility during the process of transforming needs (occur during the pre-project phase) to realized outcomes (time-dependent, as Shenhar et al. (2001) show) between the PBO and the project customer.

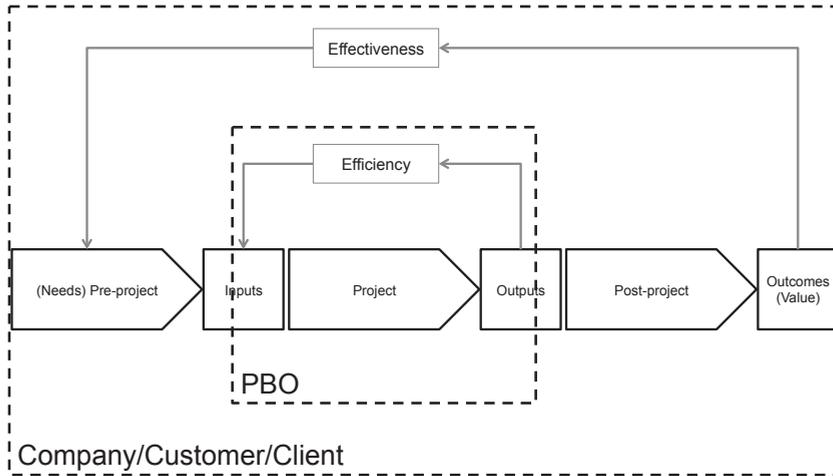


Figure 6: Responsibility for efficiency and effectiveness in subsidiary PBOs. The PBO and project manager are responsible for efficiency (inner dashed square), while the client—a department within the company for example—is responsible for project effectiveness (outer dashed square).

2.7 Summary

To sum up, Continuous Improvement is a concept for improving productivity and competitiveness through incremental and continuous changes to work processes. A process approach allows for the identification of interrelated activities that transform inputs to outputs in order to create customer value. Lessons learned from working with processes can be used as inputs to improvement work. Productivity can be understood using the concept of efficiency (doing things right), while customer value can be understood through the concept of effectiveness (doing the right thing). Figure 7 summarizes the efficiency and effectiveness perspective as applied to subsidiary PBOs. The figure illustrates how company needs should be transformed into company value through the PM process. PBOs can improve their ability to produce efficient results using systematic improvement (such as CI), while company can use systematic improvement to improve their ability to produce effective results.

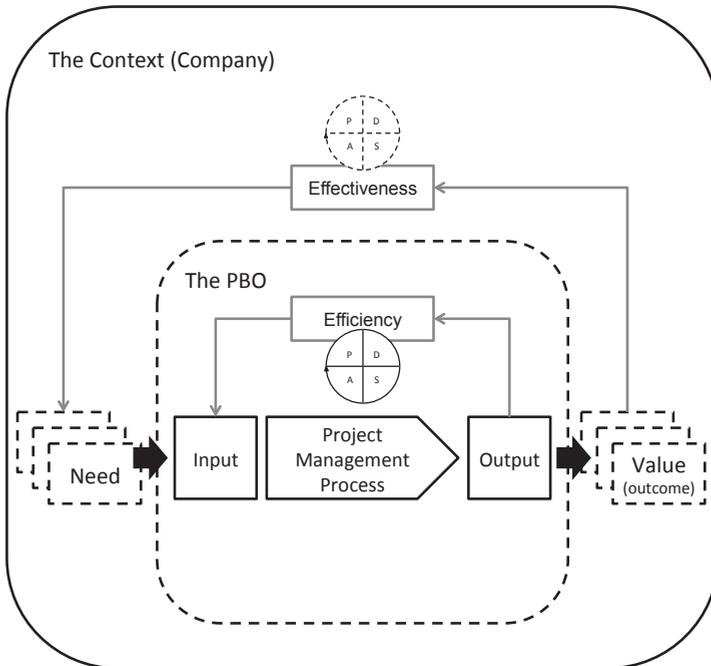


Figure 7: A summary illustration of the application of a systematic improvement approach applied to a subsidiary project-based organization, based on continuous improvement and the concepts of efficiency and effectiveness. Efficiency is described as the responsibility of the PBO, while effectiveness is described as the responsibility of the client (parent company member).

3. Methodology

This chapter addresses the methodology used and discusses the associated research design choices. Because a case study methodology was used the chapter starts with a description of the company and context in which the case organization operates, in order to introduce the reader to the case's context. A transparent research process is important, and as a show of transparency to the reader, the chapter is ended with reflections regarding events that shaped the research.

3.1 Background

Starting off, I would like to put this thesis in a broader context in order to offer transparency to the reader. In 2011, a study was conducted focusing on learning and continuous improvement (CI) in different project-based organizations (PBOs). That study showed that continuous improvement work and a learning organization are important areas for achieving improved project operations but are hard to achieve in practice. The results of that study were published in the *Project Management Journal* in an article titled 'A holistic view on learning in project-based organizations' (Chronéer & Backlund, 2015). A research application was submitted to the Hjalmar Lundbohm Research Centre (HLRC) as a follow-up on these findings. The application was accepted in 2012, leading to a research project titled 'Continuous Improvement for Effective Project Operations,' of which this thesis is a part. The idea for the research project was to study how CI could be applied within the context of the project department at Luossavaara-Kiirunavaara Aktiebolag (LKAB), a Swedish mining company. This project department, by definition a PBO (see section 2.1.1), was striving and struggling to improve, which initiated the exploration. In 2013, I joined the research group as a Ph.D. student, with financing from HLRC for the duration of my Ph.D. study. This thesis compiles the results of my Ph.D. journey studying LKAB's project department.

Initially, the plan was to design, implement, and test a model based on continuous improvement that sought to achieve "better productivity." At the time, "better productivity" was defined as "more effective project operations", without specifying or defining the term *effective*. Improvement work requires a direction to strive towards, something to align and evaluate activities against, and hence an

understanding of the desired end state, i.e. more “effective” operations, became interesting. From the start, understanding what constituted “effective” proved to be a challenge; the PBO had not defined it, and the term was vaguely and inconsistently applied throughout the PM literature. This confusion initiated the search for clarity regarding what constitutes a desired state of performance for a subsidiary PBO.

Because my research was predominantly qualitative in nature, it is useful to share my background and preconceptions with the reader. Every author brings preconceptions and prior knowledge and experience into the research process. Starting from a background working in various production facilities, I entered the case organization with a basic understanding of and experience in industrial settings. This insider perspective allowed me to engage with respondents with ease and achieve a relatively high degree of acceptance, since I had a basic understanding of the setting they worked in. My undergraduate studies gave me knowledge of quality management and organizational management, but my knowledge and experience concerning project management were limited at the start of my Ph.D. studies. This meant that I approached the topic of project management with an understanding of organizational theory and improvement work from what could be called a production perspective, but I had “fresh eyes” on the topic and context of PBOs and PM.

In order to situate this thesis within a research landscape, it is important to lay out its ontological and epistemological approaches. The research was conducted using what resembles a process paradigm, with an interest in events and how they played out over time. Throughout my years in school, including primary school, secondary school, and through my university studies, but also in different work environments, I have found myself in a setting largely shaped by the natural sciences. The different contexts have been dominated by a “right and wrong” mindset that envisions answers or ways of doing things (e.g. performing tasks) as either right or wrong. This approach has never fully resonated with me, since I consider settings shaped by social interactions to be complex and nuanced; in addition, perceptions, knowledge, and understanding of the world differ from one individual to another. This five-year journey that continually challenged my approach to and thinking about the world and ultimately now led to an approach similar to that of the social constructivists. This

places the study within the ontological realm of interpretivism. However, I do not consider everything to be a construction, as I believe that nature and its components are real and independent of our knowledge. Instead, within our knowledge of nature there is an element of constructivism, since context plays a part in our knowledge. The movement of an object is real and independent of our knowledge, but we need some sort of framework to understand it. For example, we can come to a conclusion regarding which car is fastest and establish that as a fact, but we cannot do so without first agreeing on what constitutes a car and how to measure speed—Is it one run over a specific distance? The average of two consecutive runs? What is the unit of measurement?.

3.2 Case Study Organization

In order to offer a background to the case organization and the context in which it is active, the following section first describe the parent company, LKAB. LKAB is a high-tech international minerals group that produces processed iron ore products for steelmaking, as well as mineral products for other industrial sectors (LKAB in Brief, 2018). Headquartered in the north of Sweden, LKAB's core business can be divided into mining, refining, and logistics. This includes the mining of iron ore both above and underground, refining the ore into products, and transporting the products by railway to harbors (Narvik in Norway and Luleå in Sweden), from which the products are shipped to customers (primarily on European market). Founded in 1890, the LKAB group today employs around 4,200 individuals, the majority of whom work in northern Sweden (LKAB in Brief, 2018). The company is wholly owned by the Swedish government.

Today, LKAB has adopted projects as a way of working in order to continuously develop the organization. These projects range from maintenance to R&D to the construction of processing plants to starting new mines or establishing new levels in existing mines. Much of this work consists of one-off efforts that lie outside the core activities of the various company divisions (mining and refining), and thus have to be managed by others. In order to handle the number of projects needed to ensure both current and future production, a specific project department was established. The department today consists of approximately one hundred employees and handles responsibility for LKABs project portfolio, as well as technical and business

development. The responsibility for technical and business development was added in 2016 as a consequence of company restructuring, following the change in senior management at LKAB that took place in 2015. Prior to 2016, the department's primary focus was project management. It is this project department that is the focus of this dissertation, and from here on it will be referred to as the organization, while LKAB will be referred to as the company.

It would be difficult to describe all aspects of how the organization works, but at its most basic level the company commissions projects from the organization. The organization is exposed to market competition, which means that company divisions have a certain degree of freedom to commission projects from other actors (such as consultants). Some divisions also have their own PM resources. Company management prioritizes certain projects as important and arranges for them to be managed in-house; such projects are assigned directly to the organization. These projects include those that are of significant strategic importance or entail major corporate investment (two characteristics that usually coincide). No projects are managed for external customers, which means that the organization only competes for projects within the boundaries of the company. The organization has formulated its goal as being the natural or default project partner within the company, and it actively works to continuously develop its project management skills.

As of 2016, the organization's management group consisted of the Vice President of Projects (VP of Projects, who is the head of the organization) together with six department managers. Three of the departments are project programs (North, South, Logistics), while the other three departments are responsible for project administration, technical documentation, and production development. The research project was mainly focused on the logistics program, which is the only program that remained in its original form throughout the study. Each project program is composed primarily of three different positions: project manager, construction manager, and project coordinator. Some programs also have senior project managers, who have operational responsibility for a specific section of the program (e.g., mining projects), which allows program managers to focus more on strategic issues. Table 3 describes the roles within the case organization, and Figure 8 illustrates the case PBO.

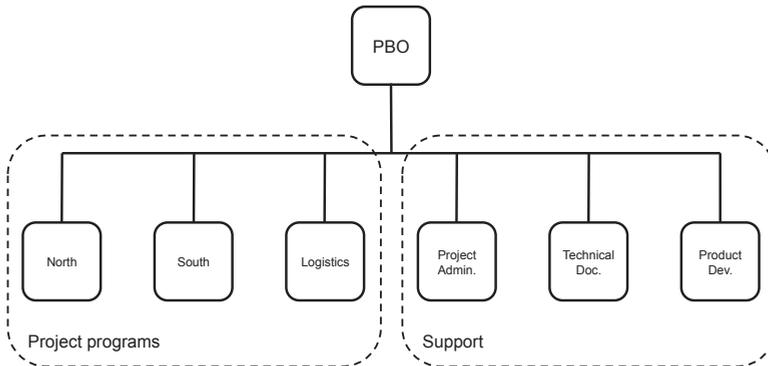


Figure 8: Structure of the Case PBO.

Table 3: Roles in the case organization.

Title	Responsibility
Vice President of Projects	Head of the department
Program Manager	Responsible for a specific area and part of the management team. Strategic focus.
Senior Project Manager	A project manager responsible for one of the sub-programs within a program. Operational focus.
Project Manager	Responsible for one or more projects
Construction Manager	Responsible for one or more construction sites
Project Coordinator	Administrative support for project managers

Regarding the project side of the business, the PBO only works on the management of projects, which means that essentially all construction aspects, calculations and so on, are handled through subcontractors. At minimum, a typical project consists of personnel from the organization, clients within the company (sponsors), and representatives of at least one subcontractor. During the course of this study, demand for PM exceeded the organization’s available resources, which meant a high workload and a need to prioritize what projects to manage. This also led to a desire to do more with less, in order to be able to manage more projects within the same budget. As explained below (see Figure 9) the drop in market prices led to a drop in demand for new projects, which brought the workload down to a more manageable level.

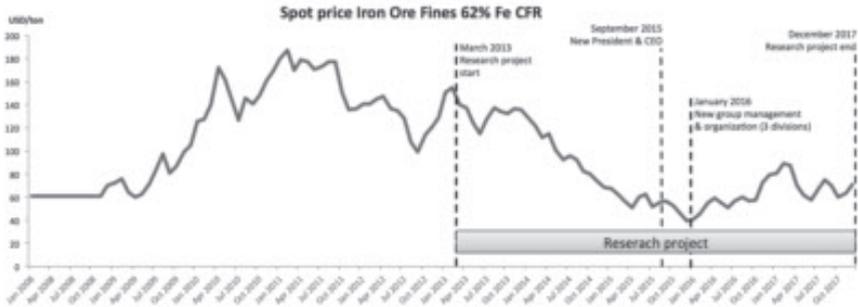


Figure 9: Spot price (USD/metric ton) of iron ore fines (62% Fe, CFR) between 2008 and 2018. Source: www.marketindex.au/iron-ore. Project duration and significant company events added by the author.

Project managers bear primary responsibility for managing projects, although both senior project managers and program managers have their own project-management responsibilities. Project coordinators play a supporting role in the organization that includes anything from writing protocols and managing documents to handling administrative tasks for the various projects. Construction managers are responsible for overseeing construction work. The organization also employs some consultants as project managers, in order to handle variations in demand.

Since the study was carried out over a five-year period, external events took place that could potentially influence the study outcomes (see Figure 9). When the study started, the company was—and had been for a while—in a period of heavy investments, including construction of a new process plant and the establishment of a new mining level (KUJ1365). This meant that workload was high within the PBO and had been for some time. At the same time, the market price for the main product—iron ore—was at a high level, reaching 180 USD/ton in 2011 and 150 USD/ton in 2013. However, it experienced a sharp drop, reaching a low point of 38 USD/ton in 2015 (62% Fe, CFR China, *Största prisökningen på järnmalm någonsin*, 2018). The changing market price naturally influenced the company's financial margins. In 2015 a new CEO (Chief Executive Officer) was appointed for LKAB as a consequence of the company's change in direction from investment-heavy growth to a focus on cost-effectiveness (Wänkkö, 2015). The company was restructured at the same time, and the new CEO replaced six of the eight members of the group's executive management (senior vice presidents and the chief financial officer). These changes entailed a shift

in responsibility for the PBO, as their scope of practice was widened to include not only their project portfolio but also responsibility for technical and business development within the company.

3.3 Research Design

This section discusses the overall methodological approach of the thesis. Because this thesis is a compilation of research outputs, each appended paper is based on and follows its own methodology to address the specific topic of each paper in detail. Each paper therefore contains its own methodology summary. This section is focused on the underlying approach of the study as a whole.

The intention in this thesis was to achieve a deeper understanding of subsidiary project-based organizations and how they approach improvement work, from an efficiency and effectiveness perspective. The study started with a focus on practice and no literature-based hypotheses had been formulated from the start, in order to search for new insight (Eisenhardt & Graebner, 2007). This approach could be described as “abductive” since it involved extensive iterative interplay between theory and empirical observations (Dubois & Gadde, 2002). This approach is similar to the inductive approach, in that the starting-point is the empirical observations, but the iteration between empirical observation and theory here is central, unlike the inductive approach that focuses on the empirical material (Dubois & Gadde, 2002). This iterative approach was chosen because the improvement approaches favored by the PBO management team had been known and applied for decades within general management, but knowledge of how to apply them in a PM context seemed to be lacking.

The empirical observations started with PBO management team meetings and the company’s own introductory PM course in order to get a basic initial understanding of the organization’s approach to PM. In terms of theory, the starting-point was the knowledge regarding QM in general (see 3.1). In parallel, the PM literature was targeted for review, focusing on topics such as complexity, paradigms, and learning, in search of fit between the QM and PM research fields. The framework was further shaped based on research literature regarding processes, learning, and CI. The lines of inquiry pursued include but are not limited to exploring how project-level problems

are discussed on an organizational level, how project managers are involved in improvement work, and how a holistic model of value creation and strategic alignment can be fitted to PM operations. The overarching and guiding question has, however, always been to understand how a PBO can work toward improvements.

Because this was an open-ended exploration, a qualitative approach was favored as a way to shed new light on improvement work in subsidiary PBOs from a QM perspective (Edmonson & McManus, 2007). The qualitative approach was also favored due to the rich access to the empirical setting that was granted by the case organization. The opportunity to study relationships, attitudes, and personal interpretations in the life worlds of individuals, groups, and their surroundings, in order to shed light on practices of PBOs was the basis for favoring a qualitative, narrative approach rather than a quantitative one that reduced individual experiences to numbers and statistics (Geraldi & Söderlund, 2016; Edmonson & McManus, 2007; Hartman, 2004).

3.4 Case Study

Based on the interest to gain insight into practice and to focus on contemporary behavioral events the case study strategy was adopted (Yin, 2014). Taking advantage of the case study strategy allows for a rich understanding of the context of the research, which is also in line with the exploratory nature and research approach of this thesis (Eisenhardt & Graebner, 2007). Limited knowledge in the research area was another argument in favor of adopting a case study approach (Edmondson & McManus, 2007), as well as achieving an extensive and in-depth description of a particular phenomenon (Yin, 2014). A case study strategy was seen as fitting from the start, since knowledge of systematic improvement work and moving towards value creation in PBOs was limited. The rich access granted by the case PBO allowed for the pursuit of a wide range of data sources to verify, question, and discuss emergent findings, making the case study strategy suitable (Yin, 2014; Eisenhardt, 1989).

There is also the question of choosing a single-case or multiple-case study. A multiple-case study is considered to provide a stronger base for theory building, while a single-case approach allows for a rich description of a phenomenon (Eisenhardt & Graebner, 2007). The case organization fulfilled two criteria, making it a typical and

representative case (Yin, 2014). The first criterion was the extent of project work: that is, the PBO executed the majority of its business through projects, either as a standalone or subsidiary organization (Pemsel & Müller, 2012). The second criterion was the number of projects managed at any given time: that is, the number of projects was large enough for the organization to require or benefit from the coordination of resources. Being offered the opportunity to study the case PBO during the entire Ph.D. study was seen as a somewhat unique opportunity to study improvement work in as many aspects of the organization as possible. Because this rich access would allow for an in-depth study of the phenomenon—how systematic improvement work was managed—a single-case approach was favored.

Further, given the exploratory nature of the research project, it was not known at the starting point which aspects of the organization that would be of interest to study. Because all research must consider the time available to conduct it, the single case seemed the most suitable in order to capture as many aspects as possible, instead of pursuing multiple cases at the expense of content richness. Common critiques of using a single case design is that it is only useful for pilot studies and for generating research proposals and cannot be useful for generalization (Flyvbjerg, 2006). Flyvbjerg (2006), however, goes on to dismiss this argument, stating that formal generalization is overvalued as a source of scientific development, whereas “the force of example” such as a single case study is underestimated. Critiques of single-case design also focus on the lack of replication for ruling out chance and to strengthen the findings. However, in the pursuit of generalization, the important and interesting details that are unique to each case are lost (Dubois & Gadde, 2014; Dyer & Wilkins, 1991). The main objective of this thesis is not to generalize but to gain an in-depth understanding of the implications of applying an efficiency and effectiveness perspective in PBOs. It can thus be seen more as theory development than theory generation (Dubois & Gadde, 2002).

3.6 Literature Review

A literature review was conducted as an ongoing process rather than a predefined time-limited activity. Literature reviews fulfill several purposes, but at their core they aid in acquiring an understanding of the research topic (Hart, 1998). Starting with an introduction to the project management field, the literature review has continually been added to, both because of the exploratory nature of the research and because of the structure of the thesis as a compilation of articles. As a result, literature from more than one research discipline was covered, as Hart (1998) promotes.

Table 4: Summary of the most commonly used keywords during iterative literature searches.

Keywords
Applied in full or as variations using *. (Most common combination was 'Project Management' + 'x')
Project management, Project, Project-based organization, Continuous improvement, Organizational improvement, Learning, Learning organization, Organizational learning, Process, Process management, Efficiency, Effectiveness, Maturity model, Project management performance.

Keyword searches have been performed on academic databases such as Scopus, Web of Science, ScienceDirect, and Elsevier, as well as complementary searches in the Google Scholar database and the library database of Luleå University of Technology (EBSCOhost). Keywords included “project management,” “continuous improvement,” and “learning,” as well as combinations of keywords and synonyms for them. Table 4 presents a complementary list of search terms employed. Table 5 contains examples of the number of hits for the most common keywords, showing that relatively few PM-specific research articles mention *CI* ($n = 8 + 14$) or *Efficiency* and *Effectiveness* ($n = 13 + 34$) in the title, abstract, or keywords. Although relatively few PM-specific articles mention CI, far more PM-specific research articles mention the two central components of CI, learning ($n = 82 + 215$) and process ($n = 317 + 751$). This indicates the existence of relevant PM-specific research literature. Not all articles in Table 5 are included in this study’s bibliography, but the table serves the purpose of illustrating the extent to which specific keywords that are central to this study are mentioned or discussed in the relevant research literature. A snowball technique was applied to find additional relevant literature, both by reading original

sources (going backwards) and by following citations (going forward). Finally, three PM journals—*International Journal of Project Management*, *Project Management Journal*, and *International Journal of Managing Projects in Business*—were browsed on an ongoing basis for new and relevant articles.

Table 5: Example search for the most common combinations of "Project Management" AND "..." (Number of hits, performed 2018, no time limit) (Google Scholar searches are less representative as the results are based on entire documents, including references).

Database search for "Project Management" AND "[...]"					
Search in: Limited to:	Database				Google Scholar Anywhere PMJ
	ScienceDirect*		Scopus		
	Research article	Title - Abstract - Keywords PM journals	Research article	Keywords PM journals	
"[...]"					
Continuous Improvement"	24	8	178	14**	70
"Learning"	238	82	1894	215	471
"Process"	1241	317	10922	751	598
"Efficiency"	195	49	2001	117	333
"Effectiveness"	203	67	2526	181	345
"Efficiency" AND "Effectiveness"	47	13	376	34	225

International Journal of Project Management (IJPM)
 PM Journals International Journal of Managing Projects in Business (JMPB) *Only IJPM indexed
 Project Management Journal (PMJ) **No hits for PMJ

3.7 Data Collection

According to Yin (2014), case studies commonly gather evidence from six different types of sources: documents, archival records, interviews, direct observation, participant observation, and physical artifacts. This study primarily employed interviews and direct observation, which were supplemented by documents from the case organization. Utilizing multiple data sources strengthens case study conclusion, since triangulation can be achieved (Yin, 2014). This study’s sources are listed in Table 6.

Table 6: Data collection methods.

Method	Variety	Purpose	Documentation
Direct observations	Project, Program, and Organizational level	Insights to how the PBO works, CI thinking in PBO practice.	Notebooks, reflective summaries
Interviews	Semi-structured face-to-face, focus group	Access respondents views and perspective of the matter discussed	Notebooks, audio recordings, audio & video recordings
Documents	Strategic documentation, business plans	Triangulation	N/A

Data can be qualitative (e.g., words), quantitative (e.g., numbers), or both (Eisenhardt, 1989), depending on its purpose. This thesis relies primarily on qualitative data and applies quantitative evidence to a lesser extent. The approach for analyzing the data has been an iterative and exploratory process of comparing findings to theory, where empirical findings are compared against theory and conclusions can be made (Yin, 2014; Edmondson & McManus, 2007). However, the analysis was not limited to the search for fit between the empirical world and a predetermined theoretical framework, as described by Eisenhardt (1989) and Yin (2014), but instead as a process of confronting theory with the empirical world (Dubois & Gadde, 2002). This approach means being open to reevaluating the purpose of the study as the framework and case evolve over time (see Figure 10). In section 3.10.2 “Research Reflections,” the PhD. student’s reflection on this emergent process is provided to provide both transparency and reflexivity (Piekkari, Plakoyiannaki, & Welch, 2010). A compilation of sources used in this thesis can be found in Table 7 (pp. 44-45), including among other 32 interviews, 13 research project steering group meetings, and 28 different observed meetings.

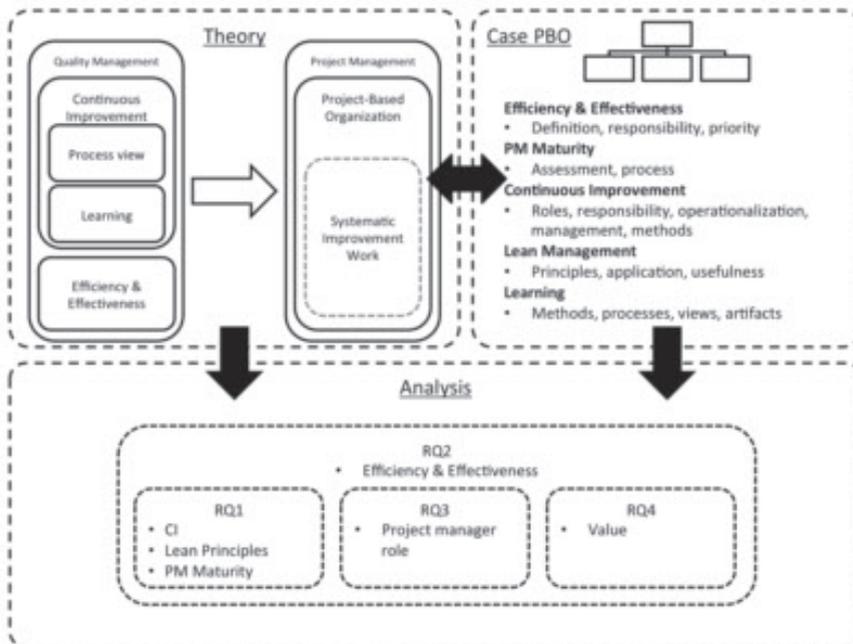


Figure 10: Analytical model, confronting theory with the empirical world, open to reevaluation of purpose as the framework and the case evolve over time.

3.7.1 Observations

Direct observations offer the researcher the opportunity to study actions and cover the case context in real time, even if it is time-consuming and difficult to cover all aspects of a case (Yin, 2014). In this case study, the strengths of this method outweighed the weaknesses, since the purpose was to explore and understand how the case organization worked toward improvement from an efficiency and effectiveness perspective. Solely relying on interviews would have resulted in a one-sided description of how the respondents work, since there would have been no way to corroborate their answers. Adopting direct observations allowed the researcher to both verify results from alternative data sources (e.g., interviews, documents) and discover aspects of the case that could not have been predicted. Observing the case organization over time allowed for continuous loops of discovery and verification, as well as discussions that contributed to developing the case. All observations were conducted with a main topic in mind, but topics did shift over time. Starting with a general focus on how the PBO operated, the topics shifted between improvement work in the management team, learning in projects within a specific program, learning within the same program, and how holistic aspects of value creation are present in project meetings. The overarching topic that was always present was that of improvement work in the PBO, with the more specific topics developed as the study progressed. These specific topics are presented in the appended papers. As the study progressed, new topics emerged and were focused on (e.g. the role of project managers); however, this did not mean that old topics were discarded; relevant observations were continuously documented when possible.

In order to document as many observations as possible a A5-format notebook was always at hand for recording field notes on all aspects that were found interesting at the time. To the extent possible, all notes were coded with the date and place, as well as a description of the situation (e.g. steering group meeting or coffee break) and the individuals present. Notes were also coded to separate unprocessed observations, such as descriptions of events and quotes, from notes reflecting ideas and thoughts made by the researcher. Observations were further divided into those that were part of planned and structured data collection and those made during spontaneous meetings (such as spontaneous observations that happened to coincide with steering group meetings). For planned observations reports with the notes were compiled after each

Table 7: Timeline and summary of the data collection process.

Year	SG	Observations	
2013	Q1	SG#0	
	Q2	SG#1	Management team meeting
	Q3	SG#2	
	Q4		Management team meeting
2014	Q1	SG#3	Program meeting (business development)
	Q2	SG#4	
	Q3		4 meetings in the logistics program; 1 internal meeting, 1 reference group meeting, 1 coordination meeting, 1 construction meeting
	Q4	SG#5	5 meetings in the logistics program; 2 weekly internal meetings, 1 commissioner meeting, 1 project steering group meeting, 1 coffee break 1 day of meetings in Norway, traveling with PBO manager and Program manager (logistics) including general discussions, 2 client meetings: 1 project specific, 1 general/strategic
2015	Q1	SG#6	
	Q2		
	Q3	SG#7	
	Q4		5 meetings in the logistics program, all 5 at weekly internal meetings, focus on what is being discussed to understand how projects, program, and PBO is discussed
2016	Q1	SG#8	1 Program meeting, same as observations Q4-2015
	Q2	SG#9	
	Q3		2 project meetings, related to the holistic model
	Q4	SG#10	3 project meetings within the same project; 1 contractor meeting, 1 constructor meeting, 1 steering group meeting, focus on end-of-project meetings ("saving the project")
2017	Q1	SG#11	
	Q2	SG#12	
	Q3		Management team meeting
	Q4	SG#13	
Explanation of abbreviations: SG#X = Reserach project steering group meeting No. X E&E = Efficiency & Effectiveness PM3 = Project Management Maturity Models PBO = Project-based organization			

3. Research Design

Interviews	Workshop	Other
<p>6 PBO leaders in 6 different companies, focus E&E+PM3, telephone</p> <p>Case PBO members, 8/8 members, focus E&E+PM3, face to face, Kiruna & Malmberget</p>		<p>Case company introductory course in PM</p>
<p>The person responsible for adapting the PM3 to the PBO</p>	<p>PBO Management team, focus on E&E and PM3</p>	

<p>The PBO management team, 6/7 members, average 1 hour, recorded, focus CI, Kiruna & Malmberget</p> <p>Program manager (logistics), Introduction to logistics program, preparation for meeting observations</p>		<p>Dialogue meeting 1</p>

	<p>6 PBOs regarding CI, based on the questionnaire</p>	<p>Questionnaire, 6 PBOs, 46 respondents in total</p> <p>*Licentiate seminar</p> <p>Dialogue meeting 2</p>

<p>1 phone interview with Program manager (logistics), focus on learning and value, preparation for model holistic model construction and following interviews and observations</p> <p>1 Phone interview with selected project manager, testing the model</p> <p>1 Phone interview with selected project manager, following up on the model</p>		<p>HLRC day, informal meeting with C-PBO</p>

<p>PBO Management team, 7 members, recorded in Skype for Business, focus on Lean</p>	Additional data (not dated)	
	<p>Operational plans for PBO and the logistics program, 2012-2016 (5 each)</p>	
	<p>Meeting documents, including agendas, presentations (audio and visual), and other material observed during each meeting</p>	
	<p>E-mail correspondence with research project steering group members</p>	
	<p>7 A5 notebooks covering 5 years</p>	
<p>CI = Continuous Improvement PM = Project Management HLRC = Hjalmar Lundbohm Reserach Center</p>		

day/session in order to document reflections and thoughts. These reports provided structure and additional context to the observations, which facilitated analysis at a later time. All notes were also scanned into PDF files and coded based on context (e.g. steering group meeting) and date, as shown in Table 7. A total of 7 notebooks were used and contain the majority of notes taken during the five-year period.

The focus of observation differed during the course of this study. At the start, the management team and their meetings was in focus in order to build an initial understanding of the PBO and how it was organized. Since the first meeting took place quite early on in the process, the researcher had limited prior knowledge of both the organization and the specific research topic. This allowed for a more unbiased approach. Management group meetings were attended regularly between spring 2013 and autumn 2014, and more sporadically from that time until 2017. For a comprehensive description and illustration of case study observations, see Table 7.

3.7.2 Interviews

Interviews are one of the most important sources of case study evidence, since such studies most often frame human affairs and actions as the topic of interest (Yin, 2014). Interviews offer insight into the individuals involved in the case study, in a way that is hard to achieve using other methods. Interviews have the potential to access descriptive information and personal opinions. The recommended approach for collecting interview data is to use numerous and highly knowledgeable informants who can provide different perspectives, in order to limit the bias of retrospective sensemaking (Eisenhardt & Graebner, 2007). Yin (2014) describes the dual role that interviewers typically need to play when conducting interviews for case study research. The first is to follow one's own line of inquiry, and the second is to ask the actual conversation questions in an unbiased manner. This is exemplified by the description of the researcher's intention to address 'why'-questions while needing to translate and formulate them as 'how'-questions in order to avoid spawning defensive answers.

In total, 32 semi-structured interviews were conducted, with an emphasis on senior PBO managers, as these respondents were considered the most knowledgeable concerning the improvement work in the PBO. The interviews averaged around one

hour in length, and the topics discussed more or less correspond to the topics found in the appended papers. The study addressed three main topics in the interviews. The first topic was maturity models and efficiency and effectiveness, the second was senior management's knowledge and perception of CI, and the third topic was senior management's perception of the appropriateness using Lean principles in a PBO. Interview guides were developed as a basis for discussion for these topics, although the format was semi-structured in order to allow for and capture additional aspects that the respondents offered up. All interview guides were developed with theory as a basis and then discussed, commented on, and improved within the research group before any interviews were conducted. This approach scrutinized the questions and bullet points to determine how well they served the purpose of the study and addressed the topic of interest, as well as to prevent author bias in the questions. The interview guides and the material from interviews can be found in Appendixes I-IV.

As Tables 6 and 7 show, several additional interviews were conducted in order to supplement or guide the main data collection. These interviews were often less structured and provided input into other data collection efforts, such as other interviews and observations.

3.8 Research Project Meetings

A reoccurring event during the exploration of the PBO was the research project steering group meetings, which took place 2–4 times a year. These meetings were used as an opportunity to collect data and as a way to enable the study. Because these meetings played a significant role during the research project and represent a less-common data collection method, they are presented and discussed separately in this section of the methodology chapter. A total of 13 meetings were held over the course of the five years, with an average duration of two hours. Attendance varied, since it was not always possible to schedule meetings at times when everyone in the group was available. Nonetheless, there was always a minimum of two representatives from the research group and two representatives from the PBO advisory board (see the following section). The PhD. student attended all the meetings, as did the VP of Projects. Table 7 lists 14 meetings; however, the first meeting (SG#0) was held before a PhD. student had been recruited onto the project and hence is not part of the data collection process.

The initial purpose of these meetings, attended by the university research group consisting of the Ph.D. and two senior supervisors along with an advisory board from the case organization (the VP of Projects, the program manager for business development, and the program manager for logistics), was to support and track progress on the research project. These meetings were the formal link between the university and the case organization and served an important role in gaining deeper access to the organization. Having dedicated research project meetings between the two groups allowed for a quicker start-up phase, since a basic understanding of the case organization's structure and perceived problems could be established from the start. Another strength was that early heads-up about pending changes could be brought up and discussed before influencing the research project. This allowed for preemptive actions, where potential risks to the exploration caused by changes could be discussed and handled before their occurrence. These meetings also fostered discussions regarding findings in a way that allowed both sides to benefit, improving understanding and contextualization for the researchers and offering practical implications for the PBO representatives. Mutual interests were fostered and addressed in order to ensure that the researcher maintained longitudinal access to the organization. It was seen as important to maintain a regular forum for discussing progress on the project in order to ensure that the case organization perceived their participation in the project as interesting and valuable and would be encouraged to commit to the project over time (i.e., to show that the researcher was not just there to study the organization, but to offer something in return).

The meetings were instrumental in the progress of the research project, since they provided direct access to decision-makers in the case organization, which allowed for a more structured and planned approach to the exploration. Projects, individuals, and departments to study could be discussed in order to ensure mutual benefits and interests, as well as quick access to, and legitimacy among, organizational members. The role of the case organization advisory board was to discuss and provide access to the parts of the organization that would be of value, as well as to ensure that no parts were overlooked. The advisory board sought to avoid managing or influencing the project towards organizational tasks and instead assist the researcher and provide in-

depth knowledge about the organization that would not otherwise have been accessible to outsiders. There was always a risk of unwanted bias from the advisory board, since they also managed the organization. This risk was discussed during project meetings, as well as among members of the research group, to ensure that the management group did not impinge on the process.

These meetings provided one significant challenge as a forum for data collection: how to document them. How to collect data at the meetings was not fully considered at the start of the project, and thus there was no clear plan for documentation designed beforehand. Instead, each member of the research team took notes on things that caught their attention during the meetings, and thus the notes were scattered and sometimes difficult to decipher for anyone but the individual who took them. When the situation allowed, the researchers sat down afterward for what could be called a debriefing meeting, to discuss what was said during the meeting and what could be of value to follow up on. This process would have benefited from increased formality and structure, with a predefined and consistent form of documentation. This approach would have benefited both the data collection and the analysis, as it would have provided further structure to the data and made it easier to work with.

In the final stages of the exploration, during autumn 2014, a second type of meeting was initiated between the university research group and the PBO management group (the same constellation of participants as the research project meetings). The research group initiated these meetings, which were called dialog meetings, in order to discuss study findings from a more long-term perspective. The goal was to ensure that the interests of both parties were taken into consideration and to confirm that the findings were of practical relevance. An additional outcome of these meetings was a discussion of the case organization in relation to the parent company. This discussion brought to light the complexities of customer and stakeholders in the perspective of short- and long-term goals. Two dialog meetings were held (see Table 7).

3.9 Research Limitations

As with any research approach, a study based on a single case has its limitations. The case study strategy is strong in terms of depth but weak in terms of breadth, and it should be applied accordingly (Flyvbjerg, 2006). This means that what is lost in testability and statistically based evidence is gained in terms of detail, generating knowledge, and rich examples. This research was never intended to provide statistical generalization but rather sought to focus on creating knowledge through force of example and providing analytical inference (Dubois & Gadde, 2002; Flyvbjerg, 2006; Yin, 2014). This thesis is therefore aiming at expanding and contributing to existing theories by providing an in-depth understanding of the phenomena under analysis. By using a representative and typical case, its findings should be applicable to other PBOs, at least to some extent. Nevertheless, additional empirical studies would strengthen the findings: for example, studies of similar PBOs, subsidiary PBOs in other industries, or standalone PBOs.

Since the case PBO is part of a larger company, there were other departments (e.g. mining and processing) and managers influencing its work, directly or indirectly. The research did not examine how this context influenced the PBO, although it was an issue taken into consideration in ongoing discussions. This study also did not look at improvement efforts in other parts of the corporation, since the majority of the company is process-based and not project-based. Furthermore, the PBO engages consultants on a regular basis in order to manage the large number of projects that exceeds the availability of its regular employees. This means that there are individuals working in, and learning from, projects who are only affiliated with the PBO for the duration of their specific project (and sometimes for a shorter period of time). These consultants have been discussed, and sometimes studied, but not included, since there could be added (or other types of) complexity related to them not being full-time employees of the PBO. Hence, the study was limited to the permanent employees of the PBO.

By scrutinizing the reference list of both the thesis and the appended papers, it is evident that the theoretical background of the work is skewed towards project management specific journals, such as *International Journal of Project Management*

and *Project Management Journal*. The PM-specific journals were intentionally targeted in the literature review, since the PM community of scholars was the intended audience the thesis sought to address from the start. Additional contributions providing alternative perspectives on the topic of the study could exist in adjacent research fields, under different labels (e.g. change management), from which the thesis could have benefited further. In addition, as exemplified through the thesis, important contributions in project studies have been published in more general management research publication outlets (e.g. Engwall, 2003; Hobday, 2000; and Shenhar et al., 2001), contributions that are represented in the thesis. As previous research has shown, the existence of project-related publications in general management journals is still relatively scarce (Bakker, 2010).

3.10 Research Quality

Because of the study's exploratory nature and empirical basis, discussing reliability and validity is of limited value. These are aspects that are more relevant to quantitative approaches focusing on quantification and statistical correlation. The quality of the work should instead focus on whether the product (i.e. thesis or paper) is convincing and trustworthy (Yin 2014; Siggelkow, 2007). Statistical significance is one way of doing this, but when quantitative measures are not used, other approaches are needed. Logical coherence of the writing and argumentation, for example, is one way to allow readers to draw their own conclusions from the material presented and therefore judge its quality. This can be achieved by providing the reader with enough information about the research process and theoretical grounding to assess the quality of the work (Dubois & Gadde, 2002; Eisenhardt, 1989). Because the journal article format often does not allow for lengthy descriptions, narratives, and accounts of events that would provide this information, chapter 4 and section 3.11 has been added here. These sections are designed to offer both transparency and increase the logical coherence of the thesis so that the reader can judge the feasibility of the study.

Case studies have commonly been critiqued for containing a bias toward verification, understood as a tendency to confirm the researcher's preconceived notions (Flyvbjerg, 2006). This is, however, not specific to the case study methodology but rather is present in all research. In order to address this issue, this study entailed an iterative process based on triangulation, using multiple sources of information and perspectives

(Yin, 2014). This iterative process involved literature review, various data collection methods, and presentations and discussions with representatives from the case organization, in order to continuously question and challenge the findings. The study's exploratory nature also allowed for a more open approach, since the interest of the researcher was more focused on understanding the context than on verifying any preconceived notions. As Flyvbjerg (2006) points out, the case study researcher is more likely to discard or challenge preconceived notions than to confirm them. This behavior is related to case study research as a learning process and a means to achieve new insights.

The difficulty in generalizing from case study research, especially in a single-case design, is another major criticism of this methodology, one that is often brought up by researchers advocating the natural science ideal in the social sciences (Flyvbjerg, 2006). Also, generalization in the statistical sense does not always have to be the goal. By portraying events as accurately as possible and being open with choices and decisions, the researcher allows the reader to scrutinize their work and be the judge of the quality and adequacy of the research process (Eisenhardt, 1989). This has been done to the best of the researcher's abilities.

3.10.1 Research Ethics

Because the case study included interviewing, observation, and discussion of individuals, it is important to address the ethical considerations this entails. In order to adhere to good research ethics, four research ethical principles were considered in collecting the data. These four principles are: (1) informing respondents about the purpose of the research, (2) allowing respondents to control their participation, (3) treating the data and information with care and confidentiality to protect the individual, and (4) ensuring that data collected on individuals is used exclusively for the purpose of the research (Bryman & Bell, 2003; Vetenskapsrådet, 2002). Information regarding the purpose of the study and the intended use of data was shared with all respondents at the first meeting, and all respondents gave their verbal consent. At meetings attended with the primary intent of observation, the Ph.D.'s presence and intent was always addressed as the first point of order. This was especially important during meetings with participants from outside the PBO, as they had no prior knowledge of the study.

Respondents' anonymity should always be a priority, but this is not always possible, since certain individuals hold organizational positions that are unique (e.g. a CEO). This can be dealt with by also making the organization anonymous, which was done in the articles submitted for publication. However, for the purposes of the thesis, exposing the organization was considered to be valuable, given the nature of the study. This meant that, at least for individuals who are knowledgeable about the company, it would be fairly easy to identify certain respondents. To address this concern, the respondents were offered the opportunity to review the content prior to publication. Because the issue of disclosing the company's identity was known and discussed with the respondents from the beginning, the implications of this approach were considered limited and manageable. This measure also contributed to ensuring that data was not taken out of context and given a different meaning than what was originally intended by the respondent (Jacobsen, 2002).

By opening up the organization to study, the PBO management team provided a unique opportunity for an in-depth study. This opportunity also entails a responsibility to treat the data with care and confidentiality out of respect for the individuals. Openness towards respondents was always a priority, and measures were always taken to ensure that everyone in the room (physically or virtually) were informed of the researcher's role and purpose in each situation. If any one individual opposed participating, either as an active (e.g. interviewee) or passive (e.g. observed) respondent, that person would not have been included. Fortunately, all respondents agreed to participate. The main respondents in the study were the PBO management team members, of whom only four individuals were members through the whole process. In order to prevent identification of specific individuals, some of the data is only presented using the organizational position (e.g., program manager), rather than a more specific description (e.g., program manager of department X). This approach favors the anonymity of respondents, although it comes at the expense of transparency in the thesis.

3.10.2 Research Reflections

One of the main challenges with the research approach has been to contribute to advancing both practice and academia. As Maylor, Turner, and Murray-Webster (2015) describe, providing satisfactorily prescriptive results for busy managers on a tight schedule, and at the same time providing sufficiently theoretical results for academia, risks leaving the researcher in a situation and feeling of ‘falling between two stools.’ Borrowing Karrbom Gustavsson and Hallin’s (2015) concepts of *goal-seeking* and *goal-oriented* modes, I reflect on the research process as one where I was often torn between these two modes. In short, working in a goal-oriented mode implies working toward defined goals using specified activities, resources and timeframes, while working in a goal-seeking mode implies the opposite, i.e. searching for the specific goal(s) so that activities, resources, and timeframes can then be specified. According to Karrbom Gustavsson and Hallin (2015), these two modes represent states between which projects may shift, rather than as opposing categories. From the start of this study, a project management approach has been applied in order to plan and track progress, including having a clearly defined purpose and (SMART) goals. In other words, the research project was initially designed to be goal-oriented, with defined deliverables, at least from a practice perspective.

From an academic perspective however, the goal from beginning to end was to earn a Ph.D., represented by this thesis. In this sense, the project was, and has been throughout, a goal-oriented process. From a practice perspective, the initial goal was to develop, implement, and evaluate a process-based project model based on continuous improvement, with proven contributions to more “effective” project operations (the use of quotations is explained in section 3.1 Background, and will be elaborated on in the following section). Broken down into deliverables with defined timelines and resources, the plan was initially goal oriented. However, the end result cannot be defined as anywhere near the initial goal, since the practical outcome adheres more to the common cliché ‘the journey is the goal.’ Instead of a developed and implemented model for increased project “effectiveness,” the practical output is an increased awareness and reflection on what constitutes efficient and effective PBO operations, at both the project and organizational levels. This output is primarily the result of the ongoing discussions represented by, but not exclusive to, the research

project steering group meetings (see Table 7). In these meetings the practice-oriented perspective, provided by the three senior PBO managers, met the academic-oriented perspective, provided by me and my two supervisors and senior researchers, in a manner that allowed both sides to reflect on and reevaluate their understanding of efficient and effective project-based operations.

In hindsight, I would say that the first event that initiated a shift from a goal-oriented to a goal-seeking mode was the discovery of how the term *effective* was used and defined in relation to projects. Or rather, our finding out it lacked a definition and was used inconsistently (c.f. Zidane & Olsson, 2017). As it so happened, the Swedish language uses only one word to cover the English-language concepts of efficiency and effectiveness; *effektivitet*. This means that in a Swedish-speaking context, the word has a broader, or less specific, meaning in comparison to the English language. To clarify our goal, we then set out to understand how the PM literature uses and discusses efficiency and effectiveness, only to discover that the application of the words were far less consistent and far more arbitrary than what we were used to from the perspective of the quality management field, for example. What we found and reported on in Sundqvist, Backlund, and Chron er (2014) was that efficiency and effectiveness are seldom used together, are often used interchangeably, and are used without being clearly defined. Similar findings were later reported by Zidane and Olsson (2017). This seemingly small linguistic conundrum, which we started to discuss and examine early on, came to shape the study as a whole, as we moved from a goal-oriented to a goal-seeking mode. In order to define what constitutes an improvement one needs to know what the desired state to be striven for is. Without this knowledge, it is not possible to *develop, implement, and evaluate a process-based project model based on continuous improvement*, as stated as the project goal. Consequently, the focus instead turned towards understanding the discourse within the PBO regarding efficiency, effectiveness, and improvement work in order to contribute to an understanding of improvement work in PBOs on a more aggregate level.

The shift in focus regarding project outcome and mode was not the result of an active decision taken then and there, when the issue of efficiency/effectiveness arose. The

shift instead becomes clearer in hindsight, as I now reflect upon the research journey. Discussions in line with the initial project goal continued throughout large parts of the project at the same time as the research itself diverged into a goal-seeking mode, mainly based on exploration of how efficiency and effectiveness as perspectives influenced the PBO's operations and improvement work. The first active action taken to realign the research project with the thesis process occurred during the second half of 2014, when the first dialog meeting was held (see Table 7). Based on the insight that planned research project deliverable deadlines were starting to be missed, or were in apparent risk of being missed, the research group decided to take action. We knew that the exploratory phase had already surpassed the planned deadline, and was still ongoing, so in order to realign the research project with the thesis process a new type of meeting with the project steering group was conceived. We decided to call this meeting a "dialog meeting," since the intention was to discuss the project in a more open format compared to the regular project steering group meetings. The focus of the meetings (the second of which was held in autumn 2015) was to openly discuss the challenges that the PBO experienced in relation to improvement work and the emerging findings from the research process. Its open discussion format allowed both the researchers and practitioners to reflect on and reevaluate the progress of the research project, and it generated input into both the PBO and to the thesis process. This also realigned both processes into a goal-seeking mode. Practical outcomes from these meetings were a change in focus to value creation (meeting 1, discussed in Paper V), the role of the project manager in PBO improvement work (meeting 2, discussed in Paper IV), and how client/customer behavior influences efficiency and effectiveness (a topic for further research).

The feeling of "falling between two stools" described by Maylor et al. (2015) did undoubtedly arise several times during the thesis process. However, the frequent interaction between researchers and practitioners, both in the steering group meetings and in the dialog meetings, helped to balance and realign conflicting goals. Instead of a developed, implemented, and tested model for improvement work, the outcome for the PBO was as revised understanding and approach to their operations. The value of this outcome was clearly dependent on the PBO members' attitude towards the change in focus, from something closer to a practical model to the more abstract

understanding of efficiency and effectiveness and their potential consequences. Without the positive and curious attitude of the PBO managers, the risk of losing access to the case would have been real, since the access depended on these three individuals.

3.10.3 Method Discussion

The exploratory approach taken in this thesis presents both strengths and challenges. In this section the methodological approach is discussed, in order to offer reflection and transparency to the process. First, I am interested in providing some insight into my preconceptions regarding the research topic. Because I have an M.Sc. in industrial engineering and management, with a specialization in strategic work and business development, my theoretical knowledge going in to the PhD process was focused on general organization management (e.g. strategy, quality, and logistics). Project management (PM) as a research field was completely new to me, and I had limited experience with and knowledge of it. What's more, my practical experience was based on working in different manufacturing production settings as an operator. This background allowed for a more open approach to the research and meant I had limited preconceptions regarding PM and PBOs. However, it also meant it took me longer to get up to speed, so to speak, since I needed to do a lot of reading on previous and current PM research. This allowed for a more open approach to the phenomenon under study but also created a risk missing important historical contributions. I interacted with experienced PM researchers as a way of addressing these pitfalls; for example, I participated in PM-specific conferences and conference tracks.

Second, the exploratory nature of the study created challenges for data collection from a holistic perspective. The approach included both structured and unstructured means of collecting data. For specific foci—for example, the paper on maturity models and the paper on CI in PBOs—data collection was conducted in a planned and structured manner to generate data that was easy to work with. However, along with these targeted and specific sets of data broader data collection of a more unstructured nature was conducted, following more loosely defined purposes. This type of data collection is based on the researcher being present at the case PBO, observing, discussing, and interacting with PBO members (see Table 7). The primary method for documenting data in these situations was field notes, where topics discussed and examples given

were described. These notes were often taken either on the fly as something of interest occurred, or shortly thereafter. This technique meant that the notes were not always rich in detail and may not have included quotes, since taking such detailed notes would have likely disrupted observations of the situation (for example, when participating in a meeting). In order to provide at least a minimum level of structure, context, and traceability to the notes, the date and a short description of the setting was provided (at a meeting, coffee break, etc.). When possible, the individuals present were also listed, to allow for follow up questions if needed. This data collection technique can be described as both “passive” and “active,” where the former is the planned and structured collection and the latter is associated with discovery (Dubois & Gadde, 2002).

Similarly, the research project steering group meetings offered a valuable additional source of data. The primary purpose of these meetings was as a steering group for the research project that sought to ensure project progress and value creation, as well as to accommodate practical issues. Examples of practical issues included the selection of, and gaining access to, relevant projects, meetings, and respondents for inclusion in the study. These meetings, held at least twice a year, provided important input to the research process, as they contributed updates regarding current and future events in the case PBO. These meetings were primarily documented using project protocols. However, although valuable, these protocols primarily focused on decision points and excluded richer descriptions of the discussions. To supplement the protocols, notes were taken by the participating researchers (at least two at each meeting). In hindsight, a more structured system for recording discussions could have been used to generate richer data that would have been easier to analyze. Taking notes is a challenge regardless of the situation, especially if the note-taker also is engaged in the discussion.

The two dialog meetings (Table 7) were introduced as a way of balancing the more structured steering group meetings; these forums allowed for more open discussion of research findings and their consequences for the case PBO. These meetings proved to be very valuable, as they allowed both researchers and PBO members to reflect on and discuss the emergent findings. As an example, both the paper on the role of the

project manager and the paper on value originated from these meetings. The dialog meetings also helped to align expectations among participants, in order to focus the study and avoid losing access to the organization in the event that the PBO representatives started to consider that participation was not of value to them.

Data collection techniques have consequences for the subsequent analysis, which is the third methodological issue to be discussed. Just as the research approach was iterative, so to was the analysis. Analyzing the case study data was challenging, since the findings were continually reevaluated by moving back and forth between theory and empirical data. As described in *Research reflections*, the purpose shifted towards efficiency and effectiveness at an early stage of the study, and this remained a main focus throughout the study. However, this does not mean that the purpose was fixed. Continual reevaluation occurred as different perspectives were tested on the initial idea of understanding improvement work in PBOs. For example, after the licentiate thesis defense (Q2 2015, Table 7), learning in PBOs emerged as a focus when the initial findings indicated that experience and lessons learned remained at an individual level and thus hindered organizational-level improvement.

Further, data, collected for a slightly different purpose than the main focus of the analysis may influence what conclusions can be made. For example, data that was originally only a side note to another discussion might appear as significant at a later stage. At that later time, follow up or gathering alternative perspectives on the issue might not be possible for various reasons that limit the availability of relevant data. A limited amount of data on certain aspects influences the researcher's ability to make conclusions based on that data. In other words, unexpected or surprising results may come at the expense of how well supported the conclusions are. However, this is not an uncommon problem in the explorative approach and provides a valuable direction for further research.

The conclusions and results led to the third topic, research quality. As observations and discussions make up a considerable amount of the data, the material contains more descriptions of events than it does direct quotes. This means that transparency becomes important as a means to build trustworthiness, since "showing your work" is

more difficult. It is the researcher's interpretation of the data that is presented. To contribute to the trustworthiness and transparency of this study, a significant effort has been made to account for the research process, as exemplified by the section on *Research reflections*, and this discussion of methods.

The above-mentioned research project steering group meetings and dialog meetings served to verify the findings by facilitating constructive dialog on them. This constructive dialog, sustained throughout the research process, allowed for continuous verification of the findings and ensured that the researcher's interpretations of events corresponded to reality. The PBO members who participated in the project research steering group were given the opportunity to review the material before publication in order to further corroborate the findings. The high degree of respondents' involvement in the research bears resemblance to a participatory research design, in which results are produced in a cooperative manner, with respondents serving as active participants in production through analysis and even writing. However, the participation of respondents in this study never reached that point, and instead remained at the level of discussion.

The third issue to be discussed is the contributions made through this research. The main contribution of this thesis is the insight into the strivings to improve the PBO's. The third issue to be discussed is the contributions of this research. This thesis' main contribution is its insight into how PBOs strive to improve PM practices. As with the analysis, the exploratory approach entailed several challenges in specifying and clarifying the contributions made by the research. By focusing the appended papers on more specific aspects of improvement work, it was possible to provide contributions to both research and practice on a more detailed level. This approach, however, means that the appended papers must be viewed less as pieces of a puzzle and more as the outcome of a process. Hence, the appended papers provide different perspectives on improvement work in subsidiary PBOs. The thesis' contribution may come across as less precise, with more vague conclusions regarding the challenges of working with organization-level improvement in subsidiary PBOs. However, the intent has always been to illustrate the challenges related to improvement work in PBOs. Initially, the aspiration was to develop, implement, and evaluate a model to

support systematic improvement work in a subsidiary PBO. This goal was not reached as findings indicated that the prerequisites to systematically work toward improvements were different than expected. This is however in line with the chosen approach, as the purpose of the study had to be re-evaluated once the unclear use of efficiency and effectiveness in both PM research and practice was discovered.

Finally, the research project was funded by the Hjalmar Lundbohm Research Center, a research fund created as a cooperative effort between LKAB and Luleå University of Technology. This means that the research funding came from the same company as the case organization. Since the company provided the research funding, there is always the risk that the results were skewed in favor of the company: for example, by concealing certain negative findings and promoting other positive one. In addition, there is also the risk of the company interfering with what is published and what is not— for example, by refusing to approve publication of findings that could be of value to competitors as well. In order to address these issues, ongoing dialog has been maintained between the researchers and the PBO management team as part of the research project steering group meetings. Openness and consensus regarding the publication of results was a key issue in these meetings, and the PBO representatives participated as advisors rather than controlling the research. There was always a risk of generating results that the participating organization might have concerns about publishing, but by being open and continuing to discuss the issue it was possible to partially safeguard against unwanted surprises for all parties. Luckily, the case organization was very open and helpful throughout the process. Not only did PBO members participate in this research project—for example, the VP of Projects—but they also participated in different industry forums related to PM, which might be seen as an indicator of their openness and interest in sharing their experiences and learning with others. Nevertheless, there is always the risk of hidden agendas influencing the study, which must be considered as one of the limitations of the study.

4. Studying a PBO from an Efficiency and Effectiveness Perspective

The academic format of published journal articles in general focuses on presenting research work in a rather condensed format. The format, as well as the author's ability to adhere, created challenges in providing depth and nuance to the presentation of the research. This chapter is intended to give more in-depth insights into the case study that this thesis is based on and to include aspects that have not been presented in papers but are considered to be contributing aspects to achieve the purpose outlined in Research Question 2 (RQ2).

4.1 Short stories from the PBO

It has been an interesting experience to follow the members of the PBO in their endeavors and efforts during these five years. Overall, the research questions progressed from an inwards focus towards an outwards focus: i.e., from efficiency towards inclusion of effectiveness and value creation. The researcher's knowledge and understanding grew hand in hand with that of the PBO, mutually influencing each other throughout the process. At the start of the case study, the company used a traditional approach to working with projects; in it, clients—the various departments of the company—commissioned projects from the PBO. The PBO then reviewed available resources and assigned a project manager, who in turn planned and managed the project. This approach aligns with the one promoted in PM handbooks and standards and is similar to a contractual relationship in which the customer is responsible for what should be achieved in the project (outcome), and the project manager is responsible for how to achieve the intended outcome (conformance to specifications). However, because its projects are internal and are often aimed at developing or modifying the company's processes, the PBO managed its projects through administrative procedures rather than through contracts between the project manager and the customer (Hobbs and Besner, 2016) (for a comprehensive description of the case PBO and its parent company, see the chapter on methodology). This chapter intends to offer more detailed insights into the challenges that emerged from applying an efficiency and effectiveness perspective to the operations of the case PBO. Consequently, the chapter is intended to contribute to RQ 2 (Introduction, p. 7): How can PBO operations be understood from the perspective of efficiency and

effectiveness? Each of the chapter's sections addresses the question of how introducing a clear distinction between efficiency and effectiveness influenced the understanding of PBO operations (and projects) in their context.

The chapter is structured in accordance to different themes that emerged in the course of the exploratory research process, all falling under the overarching theme of efficiency and effectiveness. The sub-themes represent different aspects of the case PBO's efforts to work toward organizational-level improvement and the subsequent challenges discussed. The chapter starts with what could be seen as a contextual theme that is not directly related to efficiency and effectiveness but which is still important to understanding the context in which the PBO operates. Under the umbrella theme of efficiency and effectiveness, the chapter addresses four separate sub-themes that examine challenges related to: (1) short-term focus on project delivery versus long-term focus on project effect, (2) early and late phases of projects, (3) performance and success in relation to PM and the PBO, and (4) learning in the PBO. Because the different themes are interdependent, they overlap in places; however, measures have been taken to keep them as separate as possible. Efficiency and effectiveness are the main theme, since they are part of the chapter both as a theme and as the guiding perspective through which the other themes are discussed.

4.2 The Clients

By operating as a subsidiary to the parent company, the PBO can be seen as an internal PM resource serving the other departments within the company. The primary customers for the PBO are the different company departments, and both the PBO and the customers operate following an overarching and shared company strategy and therefore share the same goals. As the PBO management team describes it, their short-term focus is to manage and deliver projects for their customers, while their long-term focus is to ensure that projects are delivered in a manner that is efficient and effective and that they contribute to achieving the company's goals and strategy. One program manager (Interview, Q2 2014, Table 7) defined the PBO's "customer" as the different departments that commission the projects. The VP of Projects confirmed this definition of *customer* but added:

We should start with the customer's needs, but not agree to everything.

Here he means that the PBO ought to critically review the commissioned task in order to ensure efficient and effective projects, since customers often only focus on their own operations and may fail to see the bigger picture. The PBO, in contrast, needs to consider the project from both a departmental and a company-wide perspective, and ultimately the organization's customer was not only the commissioning department specifically but also the parent company as a whole. In order to separate between the commissioning department and the parent company, however, the customer as defined by the PBO (i.e. the different departments) will be referred to as "the client," while the parent company will be referred to as "the company," even though in some sense it can be considered the PBO's customer as well.

Misalignment between client and company goals was one of the most frequently mentioned challenges regarding efficiency and effectiveness, since if projects prioritized the client's goals over company goals their execution could turn out to be suboptimal from the broader perspective. During the research project steering group meetings PBO management members explained that sub-optimization meant spending resources on projects, or parts of projects, without adding value from a company perspective. One example concerned a project aimed at modernizing a workshop, part of which included the client's request for installation of three overhead cranes. On closer review, it was found that one crane would be sufficient to provide the desired capacity. The respondents pointed out that by doing so, the client had decided to invest in redundancy in order to prepare for future potential increases in demand. Because the increased capacity would not be required for the foreseeable future, however, investing in more cranes than needed would tie down resources that could be used in other projects. The respondents explained that installing all three cranes would most likely create value for the client in terms of meeting their needs but would not create value for the company, since the capacity would not be utilized in a foreseeable future.

4.3 Efficiency and Effectiveness

As it happened, one of the first things discussed during initial research project steering group meetings (SG#1-2, Table 7) was project efficiency and effectiveness. This was because the PBO was struggled to define what constituted “good” and “effective” performance. By reviewing the PM research literature it was found that discussions of efficiency and effectiveness in the context of projects was limited and that the concepts were applied in an inconsistent and poorly defined manner (cf. Zidane & Olsson, 2017). This finding lead to the first topic of interest: to further understand efficiency and effectiveness in project settings. A central piece of information at this point is that in Swedish, the English-language concepts of efficiency and effectiveness are described using the same word, *effektivitet*. This meant that the PBO had made no clear distinction between working toward improving efficiency and working toward improving effectiveness; rather, it discussed the two concepts as being synonymous. This presented both a challenge and an opportunity during the research project. All discussions and data collection were carried out in Swedish, focusing on *effektivitet*. By not separating the concepts during data collection it was possible to discuss efficiency/effectiveness without distinction. The distinction would instead be made later on during the data analysis, in order to tease out how the respondents discussed the two concepts.

Findings suggest that PBO members at all levels (project manager, project coordinator, program manager, PBO manager) seemed to prioritize efficiency and focused predominantly on the triple constraint: in particular time and cost, and to a lesser extent scope. This finding was consistent with previous research, identifying the triple constraint as the driving concern in projects (c.f. Patanakul & Shenhar, 2012; Shenhar et al., 2001). Since the initial purpose of the research project was to understand how PBO performance could be improved, efficiency and effectiveness were naturally discussed in the research project’s steering group meetings. Over time, these discussions moved from focusing on project delivery under the triple constraint to also include how to account for the best possible outcome for the company. As an example, at one meeting the results of first round of interviews (Q2 2013, Table 7), concerning the separation and definition of efficiency and effectiveness as commonly applied in quality management, were presented to the PBO’s management team.

Following the presentation and subsequent discussions, discourse among the PBO management started to shift to include both efficiency and effectiveness in their management team meetings (observed during fall 2013 meeting, for example).

Another indication of the shift in focus to include effectiveness can be found in the PBO's strategic plan. The plans were studied starting from a point prior to the launch of the research project (2012) through the 2016 plan; over this timespan the primary goal shifted from project efficiency to customer satisfaction and project effect (outcome). The triple constraint was, however, not discarded, but instead remained as an indicator of project and PBO efficiency. For example, the only goal in the 2013 and 2014 strategic plans was project efficiency (*projekteffektivitet*), with the development and implementation of a performance index for measuring project effect existing as one of many action item bullet points. Two years later, the 2016 plan included primary goals related to both efficiency and effectiveness, consisting of the goals *follow-up on customer satisfaction, more than [XX]% of projects meet the triple constraint* and *measure project effect*. (Projects at LKAB, 2013–2016 operational plans, see Appendix V)

As Zidane and Olsson (2017) thoroughly describe, and as previously discussed by Sundqvist, Backlund, and Chronéer (2014), the PM literature defines and applies the concepts of efficiency and effectiveness in an inconsistent manner. At the most basic level of description, efficiency and effectiveness refer to *doing things right* and *doing the right things*, respectively. This means that the concepts differ in focus: efficiency is internally focused (how the project is managed and delivered), while effectiveness is externally focused (what the project should achieve and why). This insight proved to have consequences for the PBO in several aspects. An important outcome from the research project's steering group meetings was the insight that the PBO was only responsible for the question of efficiency, while the question of effectiveness was the responsibility of the client, as seen in Figure 6. This posed several challenges regarding improvement work at the PBO, which was discussed in relation to the following themes.

(4.3.1) SHORT- AND LONG-TERM FOCUS OF PM

The first theme concerns the challenges related to the short-term focus on project delivery (i.e. conformance to specifications) and the long-term focus on project outcome (i.e. the effect achieved). Although seldom explicitly mentioned, discussions with and among management team members generally revolved around the challenges that the team experienced in making sure that every project delivered value to the parent company. During the research project's first steering group meetings (SG#1-2, Table 7), PBO management team members brought up the issue of striving to ensure that the intended effect of each project was achieved. They explained that different clients varied in the degree to which they took responsibility for defining the intended project outcome (i.e. effect) and that it was not uncommon for projects to be initiated without a clear outcome in mind. In other words, aspects related to effectiveness were not addressed or poorly defined at the start of the project. The PBO management representatives felt obligated to make sure that each project reached its full potential, but they did not know how to achieve this. The challenge of poor project definition is not unique for the case PBO. For example, Hobbs and Besner (2016) have shown that in the case of internal projects, project definition has a significant impact on project performance. They suggest that having practices in place to improve project definition is a best practice due to its significant impact on performance.

A reoccurring concern for the PBO management team was how to monitor the effect that projects delivered. One of the main concerns raised by the VP of Projects throughout the case study was how to account for and ensure that a project's intended effect was achieved. Already in 2013, the strategic plan mentioned the development and implementation of performance indexes for project effect within its action-item list. The issue of project effect was twofold—one part related to ensuring that projects delivered their intended outcomes and the other part related to how to understand project success and PBO performance. As previously mentioned, during the research project's steering group meetings PBO team members explained that it was not uncommon for projects to lack a clear definition of the intended effect to be achieved. Similarly, and consequently, the degree to which the delivered effect was or even could be measured and evaluated varied significantly. For example, the VP of

Projects explained that the PBO often had projects that lacked a defined initial or current state to which the achieved outcome could be compared to (i.e. a way to evaluate results other than cost and time). One reason given for poor project definition was that clients sometimes initiated projects on their own, only to later realize that they did not have the knowledge or resources to bring them to fruition. In such a situation, they handed the project over to the PBO, resulting in the PBO “inheriting” a project that had already started to consume resources. This made it difficult to go back to the beginning of project conceptualization, since that would result in a loss of any investments already made. The VP of Projects felt the solution to such cases was to make the best out of the situation and finish the project. According to respondents, ill-defined projects were a consequence of clients who had little or no previous PM knowledge and experience.

In the case where the relationship between the client and a PBO is governed by a contract, concern with and responsibility for project effect rests fully with the client, as one program manager described (Q2 2017, Table 7): “[...the responsibility] is formally the clients, they’re the ones responsible for the investment.” However, in the case of a subsidiary PBO serving internal clients, it seems that achievement of project effect becomes at least potentially more important due to the nature of the relationship and the interdependence of the two parties, since both client and provider are part of the same company. As the VP of Projects stated in an interview (Q2 2017, Table 7):

How can we know that we are doing the right things? [...] we want to put more time into the initiating phase and gather more competencies and resources around [answering the question of] why should we do this [project]? [...] In order to create better effectiveness we need to start the journey already in the first phase [referring to project initiation].

In examining the “why” question for each project, the VP further stressed the need to identify the root cause and to understand the current state but also to put an effort into describing the intended outcome (effect). In practice, this would mean being involved in the clients’ task of identifying their needs and developing the project charter—activities that are generally not part of PM practice (see PMBOK Guide® [PMI, 2008]). In essence, this is the work needed to link the project to the ongoing work of

the organization, such as strategic alignment. In this process, the VP of Projects describes having to balance value creation at different organizational levels—that of the client and that of the company. Spending time and resources on reviewing project ideas, the VP of Projects argued, might be considered a waste from a project manager perspective, since it might delay or even paralyze project launch. However, from a company perspective it might add value, since it would allow the project manager (or PBO), together with the client, to strive to ensure that the project is aligned with company operations and strategy.

In the early stages of the case study, the role of the PBO was more that of a service and support function, primarily providing clients with PM competence. During the period when organizational changes were made at the company, including replacement of the company president and CEO (September 2015), the role of the PBO changed and their strategic responsibility increased (see section 3.2, Case Study Organization). As a consequence, the PBO's interest in project effect increased. Looking at the PBO's project guide—the formal document describing project work within the company—one of the changes that was made between the start of the study in 2013 and its conclusion in 2017 was the addition of a section regarding project effect. This section states that the intended effect of the project should be defined in the project charter, including both the short- and long-term perspective. The project guide also stated that the project client is responsible for monitoring the intended effect. However, as the PBO management team described it, projects often continued to lack a defined “intended effect” and instead focused on the output. Consequently, if the intended effect—including the current and future state—was not defined, tracking project outcome in the short- and long-term was not possible.

During research steering group meetings the VP of Projects and the logistics program manager further explained that even when the intended project effect was defined (either by the client or by the project manager), this did not guarantee that the client would follow up on it (at least to the knowledge of the PBO). In some sense, PBO managers described certain projects as organizational changes with unknown effects or outcomes. The PBO management team members' frustration and concern regarding project effect indicates a tension between their responsibility as formally defined and

what they experienced as being responsible for in practice, as noted above. Even though the client was responsible for defining and tracking project effect, it was not “business as usual” for the PBO when this responsibility was not fulfilled, as they felt obligated to ensure sufficient project outcome for the company. The PBO management team argued that although the formal responsibility was assigned to the client, it was in everyone’s interest that every project reached its full potential, since ultimately they all belong to the same company. The VP of Projects also described project performance, defined in terms of achieved effect, as reflecting back on the PBO, whether positively or negatively. The VP wanted to make sure that the PBO performed at its best. In other words, clients and senior management might perceive a lack of clear project effect as a failure reflecting poor PM competence within the PBO. The introduction of “measuring project effect” as a strategic goal for the PBO indicates a shift in focus from efficiency to both efficiency and effectiveness.

In light of the discussions on efficiency and effectiveness, specifically regarding effectiveness and the delivered effect, the topic of interest during research meetings with members of the PBO management team shifted from “how to deliver projects efficiently” to “how to deliver the best outcome in relation to the company strategy.” This indicates a shift in focus from meeting the triple constraint towards evaluating projects based on factors such as contribution to overall corporate strategy and prioritization among projects. This change in focus also indicates a shift in mindset regarding the role that the PBO played within the company. The need to shift focus from the short-term goal of project efficiency to a longer-term goal of value creation has previously been emphasized by researchers such as Shenhar et al. (2001), Winter et al. (2006), and Geraldi and Söderlund (2016). An event (a contextual factor) that illustrates the shift in focus within the PBO to a concern with both efficiency and effectiveness was the revision of the organization’s structure that occurred in conjunction with the change of company leadership (see section 3.2, Case Study Organization). As a part of this change, the PBO was given a new responsibility—to act in a strategic role within the company—and this included an increased responsibility for the strategic alignment of projects and process optimization. This new responsibility meant that the PBO now had formal authority to be involved in the early stages of project conceptualization and hence became a partner in discussions

with and support for other divisions and departments, and not just unit that assumed responsibility for projects from other departments and delivered the end results. However, as the VP of Projects pointed out, project effectiveness was still a shared responsibility, and there was still a lot of work to be done before both project managers and clients accepted and embraced the value of adopting both short- and long-term foci in projects.

(4.3.2) EARLY AND LATE PROJECT PHASES

The second theme that emerged in the results concerns the early and late phases of projects, and the related challenges for the PBO: that is, creating prerequisites for a favorable project outcome in terms of both efficiency and effectiveness. In relation to the first theme concerning short- and long-term focus, the PBO management team expressed frustration regarding project performance, as they were concerned that events they could not control had major implications on project performance and success. One of these challenges related to the early and late project phases, i.e. the identification of needs, project initiation, and handing over the result to the user.

The PBO's "market" shifted during the case study. At the start, the order book was full, since demand on the market for the company's products was at an all-time high and the company was in the middle of a period of heavy investments. For example, a new mining level, called KUJ1365 (Kiruna Under Jord [Kiruna Under Ground], at a depth of 1,365 m), was being completed to secure future production. Project managers described having heavy workloads due to the high product demand; their main focus was on delivering projects according to the triple constraint. Although they did admit their primary focus was the triple constraint, several project managers acknowledged the need to focus more on the long-term aspects of project outcomes. When asked what kept them from focusing on long-term goals, they said it was the result of a lack of time and resources. Specifically, they argued that sufficient time in the early phases was important in order to ensure benefits in both the short- and long-term perspective. The logistics program manager explained that it was not uncommon that time in the early phases was already spent by the client prior to contacting the PBO.

A common course of events in the early phases was for the client to have identified a problem and explored possible solutions before reaching the conclusion that a full

project was needed. Only after those initial steps, when a possible solution had already been identified, would they contact the PBO. As one program manager commented:

Clients are sometimes quick to initiate a project [...] and fail [to define] the purpose of the project [i.e. why].

In other cases the client organization started work on a project themselves before realizing that they did not have the resources or knowledge to finalize it; they subsequently handed it over to the PBO for completion. In these two scenarios the program manager described it as difficult to restart and do the job properly. Instead, they had to adapt and make the best of the situation. PBO team members felt that the fact that clients consumed time and resources in the early phases before engaging with or consulting the PBO in any way influenced the potential project outcome and limited the chances for the project to achieve its full potential. Project managers felt that the limited time available meant they had to go with the first suitable solution rather than conduct a root-cause analysis or similar study to arrive at a holistic understanding of the problem.

Another challenge caused by limited time in the early phases relates to cross-project coordination. One of the strengths of having in-house PM competence, according to the VP of Projects, was the potential to coordinate between projects. One example described during an early workshop (autumn 2013) concerned moving excavated rock from one project to another project that needed fill material, saving both time and money. This was an example of a synergy between projects that the PBO wanted to achieve, but it was described as difficult in practice due to lack of time in the early project phases. Similarly, team members also expressed frustration in relation to efficiency and effectiveness, since project managers considered the early phase to be important in order to achieve a project that was not only efficient but also effective. The literature provides support for the idea that early project phases are critical for project success (c.f. Morris, 2005; Pinto & Winch, 2016; Winter et al., 2006). The option for the project team to explore alternative solutions in the early phases was described as both good practice and desirable. However, several respondents pointed out that the lack of time and resources forced them to skip this form of review and

reflection and only deliver what had been ordered; they could only focus on efficiency. One project manager stated in an interview (Q2 2013, Table 7) that:

[There is no] time and money to explore alternatives, [...there is] no time to question what should be done.

Consequences of not being able to explore alternative solutions in the early project phases included sub-optimization, ill-defined projects, failure to achieve synergies, and unnecessary redundancy. In other words, there was a risk of losing out on important aspects of effectiveness and value creation (Geraldi & Söderlund, 2016; Jugdev & Müller, 2005; Winter et al., 2006) for the parent company.

The following example illustrates a change in approach within the PBO and exemplifies the potential benefit of early-phase involvement of the PBO in terms of achieving both efficiency and effectiveness. In the fall of 2016, while attending an event organized by the HLRC, the research fund supporting this study (Table 7), I was surprised to meet the VP of Projects, who was attending as a spectator. We started to talk, and the conversation came around to a discussion of the early phases of projects, which was a topic addressed at a previous project steering group meeting. The VP explained that he, together with the logistics program manager, had recently been in discussions with a client who had contacted them regarding a potential project. Since the client had contacted them in the early phase, they decided to arrange a visit for initial discussions regarding the underlying problem, instead of following the normal routine of accepting the project based on available PM resources. Without going into detail about the specific project, the VP of Projects and the program manager, together with the client, managed to find an alternative solution to the underlying problem defined in the project, and they were consequently able to launch a project that would be both cheaper and faster to implement than the original idea. This example represents an aspect of project work that is less frequently mentioned: the potential savings of downsizing or even scrapping projects, which saves resources or frees them up for other projects. The literature devotes a great deal of attention to importance of the project front-end, with notable contributors such as Morris (2005) stressing the need to include front-end activities in PM in order to positively influence project outcome. These findings support the need to include

front-end activities in PM, since these front-end activities such as defining objectives and strategic alignment seems to influence project and PBO effectiveness.

In comparison, the PBO and project managers did not discuss the late phases of projects as often as the early phases, but it was a topic that came up from time to time. Respondents' descriptions were dominated by challenges relating to client engagement and implementation, and take-over by the client organizations—project aspects often related to the project sponsor role (Crawford et al., 2008). For example, the process of handing over the project results to the client was considered problematic. As the VP of Projects put it during an interview (Q2 2014, Table 7):

[...] the customer might not always have secured the resources to operate [the project output], [...] we cannot just walk away and say that we are done.

This statement referred to the need to secure the operational aspect of projects as well and to work closely with the client. The VP of Projects further explained that preparing the organization to take over the project output was the client's responsibility, but it did not always work out that way. Not all clients were engaged in their projects, and roles and responsibilities seemed to be unclear or not fulfilled. As a result, it was not uncommon for project managers to encounter resistance from the client organization in the late stages of projects, as implementation and deployment commenced.

During a telephone interview (Q3 2016, Table 7), one project manager provided an example illustrating problems related to the late project phases. It had been decided to rebuild and modernize a laboratory, and a project manager had been assigned. The project was described as a traditional construction project, and as was customary, the client was involved via the project's steering group. Representatives from the laboratory staff (users) also participated in order to ensure usability. The project manager explained that everything went according to plan: blueprints were approved and construction began. However, when it became time to start moving in the equipment, users started to raise concerns regarding the layout of the space, which they realized would negatively affect their operation. As a consequence, adjustments

had to be made: a wall had to be moved, even though the client had been involved from the start. The project manager stated that he experienced a difference in interest from the users during the process. Initially the user representative was more reserved and did not say much, but when the results started to emerge the representative became more active, leading up to the point of demanding changes at a late stage. It seemed like communication between client (manager) and user (employee) had failed at some point.

Respondents indicated the existence of several similar situations in which they described engaging users in the project as challenging. For example, one project manager and a program manager described users' (both production workers and managers) response to an attempt to inform them about an ongoing project as *indifferent* and *tepid*. In contrast, during an interview (Q2 2013, Table 7), one senior project manager highlighted "involved and engaged clients" as a key feature of successful projects. Another program manager pointed to lack of support from the client department's management—for example, failure to inform and motivate employees or provide the necessary resources—as a major reason for such late-stage problems (interview Q2 2016, Table 7). These findings are in line with Crawford et al. (2008), who emphasize the importance of project sponsor support and governance throughout the project process. In other words, lack of commitment and engagement from clients throughout the entire process, whether it is because they are uninterested or too busy, seems to have an effect on achieving efficient and effective projects (i.e. project success).

(4.3.3) PROJECT SUCCESS AND PERFORMANCE

The third theme that emerged from the results concerns project success and PBO performance, and the challenge in grasping the concept of what constitutes a “successful” project for the PBO. Both performance and success are related to the themes on changing focus and the concepts of efficiency and effectiveness, as the PBO struggled with being able to manage the full scope of project success. This challenge goes back to the beginning of the research project, since it was the PBO’s desire to improve performance and project success that motivated its participation in the project from the start.

Throughout the research process, it became evident that project success and performance could be judged from either the PBO’s or the company’s perspective, among others. For instance, a PBO could focus either on its own concerns or those of the company when it came time to define what constitutes a successful project or a “good” performance; this would imply different approaches. From the PBO’s perspective, performance and success entail focusing on aspects they are responsible for: efficiency, understood as delivering the best possible project according to specifications. This perspective increases pressure on the client to fulfill their responsibility to achieve strategic alignment of the project, to submit the best possible project definition, to be engaged throughout the project process, and to prepare their organization to implement the results (in line with what is described in PM handbooks). In such a scenario, the company should hold the clients (project owners) responsible for ensuring that all projects deliver value that is aligned with the overall strategy. The PBO’s responsibility, in turn, is limited to the project lifecycle, from project launch to final delivery. However, as indicated in the discussions on the previous themes, focusing on efficiency was not considered sufficient to ensure that value was being created for the company in every project, since clients were known to not always fulfill their responsibilities as project owners.

Viewing success from a company perspective would mean the PBO would have to be involved in not only the project lifecycle but also the product lifecycle. Consequently, expanding the focus requires involvement before project launch—the early phases when needs and problems are being identified—and after project delivery—

evaluating the achieved project effect. This perspective requires a more holistic approach to projects and project management within the company, as advocated by authors such as Engwall (2003) and Shenhar et al. (2001). It would entail transforming the PBO from a support unit providing PM competence to a strategic unit working to implement and achieve the company strategy through projects. As a consequence, the PBO should be given the mandate to manage parts of, or even all, aspects of effectiveness in order to be able to work on all aspects of project success. The company reorganization in 2015 (see section 3.2, Case Study Organization) resulted in just such a change in responsibility for the PBO, which one program manager described as going from “*managing projects*” to “*act[ing] more as organizational developers.*”

The findings from the case PBO indicate that they are, to some extent, caught up between these two modes of operating—as a support unit and as a strategic unit. The situation described indicates that their role and mandate are in line with that of a support unit, but they are nevertheless expected to operate as a strategic unit. This causes frustration within the PBO, whose members expressed feeling like they were evaluated in terms of project performance and success using variables that were actually the client’s responsibility: i.e., achieved effect and strategic alignment. Such frustrations were voiced throughout the case study and can be seen in the PBO management team’s frustration regarding the lack of, or limited monitoring of project effects. During observations and in research project steering group meetings, several respondents described receiving poorly defined projects in which the intended effect was not defined. This meant that it would not be possible to follow up on and evaluate the project at a later stage. They also explicitly mentioned that the client was responsible for monitoring project effects, but such monitoring was either seldom done or the results of the evaluation of effect were not shared with the PBO. Program managers gave some explanations to the problem of evaluating project effect, which included poorly defined projects and needs and clients’ limited interest in or time for evaluation. From a performance and success perspective, projects were informally or formally judged based on factors related to both efficiency and effectiveness, but the PBO could only control the efficiency aspect. As Shenhar et al. (2001) have shown, project success is multidimensional, and project efficiency only has a relative

importance from a short-term perspective as the only dimension available for evaluation during a project, as well as at project completion.

Further, as respondents described during interviews and at other times, the level of commitment from the client (project owner) often influenced project performance. One senior project manager indicated that when clients were engaged in projects there were fewer surprises (unexpected changes) compared to when they showed less engagement. Such projects were considered more successful in terms of client satisfaction. Engaged clients and ongoing dialog was believed to be a way to discover and avoid common pitfalls before they occurred throughout the project process. Thus, high engagement would allow both the project manager and the client to know what the output would be, as well as what steps had to be taken to get there. During the first round of interviews (Q2 2013, see Table 7), which focused on efficiency, effectiveness, and PM maturity, all respondents were asked to describe a successful project they had been involved in. The majority could recall at least one such project, and one of the common denominators was that the client had been involved throughout the project and that dialog had been productive. Another variable often mentioned was the ability to return project funds thanks to delivering the project under budget. One project manager (Q3 2016, Table 7) stated that in order to engage clients you “*need to find the sore points*”; such “*sore points*” pushed people to get involved because they brought them to understand how they would be affected.

Discussions regarding shortcomings and challenges related to performance and success often concerned clients who primarily were engaged in the initial and late stages of the project. This challenge of not having engaged clients overlaps with the previous theme of PBO involvement in the early and late project phases. A lack of involvement throughout the project lifecycle often resulted in late changes that could have been avoided (i.e. changes beyond what can be expected in projects): for example, having to move a wall, even though the client had approved the design in earlier phases of the project, leading to budget overruns or delays. The PBO management team ascribed this unengaged behavior to clients’ limited knowledge of PM. As a consequence, projects risked failure on at least the aspect of efficiency, since late changes cause delays and increase costs, which reflects negatively on PM

performance and success. Since only the company's senior management had the authority to change the formal responsibility, the VP of Projects was unable to directly influence clients' level of engagement.

In individual interviews (Q2 2014, Table 7), members of the PBO management team were asked how they spent their time; they replied that around 80% of their time was spent on operational issues and 20% on strategic issues. The strong operational focus had been discussed within the management team and was considered a problem in regard to PBO performance. As a way of dealing with the limited focus on strategic issues, the VP of Projects implemented the new organizational position of senior project manager, a sort of buffer between project managers and program managers. This was done in order to relieve program managers from much of the operational issues and allow them to shift their focus to strategic issues instead, in order to achieve a 20/80 distribution of strategic/operational time instead of the 80/20 distribution described. This also indicates the importance of being able to work toward more long-term goals within the PBO.

In addition, the PBO management team was also interested in understanding the organization's performance in comparison to potential competitors. For example, "comparison to other Swedish companies" was listed as one of the reasons for initiating a measurement of PM maturity in an internal PowerPoint from 2012. During the early phases of the research project, when PM maturity models were discussed and studied, the potential to benchmark against similar organizations arose repeatedly as a point of interest within the PBO steering group. Searching for validation regarding the PBO's PM capabilities seemed to be of interest. The PBO's mission at the time was to deliver efficient (and effective) projects to the company. During initial discussions it was further explained that the PBO strove to deliver projects more efficiently than competitors, with the goal of sparing the company from having to contract outside PM services. One of the main problems, however, was that no definition had been formulated for what constituted an efficient (or effective) PBO, beyond meeting the triple constraint. The focus of the PBO management team was consequently directed towards competition rather than on current practices and value creation. As time passed and discussions concerning efficiency and effectiveness

progressed, the issue of comparisons with other organizations diminished and focusing on the customer—both client department and company—increased. Four years later, the focus had gradually shifted from comparison with others to satisfying the goals of the organization and the company. This change in focus implies a shift from product creation to value creation, and is evidenced in the introduction of and increased focus on client and customer satisfaction in the PBO's annual strategic plans when compared over the 2012 to 2016 timespan.

Finally, factors or events that were external to the company also played a role in influencing project success—factors that the project team could not influence. These events influenced the relative, or perceived, success of projects, both during the project and after completion. One of these events was the change in the market price for the company's main product, iron ore. When discussing successful projects, one program manager (interview, Q2 2017, Table 7) mentioned the construction of a new processing plant, which was considered to have been very successful. One of the events that the program manager brought up as a contributing factor to the project's success was the increase in the market price of iron ore. Because the market was experiencing a strong increase in demand that led to higher prices, the time-to-payoff for the processing plant decreased significantly. Although this was not the only factor by which project success was judged, it shows how external factors can influence the evaluation of a project.

The program manager was well aware of the luck they had with external events, and also provided another example of a situation that experienced the opposite result. During the time of high demand, the company decided to prepare a new production site in order to be able to meet the current market demand. However, as the project neared completion the market price started to decline, and it was decided to postpone the start of production. According to the program manager this meant that resources had been spent on a project that, at the time of completion, did not create value for the company, since the site was kept idle. These two examples illustrate how project success as a whole is affected by many external aspects, some of which are either difficult or impossible to foresee or influence. Without knowing the details regarding the PM efficiency of the respective projects, the first project (new plant) could have

performed poorly and the second project (new site) could have performed well, in terms of efficiency, and yet in terms of overall project success the former would have appeared successful and the second unsuccessful.

(4.3.4) LEARNING

The fourth and final theme emerging from the results concerns challenges related to the PBO's ability to identify and generate input into the improvement process, e.g. through learning and making use of the PBO members' experiences. Their ambition was to work with following internal "best practices" in order to have control over the PM process. According to the PBO management team, the overall challenge was that activities related to project delivery in general were prioritized over activities related to learning and PBO improvement. In a manner similar to the issues with the short- and long-term foci of project performance and effect, the issue with learning involved focus and priority. Learning also emerged during the research process as a form of internal value for the PBO, since the PBO could potentially use everything that individual employees learn in their profession as inputs to its improvement process. This was discussed, for example, during dialog meeting 2 (Q3 2015, Table 7), from which the idea for paper IV emerged. Hence, learning could be considered part of an internal value-creation process.

The PBO management team expressed an explicit interest in learning, as it was a recurring issue discussed during PBO management team meetings and was even included in the PBO's strategic plan. PBO managers argued that each individual in the organization continuously learned new things related to project delivery within the company, and these lessons learned could potentially be useful for the PBO: that is, everyone could benefit from them in performing their jobs. The PBO launched several efforts at sharing of lessons learned among PBO members. The primary approach was to gather and disseminate the "lessons learned" sections from project reports and internal and project meeting agendas. The PM literature and handbooks recommend this technique (e.g. PMI, 2008), but it has proven difficult to achieve in practice (e.g. Hartman & Dorée, 2015; Swan et al., 2010). The case PBO was no exception, and the "lessons learned" section was reportedly either filled in minimally using a few good examples or was left blank in the report or crossed off the agenda in meetings. As one program manager (interview, Q2 2014, Table 7) explained:

[The level of] feedback [i.e. lessons learned] in the [final project] report depends on who writes it, some [are] good, others [are] not so good. And [...] some only mention [the triple constraint] and comments “we were on time.”

Further, the VP of Projects and the two program managers participating in the research project steering group mentioned the inadequate lessons-learned sections in reports several times during these meetings (see Table 7), but they had no concrete ideas about how to move forward and achieve sharing of lessons learned.

“*Who reads them anyway?*” This quote comes from one of the program managers (interview, Q2 2017, Table 7), who made this statement in a discussion about various types of documentation and project reports. When asked why the lessons-learned sections of reports received so little attention, several respondents replied that they preferred to share experience face to face, and they wondered if anybody ever read the reports. The issue of not wanting to expose and document mistakes was also mentioned. One program manager argued that it would be more valuable to have a detailed list of project participants instead, since then it would be possible to contact them and discuss the project rather than to read about it.

The respondents commented that the only time past project reports were read was when a similar project was to be carried out, “in order to get a head start,” as commented by both a project manager and a program manager. At a managerial level, one program manager expressed concerns regarding the project reports, stating:

In my program we have 60 projects. What are the odds that I would have the energy to read a report from [another program]? (Interview, Q2 2014, Table 7)

Similarly, at a later stage of the research project, a “lessons learned” agenda item was implemented for PBO meetings. The intent was to remind participants to share lessons, as well as to promote sharing of experiences—not only at the end of a project but also continually during projects. However, it was reported that the lessons learned agenda item was continuously de-prioritized during meetings and was often

postponed for later or even crossed off the list. Lack of time was singled out as the main reason for this phenomenon. The purpose of the lessons learned section in the project report was to capture experience gained in the single project. No plan for the dissemination of documented lessons was identified; instead, it was up to each individual to access previous project reports as they saw fit. As mentioned previously, project reports were primarily accessed when a similar project was going to be carried out, in order to learn what had been done previously.

When discussing continuous improvement, one program manager (interview, Q2 2014, Table 7) stated:

[...] I can [bet] that the reader frequency is very low and went on to explain that [...] I have been somewhat of an opponent to these comprehensive final reports.

Project managers expressed similar opinions with respect to the usefulness of and their interest in the lessons-learned sections in the final reports (although advocates of the reports also existed at all levels in the PBO). However, regardless of their opinion on project reports, respondents described their usage of old project reports in similar terms.

Sometimes you have been thinking, in the role as project manager, “[...] that’s right, this [type of project] has been done before.” So, you look in the archive, [...] look in the final reports, see something [useful], “[...] I should think of this in this project.” [T]hen you might see who [the project manager was], “[...] well then I can go and ask [that person], [...]and get some feedback.” (Q2 2014, Table 7)

The quote is from an interview regarding CI, with a program manager with a more positive attitude towards final reports. Similarly, the program manager who criticized the comprehensive final reports also stated:

The most important part of a final report, to me, if I were to manage a similar project, is to have a list—who was involved the previous time? Who was involved in this project [so I can contact them] and [ask] what

can we learn. [It] is enough with a list [of participants], and perhaps a short list with three things we learned in this project. That might be something we have the energy to convey to the rest [of the organization].

(Interview, Q2 2014, Table 7)

These quotes suggest that respondents preferred to access experience verbally and face to face, rather than in written form. Both respondents valued the information from project participants more highly than any written lessons learned.

The described intent of the lessons-learned meeting agenda point was to promote the sharing of experiences on an ongoing basis, both within and between projects. When asked what was discussed during this agenda item, several respondents replied that the discussion point was often shifted to the end of the meeting and subsequently got crossed off due to time constraints. It became apparent that sharing lessons learned was considered to be something added to the meetings and not a natural part of them. In other words, the impression was that formal sharing of lessons learned was considered to be somewhat of a burden rather than as something useful. However, a program manager reported one exception early on during the case study, mentioning an internal forum initiated among those working on issues related to quality, environment, and the work environment. The forum was organized by staff, without managerial participation, and it focused on issues and problems experienced in practice that were then discussed during the meetings. The program manager ascribed the success of this forum to the nature of their work; a majority of the issues were described as related to rules and regulations, and staff members were motivated to participate, since it helped make their jobs easier. Unfortunately, as the group fell outside the boundaries of the case study, it was not pursued in greater depth.

During fall 2015 several logistics program meetings were attended and observed—both internal program meetings and various project meetings (see Table 7). During a steering group meeting for a project regarding cargo weights for trains, the project manager—who also had the role of senior project manager—invited a newly hired project manager (who transferred from elsewhere in the company) to sit in and learn how they usually conducted steering group meetings. During the meeting the attendees discussed a problem with scales, since the issue needed to be resolved. After

the meeting ended, the new project manager brought up the issue with the scales, as he happened to have previous experience with a similar problem. As a consequence, the project manager in charge obtained additional information and experience relevant to the problem. No assessment of the importance or usefulness of the additional information was made, but it does illustrate how sharing of experiences was generated through some form of cooperation.

Central to the work of improving PM competence was the PBO's PM model and Project Guide, which described that model. The guide was intended to gather organizational and company best practices regarding PM. The project guide was applied as a living document, meaning it was kept online and was intended to be accessed and not downloaded when needed. This approach was chosen in order to make sure that all project managers always had the latest version available, allowing the PBO members to make continual updates. An interesting aspect of the guide emerged when two program managers (interviews, Q2 2017, Table 7), independent of each other, described an update process they were involved in together. The two program managers had observed that project managers for certain projects had started to deviate from the described best practice. On closer inspection, they found that certain projects required more agile methods, which the project managers had adopted. The program managers explained that the new approach was found to be superior to the existing PM model, and they consequently decided to update the guide and implement a second PM model based on the new practice. By identifying and acknowledging improvements, the program managers acted as a link between the project and the organizational level, making the new best practice available to everyone within the PBO by implementing it in the guide. Both program managers were asked about their efforts to ensure that the new practice became disseminated and used throughout the PBO, but both answered that it was up to each manager to decide how they incorporated it. In other words, there was no formal process or method for actively rolling out the changes to the PM model; rather, it was up to each individual to discover it as they saw fit. This addition to the guide was, however, discussed during the PBO's steering group meetings, and so all program managers were made aware of the changes made.

Another example of a situation in which experience and learning could be shared between the project and organizational levels occurred during observation of the final stages of a construction project in late 2016. The project—a re-build of an existing function—was chosen for observation because it was in the completion phase, and the topic to study was project effect and value creation. The details of what had happened in the project are not very important here, but problems had occurred and were only discovered late in the process. A major issue concerned a missing piece of equipment—a measuring instrument—that was thought to exist but had actually been scrapped several years earlier. According to the project manager, there were two root causes for the problem: (1) the hired construction contractor did not do an on-site verification of the original blueprints on which the new blueprints had been based, and (2) the original blueprints had not been properly updated when previous changes had been made. In this project, the program manager was a member of the project steering group, together with the client (project owner) and user representatives. As a result, the program manager was directly involved in discussions regarding the project, creating a natural point in meetings where the project manager could share project-specific issues at a higher managerial level within the PBO, represented by the program manager. As a consequence, sharing lessons learned became a natural component of the project's problem-solving process, rather than existing as an extra activity to be performed on top of delivering the project. Unfortunately, it is not known how the program manager acted on the information from an organizational improvement perspective, but as with the updated project guide, this example illustrates the existence of situations where the PBO manages to share lessons learned between the project and organizational levels.

Although not directly related to efficiency and effectiveness, the discussions and findings regarding learning in the PBO are considered to be of importance, since lessons learned and the cumulative knowledge of PBO members act as potential inputs to the improvement process. Furthermore, from a value-creating perspective, lessons learned are potentially valuable for the PBO's improvement process and thus are indirectly valuable for their customers (i.e. clients and the company), since improved performance will potentially lead to better—both more efficient and more effective—projects.

4.4 Summary

Studying the case PBO from an efficiency and effectiveness perspective illustrates several challenges related to improvement work and PBO operations and performance. The short-term focus, commonly represented by a focus on the triple constraint, seems to limit the organization to focusing on and working with aspects related to “how things are done”: i.e., efficiency. Aspects related to what and why (effectiveness) seem to fall under the client’s responsibility (project owner). The lack of a contractual relationship, together with limited PM knowledge among clients, appear to have a negative influence on project effectiveness. This finding is in line with Hobbs and Besner’s (2016) survey results, which showed that projects lacking a contractual relationship also tend to be poorly defined, and that poor project definition negatively impacts project performance. Poorly defined projects are more common in internal projects, as found in the case PBO and as described by the respondents. Consequently, it is suggested that the PBO has limited potential to influence or improve project effectiveness because the responsibility for aspects that shape project effectiveness seem to be held by the client. These findings show that when the PBO is involved in the early phases, it is better able to influence both project efficiency and effectiveness. Members of the case PBO expressed a strong sense of responsibility for both short- and long-term success, i.e. project efficiency, impact on customer, business success, and preparing for the future (Shenhar et al., 2001), something that provides insight into variations in PM practice (Hobbs & Besner, 2016).

In line with Shenhar et al. (2001) project success and performance appear to be multifaceted and time-dependent, and both seem to be dependent on efficiency and effectiveness. As Shenhar et al. (2001) argued, the longer the timespan used to evaluate project success, the less important and relevant the aspects of efficiency become. Despite this long-standing insight, a focus on efficiency seems to dominate PM practice. From the point of view of a single project, achieving both efficiency and effectiveness seems to be dependent on the performance and coordination of both the project manager (efficiency) and the client (effectiveness). Applying an efficiency and effectiveness perspective highlights the division of responsibility at a department level within a company that has an internal PBO. Responsibility for project efficiency and effectiveness are split between the PBO and the client in a subsidiary setting. It

appears that the PBO is primarily responsible for aspects of efficiency, while clients are responsible for aspects of effectiveness. Further, variation in clients' knowledge of and experience with PM seems to influence both project efficiency and effectiveness, and consequently influences project success and PBO performance. These findings are in line with Engwall (2003), who found that both time and context appear to be important when managing projects.

5. SUMMARY OF APPENDED PAPERS

The appended papers are arranged according to their contribution to the thesis. Papers I–III focus on preconditions or challenges for PBOs to work systematically toward improvements. Paper IV provides insight into one potential way forward to overcome some of these challenges. Finally, Paper V contributes transparency regarding value creation in projects, in an attempt to provide further guidance on how to move from a product-creation focus toward a value-creation focus. A presentation of how each paper contributes to answering the thesis research questions is presented in Table 8 of Chapter 6.

Paper I

Backlund, F., & Sundqvist, E., (2018). Continuous improvement: challenges for the project-based organization, *International Journal of Quality & Reliability Management*, Vol. 35, No. 7, 1306-1320.

Continuous Improvement (CI) is an inherent part of project management (PM) as advocated in the Project Management Body of Knowledge, PMBOK (PMI, 2008, pp. 189-191). Many PM maturity models describe it as the highest maturity level (cf. Backlund et al., 2015; Young et al., 2014; PMI, 2008). Although the application of maturity models is widespread, few if any organizations have reached the highest maturity level, indicating that CI is difficult to achieve. Furthermore, the research literature regarding CI is predominantly focused on environments with a certain degree of repetition—something not always associated with projects—such as production and manufacturing contexts. Although it is advocated as good practice in project contexts, little is known about the application of CI in such environments, and researchers have not paid sufficient attention to the application of CI in project settings (Jung et al., 2009; Gieskes & ten Broeke, 2000). This prompts the research question: what kinds of challenges may PBOs encounter if applying CI?

A qualitative exploratory approach was used, involving six management teams at six different PBOs, with focus-group interviews as the data collection method. It was found that in PBOs, a high degree of autonomy among project managers seems to

limit a collective approach to PM. As a consequence, overall performance becomes secondary to individual project performance—an approach that is the opposite of CI. Furthermore, management teams themselves seem to uphold a project-oriented focus, which also complicates improvement initiatives at PBOs.

Contribution to Thesis

The study highlights the strong project focus at all organizational levels in PBOs. From a CI perspective, this leads to a failure to achieve the holistic, systematic, and strategic approach that is central to CI. The study also identifies challenges for achieving CI, of which the short-term focus on project delivery, reinforced by tight deadlines, is key. These challenges also include a failure to transfer lessons learned from the project level to the organizational level. Although the paper does not delve into it, the study also contributed to our understanding of differences in practice between standalone and subsidiary PBOs regarding efficiency and effectiveness. While the standalone PBOs can rely on contractual relations and leave responsibility for effectiveness to the customer, subsidiary PBOs are more involved in the process of ensuring both efficiency (operational focus) and effectiveness (strategic focus).

Author's Contribution

Sundqvist and Backlund carried out the study design, data collection, and analysis for the paper. The first submitted draft and revisions were co-written, with Backlund as the main author.

Paper II

Sundqvist, E., Backlund, F., & de Bruin, J., (2017). Lean in Project-Based Organizations. Presented at the 24th EurOMA Conference in Edinburgh, July 1–5, 2017.

The growing use of projects as a way for organizations to both develop and do business has generated the need to simultaneously manage multiple projects (Bakker, 2010). Managing multiple projects is especially important in project-based organizations (PBOs), where the project is the primary unit for production organization, innovation, and competition (Hobday, 2000). While there is research contributing to the understanding of Lean in projects (e.g. Ballard & Howell, 2003; Saier, 2017; Staats et al., 2011), there is little research on Lean in multi-project settings such as PBOs. Based on empirical observations, we argue that subsidiary PBOs may be more or less forced to incorporate Lean, as the result of Lean being implemented in the parent company. Consequently, the PBO can choose to either reactively adapt to, or proactively adopt, Lean. This paper explores the potential to introduce Lean in a multi-project setting. To narrow the scope, we chose to focus on Lean principles (and underlying values), since research related to Lean originally centers around organizational principles (Womack & Jones, 2003).

A case study approach was used in order to understand the challenges faced by PBOs when approaching Lean. Two subsidiary PBOs that experienced Lean implementations at their parent companies were selected, and interviews and observations were conducted. Womack and Jones's (2003) five Lean principles were applied as a guide during the data collection. These five principles correspond to *Process* and *Problem-solving* in Liker's (2004) 4P model, and because Liker (2004) provides a more detailed and operationalized description of Lean principles, these were utilized as a basis for coding and analysis. The findings suggest that Lean is applicable on an overall level, but that its principles need to be aligned with PM methods and tools to allow for greater flexibility. Furthermore, our findings suggest that adaptation of Lean is not only necessary for different contexts but also within a specific organization, as exemplified by the subsidiary PBO and parent company.

Contribution to Thesis

The study contributed important insights regarding the alignment between principles related to CI (since Lean can be seen as a CI methodology) and PBO practice. Furthermore, the study helped to understand what adjustments would be needed in order to achieve an alignment: for example the absence of an organization-level process describing value creation in the PBO. The study showed that process description was only applied at a single-project level, meaning that no holistic model existed for working toward improvements, among other aspects.

Author's Contribution

Sundqvist and Backlund planned the study based on an idea generated from previous discussions between the two. Sundqvist gathered and analyzed the data from PBO A and wrote the paper. de Bruin gathered and analyzed the data from PBO B, with additional analysis by Sundqvist. All work was carried out under the supervision of Backlund, who contributed valuable ideas and feedback.

Paper III

Backlund, F., Chronéer, D., & **Sundqvist, E.**, (2015). Maturity assessment: towards continuous improvements for project-based organizations? *International Journal of Managing Projects in Business*, Vol. 8, No. 2, pp. 256–278.

The development and application of project management maturity models (PM3s) as a way of understanding and improving project management capabilities is widespread. The purpose of this paper is to contribute to the empirical research on project management (PM) maturity assessments, specifically based on a maturity model. The empirical data are based on a case study that included in-depth interviews with a semi-structured approach, followed by a focus group interview. A survey was distributed within a project-based organization (PBO) and to the client and stakeholder representatives, and was then analyzed. The organization in the case study is a project department within a Swedish mining company.

Careful consideration is needed when choosing a PM maturity model (PM3), as the model structure can influence the assessment's focus. It is also important to include both internal and external project stakeholders in the assessment in order to achieve an efficiency and effectiveness perspective when analyzing PM capabilities. Valid information from an assessment is crucial, and therefore clear communication from management is important in order to motivate participants in the assessment. Improved understanding of implementing and applying a PM3 contributes to increased knowledge of drivers, enablers, and obstacles when assessing PM maturity, which also creates a basis for further research initiatives. An increased knowledge of drivers, enablers, and obstacles should be valuable for practitioners introducing and applying a PM3.

Contribution to Thesis

The study contributes to our understanding of how PBOs can systematically evaluate their operations and generate inputs to the improvement process. Furthermore, the study highlights the importance of including both internal stakeholders to understand efficiency, and external stakeholders to understand effectiveness, in order to arrive at a complete and holistic understanding of PM capabilities. The paper does not include

the portion of the study that illustrates how PM maturity is not a linear journey from the lowest to the highest level. Instead, exponential effort may be needed to move from one level to the next, with each new step being larger than the previous in terms of effort and resources.

Author's contribution

The idea to study PM3s originated from discussions between Backlund and Chron er, who also designed the study. All authors gathered data for the preliminary study, while Sundqvist gathered data from the case study (except the secondary data). Backlund and Chron er analyzed the data and wrote the paper, while Sundqvist contributed through analysis and discussions—for example, the dual-level PDCA in Figure 3.

Paper IV

Sundqvist, E., (2018). The Role of Project Managers as Improvement Agents in Project-Based Organizations. Accepted for publication in *Project Management Journal*.

Organizational-level improvement in PBOs has been recognized as difficult to achieve (c.f. Fernandes, Ward, & Araújo, 2014; Scarbrough et al., 2004). PBOs operate on two distinct levels: the project level and the organizational level (Hobday, 2000). Previous research has shown that interaction between these two levels is important but difficult to achieve (Scarbrough et al., 2004; Pemsel, Müller, & Söderlund, 2016; Müller, Glückler, & Aubry, 2013). As a PBO member and as the person responsible for project delivery, the project manager constitutes a link between the two organizational levels. However, previous research shows that project managers tend to prioritize short-term deliveries over long-term organizational improvement efforts (Chronéer & Backlund, 2015; Loo, 2002). Floyd and Lane (2000) argue that an organizational position such as project manager plays a number of roles, both primary (formalized) and secondary (not defined and more disconnected from everyday practice). The more clearly these roles are expressed, the more likely the possessor of the role is to conform to those expectations. Empirical findings indicate the existence of a secondary role for project managers as contributors to PBO-level improvements. This paper proposes that the project manager is implicitly expected to participate in and contribute to continuous improvement in PBOs.

This paper explores how the project management literature treats the project manager in relation to improving overall PBO performance. The results, supported by case study insights, indicate an implicit expectation that project managers will contribute to organization-level improvement in PBOs. If organization-level improvement is to be part of project management practice in PBOs, something promoted in the project management literature, the project manager's role as improvement agent needs to be formalized.

Contribution to Thesis

The study contributes to our understanding of the link between the project and the organizational level in PBOs. CI literature emphasizes the contribution of everyone in an organization in order for improvement efforts to succeed. When this is applied to a PBO, we would expect project managers to be engaged in improvement efforts, since they represent the majority of employees. What the study shows is that there is essentially no formal expectation that project managers will contribute to organization-level activities, despite numerous calls for the importance of integration between the levels. The study problematizes the general approach to PM, focusing on short-term delivery, and the limitations this creates for organization-level improvement efforts. Furthermore, the study provides examples of ad-hoc improvement efforts that integrate organizational levels, indicating a way forward.

Author's Contribution

As a sole author, Sundqvist conceived and designed the study, collected and analyzed the data, and wrote the paper. The work was supervised by Chron er and Backlund, who contributed valuable feedback and ideas.

Paper V

Sundqvist, E. & Chronéer, D., (2018). Making Value Transparent in Project Management Work. *Submitted for publication.*

PM literature and practice has pointed to the importance of changing focus from product creation to value creation (Geraldí & Söderlund, 2016; Winter et al., 2006). Geraldí and Söderlund (2016) conclude that progress has been made regarding value in PM since the influential *Rethinking Project Management Network* pointed it out as important. Nevertheless, there is still more to understand with regard to value in and from projects, as well as in relation to project management. Value in relation to projects has been shown to be both time and context-dependent, making it challenging to discuss. Further, from a PM perspective, a project's effect, which is a major part of customer value, is realized and possible to evaluate only after the project is completed. Consequently, it could be argued that those who discuss value need to continually reflect on the dimensions of perspective (value to whom?) and time. In order to help both researchers and practitioners reflect on the nature of value, a composite model of value is needed. The purpose of this paper is, therefore, to develop such a model and make work towards value more transparent for PM practitioners (Figure 11).

Contribution to Thesis

The study emphasizes the need for subsidiary PBOs to work toward value from all aspects, since they generally lack a contractual relationship with the project owner. It also provides a basis for discussing value creation in subsidiary PBOs and the challenges associated with the lack of contractual relationships. Furthermore, because customer value is central in quality management, including CI, and defines what adds value (rather than production, as in production-oriented organizations), the study contributes to our understanding of what guides improvement work in PBOs. The insight that PBO performance is only judged based on conformance to specification, and that this only accounts for a limited part of a project's total value, helps us understand the problems and challenges involved in understanding PBO performance. The findings point to three initial steps for making value more transparent. First, value needs to be clarified and brought up on the agenda. Second, the different perspectives

on value need to be addressed and discussed, not only within the project but also with project stakeholders and as part of a broader context. Third, responsibility for value and ensuring value creation in projects should be reviewed in order to ensure that all aspects of project success are accounted for.

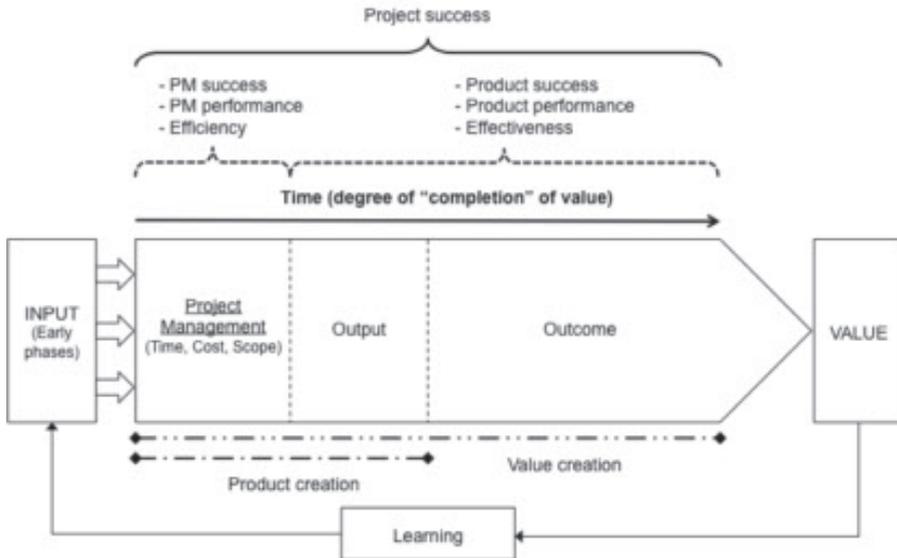


Figure 11: Transparency model, value-creation process.

Author's Contribution

Sundqvist and Chron er planned and carried out the study based on a mutual interest in pursuing an interesting topic that emerged from one of the dialog meetings (see Table 7 and Chapter 3). Sundqvist collected the data, and both authors contributed equally to the analysis and writing of the paper.

6. Conclusions & Discussion

The purpose of this thesis has been to advance our understanding of how project-based organizations can work systematically toward improvements from an efficiency and effectiveness perspective. This purpose is addressed through four research questions targeting different aspects related to systematic improvement work in a PBO. Table 8 provides a general overview of the relationship between the appended papers and cover essay and these RQs. The purpose of the thesis is also fulfilled by answering these questions.

Table 8: Primary correspondence between the appended papers and the case (Thesis), and the thesis research questions.

	Paper I	Paper II	Paper III	Paper IV	Paper V	Thesis
RQ 1	X	X	X			X
RQ 2						XX
RQ 3				X		X
RQ 4					X	X

6.1 Research Questions

RQ 1: *What are the challenges of working toward improvements in a project-based organization?*

The main challenge associated with improvement work for a PBO was found to be how to overcome its short-term focus on project delivery, leading to consequences such as a lack of strategic alignment and difficulties to learn between projects. Other challenges, more or less related to a short-term focus, for a PBO are difficulties in prioritizing learning activities, lack of a defined organizational-level improvement process, and limited authority over, or responsibility for, long-term aspects of projects (such as outcome, strategic alignment, and the creation of value). If it only focuses on project delivery at all organizational levels, a PBO will find it hard to achieve a holistic, systematic, and strategic approach: characteristics that are central to systematic improvement approaches such as Continuous Improvement (CI). In addition, when evaluating improvement initiatives at a PBO, such as a maturity

assessment, both internal and external stakeholders need to be involved in order to achieve both an efficiency and effectiveness perspective. This means that stakeholders need to be engaged in the maturity assessment in order for a PBO to achieve a complete and holistic understanding of its current and needed PM capabilities. Engaging stakeholders in the evaluation process over time was found to be another challenge for PBOs, due to a lack of direct feedback, as the effects of improvements are seldom direct and may only manifest over time.

RQ 2: *How can PBO operations be understood from the perspective of efficiency and effectiveness?*

While RQ1 contributes to our understanding of the challenges of working toward improvement in a PBO, e.g. processes, activities, and responsibility, RQ2 furthers our understanding of why these challenges may exist.

Both project performance and project success are evaluated using aspects related to the concepts of efficiency—project output—and effectiveness—the project outcome. In a project, a PBO, represented by the project manager, is responsible for aspects related to efficiency, such as planning and budget, while the client is responsible for aspects related to effectiveness, such as the project’s effect and its strategic alignment. Since a PBO only seems to have formal responsibility for aspects related to project delivery (efficiency), they must rely on their client’s project management (PM) knowledge and experience in order to ensure all aspects of project performance and success: that is, both efficiency and effectiveness.

For a PBO, aspects related to efficiency, such as planning and budget, seem to be controllable and not as dependent on the client’s PM knowledge and commitment to the project, compared to aspects of effectiveness. Aspects of effectiveness, in contrast, seem to be concerned primarily with a longer-term focus on value creation and what is being achieved through the project: the project’s effect. This is exemplified by the difficulties that members of the case PBO reported in managing projects’ effects, such as client’s failure to account for the strategic alignment and project effect. By clarifying efficiency and effectiveness in relation to PM, additional nuances could be added to aspects such as performance and success, and consequently the improvement process. Applying an efficiency and effectiveness perspective emphasizes the

importance of PM aspects such as stakeholder collaboration in early project phases, working with strategic alignment processes, and to not isolate projects from the context. This could be one indication of how to work with and overcome the strong short-term focus often associated with PM.

RQ 3: *How can the role of the project manager be developed to support organizational-level improvement work in PBOs?*

The results show that links between the project level and organization level in a PBO are weak and primarily informal. In a PBO, the project manager seems to be expected to bridge these levels by contributing to organization-level improvement work. However, the responsibility for contributing to improvement work is not formalized or evaluated in a PBO and hence not realized. Consequently, the project managers have little incentive to comply, and compliance appears limited due to their prioritization of project delivery, despite a desire among project managers to contribute to the improvement process. Hence, in a PBO, the project manager's role can be developed to also include the role of "improvement agent" in order to support organization-level improvement work. Performing this role could generate and identify good practices and areas for improvement throughout the PBO, in line with systematic approaches to improvement. However, for a PBO to further support the role of improvement agent, the organization-level improvement process that is missing, as discussed in RQ1, needs to be established in order to manage the input generated and implement suitable changes throughout the PBO.

RQ 4: *How can a focus on value creation be introduced in a PBO?*

A shared understanding of what constitutes value is central in order to focus on value creation, since value is both time and context dependent (that is, it depends on who you ask and when you ask). A first step to introducing a focus on value in PBOs could thus be to clarify what is meant by *value* in relation to projects. A significant degree of variation in defining value among PBO and project managers indicates a need for more transparency regarding value in projects. Because the value of a project is not just judged by the PBO members but also by the customer and other stakeholders, a second step would be to discuss the different perspectives on value in order to reach a mutual understanding of what it consists of at any given time for the parties involved.

Reaching a mutual understanding of value is central to avoid e.g. sub-optimization and to create clear goals to work against, as value is multidimensional and dependent on both time and context. The need to revise and clarify responsibility is also important, since the responsibility for defining project value— such as a project’s effect—seems to be unclear or not realized. A value-centric model has been developed to emphasize the various aspects of value related to projects and PM and to support value-related discussions. It can be argued that by making value more transparent, working toward improvement and prioritizing change will be supported, and will consequently include aspects of both efficiency and effectiveness.

6.2 Working Systematically Toward Improvements in PBOs

As discussed in the chapter on methodology, this research process was originally focused on providing input from a quality-management perspective to the improvement efforts of PBOs. However, as organization-level improvement efforts were found to be scarce, and because PBOs had previously been found to resist change in the project-management processes (Brady & Maylor, 2010), the focus shifted toward understanding the prerequisites to improvement work in PBOs. Thus, the main purpose with the thesis is to advance our understanding of how project-based organizations can work systematically toward improvements (i.e. from an efficiency and effectiveness perspective).

On an overall level, it was found that a PBO has to clarify what to improve in order to increase value creation, and hence develop systematic work processes. Value creation is found to consist of both efficiency and effectiveness, and both aspects influence perceived project performance and success. This means that PM and PBO improvement work has to be viewed in the light of both short-term and long-term perspectives. A holistic process approach focused on value creation seems to be missing, as process descriptions are only found at the project level. It is suggested that in order to achieve PBO-level improvements, the project and organizational levels have to be linked. Consequently, without an organization-level process, PM in a PBO risks becoming an intermittent process characterized by continual starts and stops, rather than a continuous flow of delivered value.

Applying an efficiency and effectiveness perspective further clarifies the division of practice and responsibility between the parties involved and the consequences. Efficiency—doing things right—refers to meeting project constraints and delivering on time and on budget. Effectiveness—doing the right things—refers to the purpose of the project: what should be achieved, and why it is important. When PM competence is concentrated in a specific unit or company to serve internal or external customers, it seems that the responsibility for efficiency and effectiveness is split between the PBO and the customer. The PBO and project manager becomes responsible for project efficiency, and the customer becomes responsible for project effectiveness. In a buyer-provider relationship governed by a contractual relationship, the contract clarifies the expectations and responsibilities of each party. When the relationship is not defined by a contract, however, expectations and responsibilities become less clear. As Hobbs and Besner (2016) show, projects lacking a contractual agreement, as found in internal projects, are often more poorly defined, which consequently influences the project outcome in a negative way.

Figure 12 illustrates how a subsidiary PBO could be involved in, or responsible for, aspects related to both efficiency and effectiveness in order to work with and improve all aspects of project performance and project success: the value-creation process. Only when aspects of both efficiency and effectiveness are improved— either by the PBO, or in collaboration with the client—will it be possible to improve project performance and success in full.

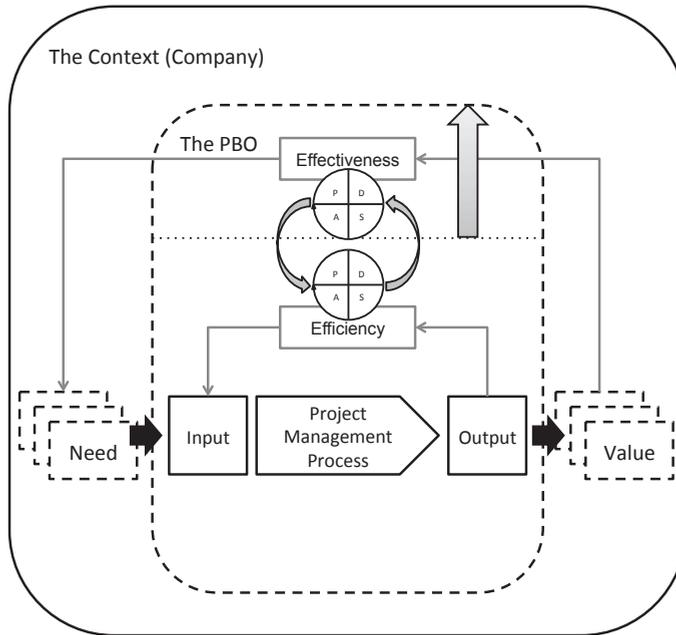


Figure 12: Model for working toward systematic improvement and value creation in a subsidiary PBO. It is suggested that the PBO must be involved in, or responsible for, aspects of both efficiency and effectiveness in order to be able to influence all aspects of project performance and project success, i.e. the value-creating process.

6.3 Contributions from Appended Papers

The contributions of this thesis lie in the exploration of challenges associated with working systematically toward improvements, inspired by continuous improvement (CI), in project-based organizations (PBOs). Overall, the thesis addresses how a PBO can deliver value to its customers and stakeholders, specifically in a subsidiary setting where it operates as an internal support unit. Different aspects related to improvement work have been studied, including inputs to, outputs from (desired outcome), and evaluation of the project management improvement process. Inputs include lessons learned, outputs include value creation, and evaluation include PM maturity assessment. Improvement work per se includes how a PBO is managed concerning efforts to increase its performance. The initial intent was to focus on *how* PBOs work toward improvement. However, the focus soon shifted to consider the preconditions

for work toward improvement, i.e. *what* the PBO should focus on and improve, since the aspect of *what* was found to be challenging and unclear.

First, the thesis provides insight into the concepts of efficiency and effectiveness related to PM practice. As previous research has indicated, the concepts are applied in diverse ways in the PM research literature. This thesis adds to this knowledge by studying the application of the concepts and emphasizing the importance of applying the concepts in a clear and structured manner within PBOs. That is, to clarify efficiency and effectiveness and to ensure that both concepts are managed with well-defined responsibility, accountability and coordination.

Second, the application of structured and incremental improvement approaches in a PBO context is studied. Although it is advocated as part of PM best practice, there is limited knowledge about the applicability of structured improvement concepts such as CI in this context. The thesis expands discussions regarding the consequences of taking concepts such as efficiency and effectiveness that were initially used in high-volume, low-variety production contexts and applying them to low-volume, high-variety settings, such as PM. These consequences include the identification of the lack of an organization-level improvement process and the separation of responsibility for realizing project effect.

Third, the thesis provides further understanding regarding assessments of maturity in PBOs and describes a continual process of evaluation and revision of both PM maturity and the assessment tool itself.

Fourth, the thesis elaborates on inputs into the improvement process, in terms of roles and responsibility of the project manager as a potential contributing factor to PBO improvement work. Contributions are made to the research literature regarding the role of project managers in the improvement process, and suggestions are made to extend the current project manager role to also include the role of “improvement agent” in order to support and realize organization-level improvements.

Fifth, the thesis builds on the suggested shift from product creation to value creation in PM by contributing to making value more transparent in project settings. Because value has been shown to be dependent on time, context, and perspective, the

importance of achieving a mutual understanding concerning value and value creation is highlighted as an important aspect of discourse on value. From an improvement perspective, value—and the value-creation process—are suggested to influence *what* and *how* to work toward improvements in a PBO.

6.4 Theoretical Implications

From a general perspective, this thesis adheres to the call to focus on value creation in project research (Geraldi & Söderlund, 2016; Winter et al., 2006). By applying an efficiency and effectiveness perspective to the management of a PBO, this thesis contributes to our understanding of the challenges related to PBO performance improvement. These challenges include managing a short- and long-term focus, and managing and accounting for both project output in terms of the product and outcome in terms of project effect and value. A focus on value creation has been outlined as important in PM, as has the need to move beyond the triple constraint (Geralid & Söderlund, 2016; Winter et al., 2006). By outlining different aspects of value as it relates to projects, including PBO value, client value, and company value, the thesis contributes to the discourse on what constitutes project value and value creation.

The lack of consensus regarding definitions of the concepts of efficiency and effectiveness in PM research (Zidane & Olsson, 2017) indicates that there is a potential to further study the concepts in relation to different levels of managing projects: from PM to PBO management, and organizational management in general. This thesis takes a step in this direction by examining the concepts in practice, looking at the consequences of a separation of responsibility for efficiency versus effectiveness between the PBO and the customer in a subsidiary setting. The separation of responsibility for efficiency and effectiveness between the project manager/PBO and customer (client/owner/company/etc.) has been shown to have implications for the value created through the project. That is, project value is dependent on both efficiency and effectiveness, but PBOs and project managers tend to focus on efficiency, while effectiveness is the responsibility of the client who often lacks knowledge and experience in PM. The concepts of efficiency and effectiveness are indicted as central and important in order to fully understand the consequences of shifting an organization's focus from product creation to value creation, as suggested by Winter et al. (2006) and Geraldi and Söderlund (2016).

Similarly, this separation of responsibility may have implications for PBO improvement work. That is, to initiate improvements, to work with improvement related processes, and to work with all aspects of performance. Brady and Maylor's (2006) improvement paradox shows that PBOs resist change as a way of balancing the uncertainty of projects against stability in their PM practice. In line with Brady and Maylor's (2016) findings, the thesis findings indicate that the lack of an organization-level improvement process, as well as the lack of clear and formal links between the project and organizational levels, has implications on change. These implications include failure to identify and implement organization-wide improvements, such as the lack of formal ways to transfer lessons learned from the project level to the organizational level with the purpose of implementing improvements in the organization. However, the findings of the thesis also indicate that change does occur and that improvements are identified and implemented by motivated members in an informal manner. That is, improvement work is performed in an ad hoc way when motivated PBO members identify opportunities to improve. The separation of responsibility for efficiency and effectiveness may also contribute to uncertainty and challenges for PBOs' improvement work.

Projects have also been recognized as important strategic mechanisms in organizations (Söderlund, 2005). As the findings indicate, efforts to achieve strategic alignment and create value for the company can be challenging for a subsidiary PBO, since aspects of project effectiveness are largely the responsibility of the client (other departments). Consequently, when it is identified that projects are at risk of deviating from or falling short of the company's overall strategy, it is not always possible to take corrective actions because of the PBO's position as a support unit. Instead, it is the client who has to be persuaded to act in order to increase project effectiveness. As such, a PBO's role in pursuing company strategy can be discussed, since changes in responsibility for project efficiency and effectiveness will consequently have implications throughout the company and how it is managed. For example, what would the consequences be if the responsibility for effectiveness were formally transferred from a client to a PBO within a company?

From a quality management perspective, the thesis provides insights into the application of a well-known concept of Continuous Improvement to a new context—project management. With respect to company management, the thesis illustrates the consequences of separating or isolating improvement efforts (specific projects) from the value-creation process, i.e. to initiate projects as a parallel and isolated activity to the core business. For companies with in-house PM competence, improvement work targeting the project process emerges as a collective responsibility, ownership of and responsibility for which appears to be important. Similarly, a holistic approach to projects and PM is suggested to be important in order to avoid sub-optimization and to achieve company-wide improvements. Although QM approaches such as CI are promoted as part of PM best practices, discussion of their implementation has primarily centered on single projects (e.g. Lean construction, or CI as the highest level of PM maturity). This thesis provides a somewhat novel perspective on how QM approaches fit into a multi-project setting. In doing so highlights the lack of overarching organization-level processes supporting improvement work and learning.

Furthermore, previous research has emphasized the importance of not applying QM concepts such as CI using a “one size fits all” approach, stressing the need to adapt the concept to the company and vice versa (Jurburg et al., 2015; Savolainen, 1999; Singh & Singh, 2015). This thesis suggests that such adaptation of systematic improvement approaches also has to be made within an organization, as evidenced in the PBO’s struggle to align its operations with the company’s Lean approach.

As the popularity of projects continues to grow, this thesis highlights PBOs as an important topic for future research within the field of QM. The varied and unclear application of concepts such as efficiency and effectiveness within PM research (Sundqvist, Backlund, & Chron er, 2014; Zidane & Olsson, 2017) suggests that the field has received limited attention from a QM perspective. This is despite the fact that the field of PM studies promotes QM approaches such as CI, process thinking, and the application of capability models (although capability models is a potential exception). For example, Padalkar and Gopinath (2016) found that research on the PMBoK® knowledge area of *quality* is minimal, despite quality being one area often featured in studies on project success and failure.

6.5 Managerial and Practical Implications

The thesis also provides implications for managers, primarily for PBO or, project managers, but also for company managers (e.g. CEO or department manager). From a general-management perspective, this thesis provides insight into the importance of clarifying and supporting responsibility for all aspects of project performance—why a project is initiated, what the project should achieve, and how to achieve the desired outcome—in order create value through projects. That is, to ensure that both efficiency and effectiveness is managed in all projects. This is important from a company perspective, since projects have been identified as a primary approach for implementing company strategy (e.g. Shenhar et al., 2001).

The thesis also highlights the risks of separating PM from the strategic alignment of project outcome, exemplified by efficiency and effectiveness as the responsibility of the project manager and client respectively. This is especially relevant for a PBO working with internal clients in a relationship not defined by contractual agreements (c.f. Hobbs & Besner, 2016), since this type of relationship lacks formal structures to support for example strategic alignment. If the client is not knowledgeable and experienced in PM, there seems to be a risk of suboptimal projects or projects that represent a failure from a company perspective. Consequently, it is suggested that the value created through projects can be improved by clarifying the different roles and responsibilities associated with them (such as by coordinating project efficiency and effectiveness). For example, the role of the PBO within the company should be clarified. Two courses of action are suggested: either focus on the customer so that they better fulfill their responsibility to align projects with the overall strategy or transfer part or all of the responsibility to the PBO in order to allow it to manage both efficiency and effectiveness.

From a PBO management perspective, the thesis provides insight into different aspects of improvement work related to the issue of what to focus on (efficiency and effectiveness) and how to approach improvement. Previous research has shown that a short-term focus on efficiency is characteristic of PM but only constitutes one of two aspects of project performance, project success, and value creation (effectiveness being the other aspect). This thesis provides further understanding regarding the

underlying concepts of project performance and success and emphasizes the importance of clarifying and working with aspects related to both efficiency and effectiveness. For example the ability to meet time and budget constraints (efficiency), and to achieve an outcome that creates value for key stakeholders (effectiveness). For a PBO, the thesis provides a framework for illustrating the value-creation process and a model for making value more transparent, in order to support project performance and improvement work. It provides insight into the fit between management concepts originating from production contexts, such as CI and Lean, and the management of project, and it points to the lack of organization-level improvement processes as an obstacle to systematic improvement work. Finally, it highlights the role of the project manager in the improvement process, by illustrating implicit and explicit expectations for project manager involvement and contribution. It suggests formalizing and supporting the role of improvement agent as one way to bridge project-level learning and organization-level improvement.

6.6 Further Research

Because this thesis is primarily exploratory in nature, further research on the covered topics is suggested. The thesis outlines project performance and success as comprised of efficiency and effectiveness; in the case PBO the two concepts were the responsibility of the PBO/project manager and customer, respectively. The consequences of a PBO being primarily responsible for project efficiency should be subjected to further study, since this could potentially provide new insight and understanding regarding the dominant short-term focus in projects and the preconditions for working toward PM improvement. Because the thesis is based on a single case study, it would be valuable to conduct more structured studies focusing on efficiency and effectiveness in practice to provide further insights regarding roles and responsibility, and the effects they have on PBO improvement and project performance.

Similarly, because this thesis was limited to the PBO, studies of the customer's role would also be beneficial: for example, studies of value realization, project effect, and the correlation between customer PM knowledge/experience and project success. In line with the conclusion that *no project is an island* (Engwall, 2003), projects and project management cannot be separated from history and context and will inevitably

create change in an organization (Hornstein, 2015). This thesis findings suggest that further work focusing on the interface between the project and the organization would be valuable for understanding how to manage the negative effects of isolating and delimiting tasks that are often of strategic importance to the company. Because the thesis focuses on the PBO side of the equation, further studies of the customer and company perspective would be of interest.

Because they tend to focus on production companies, it could be argued that quality management (QM) studies focus on optimizing the production process, while project management (PM) focuses on changing the production process (updating, replacing, and innovating, for example). This thesis adopts QM theory and thinking into the field of PM in order to generate new understanding of challenges for PM when it comes to improvement work. Because both fields largely focus on developing organizations, it would be beneficial to pursue further cross-fertilization and exchange of knowledge and ideas between the fields. Historically, these two fields have intersected, as we see in the use of maturity models in PM (Kwak et al., 2015), Six Sigma projects (Parast, 2011), and the fit between PM and Total Quality Management (Bryde, 1997)—topics that may be of lesser academic interest today. However, the topic of exploitation and exploration, and an organization’s ability to manage both aspects simultaneously in order to be both efficient and innovative, is still relevant (Benner & Tushman, 2015; Lilja et al., 2017; Steiber & Alänge, 2013). What is discussed is an organization’s ability to successfully manage operational excellence and at the same time be innovative, a capability described as organizational ambidexterity (O’Reilly & Tushman, 2013). QM is often associated with operational excellence and exploitation, while projects are commonly associated with innovation and exploration; this indicates that the fields of QM and PM represent two sides of the same problem. Padalkar and Gopinath (2016) conducted a literature review that included papers from six decades of PM research in order to identify thematic trends and future opportunities. Among the findings they highlighted that research attending to quality—as represented by the PMBoK Guide® knowledge area of Project Quality Management (also Scope and Integration)—was limited within the PM field. This indicates that there is still potential for contributions between the fields.

Pinto and Winch (2016) note that although the majority of PM researchers would support the importance of alignment of project front ends with organizational strategy, they found, to their surprise, no mentioning of this alignment within the strategic management community. This example indicates that there are important activities taking place in projects that have substantial implications for organizations, something that seems to be unknown or overlooked in other lines of research. Could the same phenomenon be found at the intersection of QM studies (or general management) and PM studies as well? Although this thesis is primarily exploratory in nature, it supports the existence of blind spots regarding the intersection between the organization and the project, such as in early project phases and the achievement of project effect. However, further research is needed to fully align the PM research field with existing organizational management research. As suggested by Maylor, Turner, and Murray-Webster (2015): the application of operations strategy (which includes systematic improvements) in PBOs is a fruitful area for both further research and for organizations seeking competitive advantage through their project-based operations.

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APPENDIX I – Interview guide #1

Inför telefonintervju med fokus på projektmognad och -effektivitet

Hej!

Tack för att du ställer upp på intervju, vars syfte är att uppnå ökad förståelse för hur projektbaserade organisationer tar tillvara på erfarenheter för att kontinuerligt bli bättre. Nedan finner du några frågor som vi gärna vill diskutera.

Frågor

Inledning

- Respondentens bakgrund och erfarenheter?

Projektmognad (15 min)

- Är du bekant med begreppet "projektmognad"? Vad innebär det för dig?
- Används begreppet inom er projektverksamhet och på vilket sätt?
- Mäter ni projektmognad (Ja/Nej)? Varför?

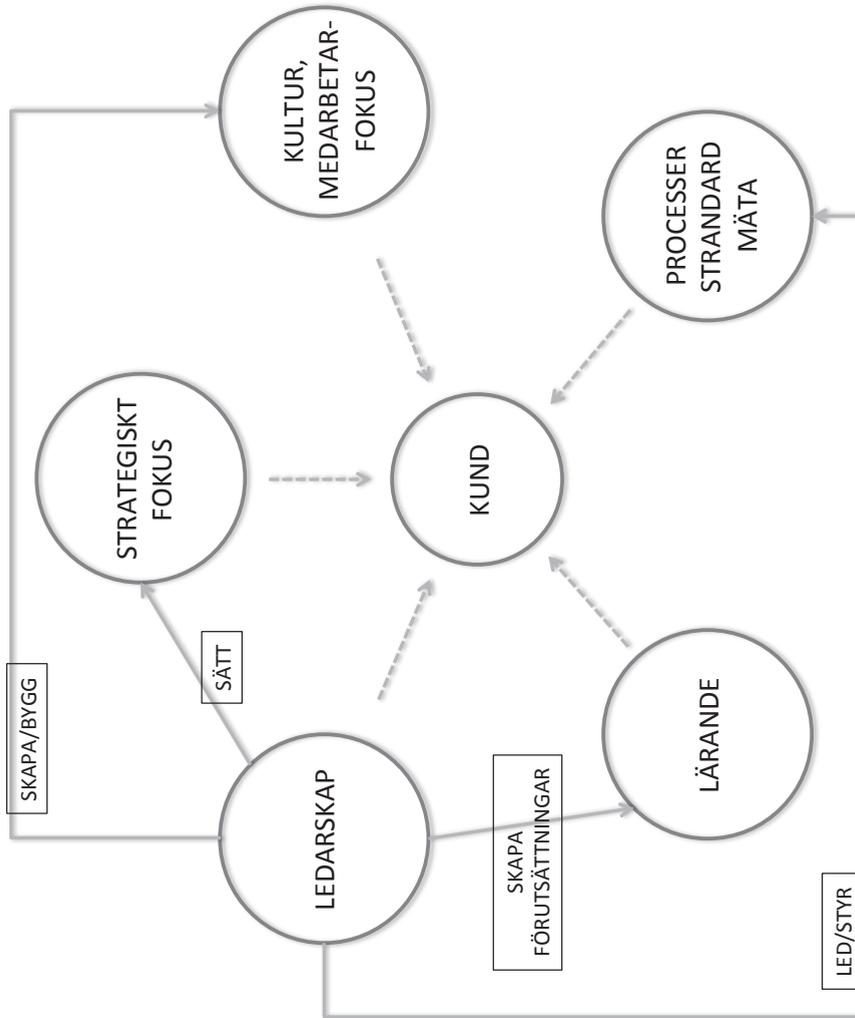
Om "Ja":

- Hur mäter ni projektmognad (t.ex. typ av modell och mätetal)?
- Hur använder ni resultaten från mätningarna?

Projekteffektivitet (15 min)

- Är du bekant med begreppet projekteffektivitet? Vad innebär det för dig?
- Mäter ni projekteffektivitet inom organisationen?
- Om ja, vad mäter ni?
- Om nej, är det någon ni i framtiden vill utveckla i din organisation?

APPENDIX II – Components of CI



APPENDIX III – Interview guide #2

Intervjuguide – Ledningsgruppen TP

Frågorna baseras på Kaye & Andersons (1999) 5 identifierade teman för att införa och lyckas med ständiga förbättringar, dessa är:

1. Ledarskap
2. Strategiskt fokus
3. Organisationskultur och ett fokus på medarbetarna
4. Processer, standardisering och mätning
5. Lärande från resultat

Det går även att argumentera för att kommunikation/information bör vara med som tema, då det bör kunna ses som ett underliggande tema, tillsammans med administration. I dagsläget finns dock inget konkret stöd identifierat i litteraturen för detta.

6. Kommunikation, Information, Administration

Men, för att inleda bör det vara av intresse att ta reda på vilken syn respondenten har på ständiga förbättringar. Det bör ge möjligheten att få en bild av vad ständiga förbättringar innebär inom TP (och LKAB) i dagsläget. Det bör bidra till att kunna skapa en bild av vad arbetet med ständiga förbättringar innebär i dagsläget.

VAD – HUR – VARFÖR → BE OM EXEMPEL

[1] Kan du beskriva vad ständiga förbättringar innebär för dig?

(Vad innebär det att arbeta med ständiga förbättringar?)

[Oavsett längd på svar så bör det följas upp med följdfrågor för att fungera som diskussionspunkt.]

- Vad är kvalitet (inom TP) för dig?

[2] Vem eller vilka är kunden enligt dig?

[Eftersom många som skriver om CI framhåller "kunden i centrum" som en viktig del i arbetet med CI bör det vara av vikt att klargöra hur de olika cheferna inom TP ser på det.]

[3] Diskussion kring illustreringen av CI, hur ser respondenten på respektive område?

[En möjlighet att få TPs syn av vad som borde funka och inte.]

Exempel på frågor:

Strategiskt fokus

- Långsiktiga mål är viktigt inom teorin, använder du några?
 - JA
 - För din avdelning? För TP?
 - Tanken bakom?
 - NEJ

- Varför inte?

Processer, Standardisering, Mätning

- Beskriv någon/några av de processer ni arbetar med?
- Använder ni rutiner i projekt?
 - Om JA
 - Exempel?
 - Hur följs de upp?
 - Uppdateras de?
 - Om NEJ
 - Varför inte?
- Mäter du resultat inom avdelningen idag?
 - Om JA
 - Exempel på vad som mäts?
 - Hur?
 - Sker någon återkoppling till personalen?
 - Om NEJ
 - Varför inte?
 - Finns det hinder för att mäta?

Kultur, Medarbetarfokus

- Personalen är central inom teorin, eftersom det ofta är de som har kunskap och möjlighet att driva igenom en stor del av förändringarna.
- Har du gått någon utbildning kopplat till förbättringsarbete?
 - Går din personal någon utbildning kopplat till CI?
- Använder du dig av förbättringsgrupper?
 - JA
 - Vem tar initiativ till grupper?
 - Hur går det till? (exempel)
 - I vilket syfte använder du just grupper?
 - Är du själv med i förbättringsgrupper?
 - NEJ
 - Varför inte?
 - Är du själv med i förbättringsgrupper?

Lärande

- Hur ser du på lärande i din organisation (och TP)?
- Ge exempel på hur du arbetar med lärande, eller att främja lärande?

Kunden i centrum

- Hur ser din avdelnings syn på kunden ut?
- Hur resonerar du/ni när det kommer till att välja/hantera/leda projekt, vad är i fokus?

Kommunikation, Information, Administration

- Beskriv de olika kommunikationsvägarna du använder dig av för att leda verksamheten? (exempel)

- Vilken typ av information handlar det om?
- Beskriv projektkoordinatorernas roll?

[4] Utifrån din bild och det vi har diskuterat, vilka förbättringsmöjligheter ser du?

- Avdelning/TP?
- Vad skulle du vilja jobba mer med?

APPENDIX IV – Interview guide #3

EurOMA17 – Intervjuguide

[Guidande tanke: Förväntat kontra faktiskt utfall, hur hanteras detta? Centralt är att det förväntade är känt (såhär ska ett projekt fortlöpa). **Fånga exempel!**]

[1]

Namn:

Roll och yrkeserfarenhet (projekt samt Lean):

Berätta lite om dina erfarenheter och hur du ser på ert Lean-arbete?

[2]

Värde

Värde är centralt inom Lean, pratar ni om värde och värdeskapande? Hur?

Om inte värde/värdeskapande, pratar ni minska slöseri?

Hur skulle du beskriva ert arbete utifrån detta?

Hur skulle du vilja arbeta med värde, eller hur ser ideal- eller målbilden ut?

[3]

Arbete enligt Lean kan fokusera på många olika delar, vi har valt att fokusera på Process och Problemlösning, och de principer som hör dessa områden till

Process (förväntat utfall)

Vad innebär process för dig? Exempel?

Kan du sätta in ditt arbete i ett processperspektiv?

Hur arbetar ni i avseende på följande principer?

[princip 2] Skapa kontinuerliga processflöden som för upp problem till ytan
[princip 3] Låt efterfrågan styra för att undvika överproduktion
[princip 4] Jämna ut arbetsbelastningen
[princip 5] Om det är nödvändigt, stoppa processen för att lösa problem så att det blir rätt från början
[princip 6] Lägga standardiserade arbetsätt till grund för ständiga förbättringar och personalens delaktighet
[princip 7] Använd visuell styrning så att inga problem förblir dolda
[princip 8] Använd pålitlig, väl beprövad teknik som stödjer personalen och processerna

Problemlösning (Hantering av avvikelser från utfall)

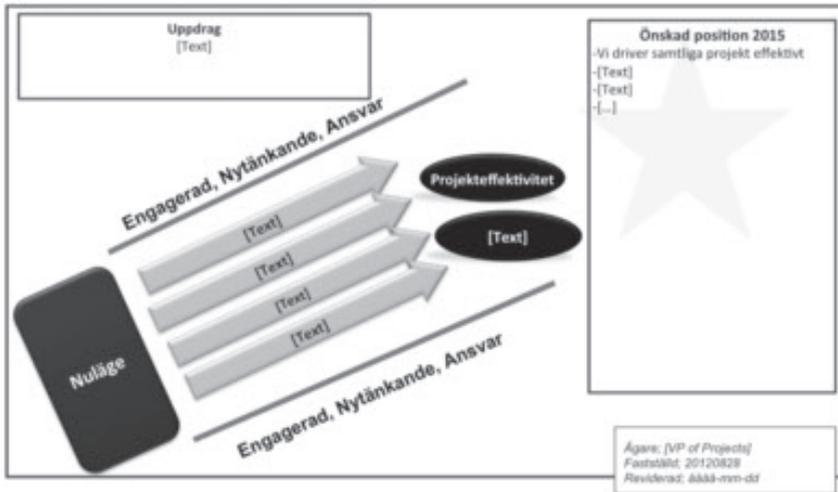
Vad innebär problemlösning (eller avvikelser) för dig? Exempel?

Hur arbetar ni i avseende på följande principer?

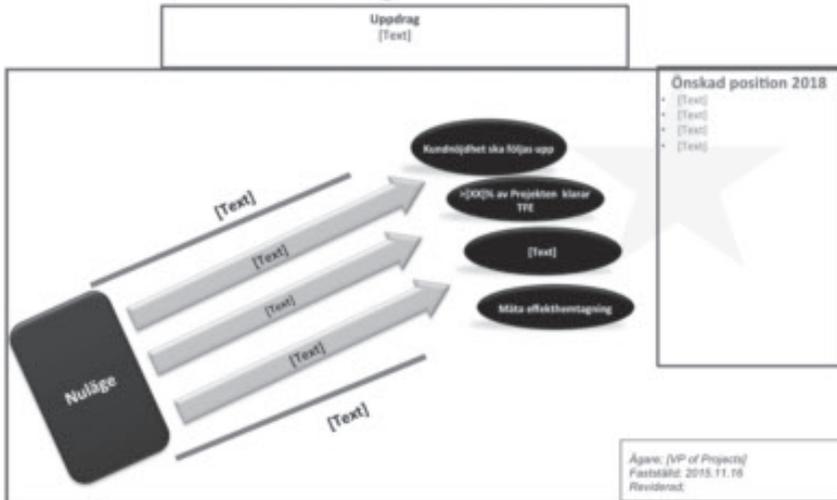
[princip 12] Gå och se med egna ögon för att verkligen förstå situationen (verifiering?)
[princip 13] Fatta beslut långsamt och i konsensus, överväg noga samtliga alternativ, verkställ snabbt. (Hur fattas beslut?)
[princip 14] Bli en lärande organisation genom att outtröttligt reflektera och ständigt förbättra

Appendix V – Operational plans, 2013 & 2016 (edited)

Lkab TP - Strategisk karta 2013



TP - Strategisk karta 2016



Continuous Improvement: Challenges for the project-based
organization

Backlund, F., & Sundqvist, E.

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QUALITY PAPER

Continuous improvement: challenges for the project-based organization

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Abstract

Purpose – There are limited studies of continuous improvement (CI) from the perspective of a project-based organization (PBO). Hence, the purpose of this paper is to explore challenges that PBOs may encounter when applying CI.

Design/methodology/approach – An exploratory and qualitative approach has been used, involving six management teams in six different PBOs, using focus groups interviews as data collecting method.

Findings – A high degree of autonomy among project managers seems to limit a collective approach to project management in PBOs. As a consequence the overall PBO performance becomes subordinate to the individual project performance—an approach opposite to that of CI. Further, the management teams themselves seem to uphold a project focus, also complicating improvement initiatives from a PBO-perspective.

Research limitations/implications – The management teams have been the unit of analysis, where the PBOs mainly conduct projects in an engineering and construction context, and are located in the same country and region. This approach enables the thorough study of a phenomenon, while preconditions for generalization are limited. However, the findings could be used by researchers as a basis for more in-depth studies of specific challenges, and for making surveys to obtain generalization of results.

Practical implications – The results can induce awareness and understanding of different challenges if applying CI in a PBO, hence a starting point for finding ways to overcome these challenges.

Originality/value – The article contributes to an increased understanding of challenges that PBOs may encounter when applying CI, confirming and presenting additional findings compared to previous studies.

Keywords Project, Continuous improvement, Project-based organization

Paper type Research paper

Introduction

More and more organizations are performing their work in projects (Gerald *et al.*, 2011; Zika-Viktorsson, *et al.*, 2006), which have become an important instrument for managing change and development in organizations (Dai and Wells, 2004; Andersen and Jessen 2003). Managing projects and quality have a lot in common, with a similar purpose to satisfy customers' and stakeholders' needs and requirements, i.e. creating value (cf. Turner and Keegan, 2000; Flynn *et al.*, 1994). However, as quality management mainly relies on processes with repetitive activities (Palmberg, 2009), a project can be seen as a one-time event, i.e. a temporary endeavor undertaken to create a unique product, service or result (PMI, 2008, p. 5). These characteristics imply that projects many times are subjected to a high degree of uncertainty, which according to Turner and Müller (2003) are specific for project management, compared with operations management.

Continuous improvement (CI) has been a significant concept for practitioners and researchers for over three decades (Sanchez and Blanco 2014), and is a fundamental part of quality management. According to Jraisat *et al.* (2016), the success of quality management in construction projects depends heavily on management practices, which, among other things, includes the integration of CI activities into the strategic goals across



the whole organization, across boundaries and at all levels. Compared with improvement work in general, CI is more holistic, systematic and strategic in its nature. A commonly used definition of CI is “an organization-wide process of focused and sustained incremental innovation” (Bessant and Caffyn, 1997). CI is also an inherent part of project management, advocated in the Project Management Book of Knowledge, PMBOK, (PMI, 2008, pp. 189-191), and the highest maturity level in many project management models (cf. Backlund *et al.*, 2015; Young *et al.*, 2014; PMI, 2008). A project-based organization (PBO) can be described as an organization in which the majority of products or services are produced through projects for either internal or external customers (Turner and Keegan, 2000), and be a standalone organization or a subsidiary of a larger corporation (Pemsel and Müller, 2012). From the previous reasoning, CI should be something to strive for in PBOs, to become more efficient and effective in managing and achieving projects. For example, when managing projects can be seen as an on-going process in an organization, it becomes obvious that CI is something to aim at (Orwig and Brennan, 2000). However, according to Backlund *et al.* (2015) few PBOs, if any, have reached the highest project management maturity level, indicating that CI in a PBO is difficult to achieve. Orwig and Brennan (2000) also claim that there is an inherent conflict between project management and CI-principles, as the definition of a project implies a singular effort delivering unique results, while CI requires repetitive activities based on a process-perspective. In a similar reasoning, Nilsson-Witell *et al.* (2005) discuss problems with applying CI in product development projects, calling for an adapted approach to CI within these kinds of projects settings. In accordance with the findings (Nilsson-Witell *et al.*, 2005), Awad and Shanshai (2017) came to the conclusion that there are few studies in quality management journals that focus on CI in a product development context (i.e. a project context). However, according to Antoni *et al.* (2005) projects may contain a considerable number of routine elements, i.e. project processes with not so unique sub-processes. Though CI is advocated in the project management literature, searching the literature few studies are found exploring CI in a project context. In the research literature, it appears that CI is predominantly situated and studied in environments where the work has a certain level of repetition, for example, in a production and manufacturing context (Hyland *et al.*, 2000; Gieskes and Ten Broeke, 2000). According to Gieskes and Ten Broeke, little is known about CI in organizations where products and services are carried out by means of projects, and CI in international projects settings have not received a proper attention from researchers (Jung *et al.*, 2009). Hence, further research seems to be needed, where the research question addressed in this paper is:

RQ1. What kinds of challenges may PBOs encounter if applying CI?

Literature study

The literature section describes different challenges concerning the management of improvements in project-based settings. In addition, a holistic view of CI is presented, also used as a basis during the focus group interviews described in the method section.

Challenges for improvement work in PBOs

Applying CI within an organization implies a learning approach, as the organization would be focused on improving the way it currently operates its business (Oliver, 2009). However, project teams often start solving problems anew rather than learning from the experiences of previous projects. According to Scarbrough *et al.* (2004) this “re-inventing the wheel” represents a lost opportunity to improve performance from one project to the next. In addition, organizations seem to only partly adapting management behavior based on lessons learned, and learning in projects is at best transferred through individuals

moving to new projects or through personal networks (Swan *et al.*, 2010; Williams, 2003). Many project managers view lessons learned as a valuable and important exercise, but do not have enough time to manage them (Kotnour, 2000). In a similar way, studying improvement work in product development projects, Antoni *et al.* (2005) found that a considerable hindrance to inter-project improvement was that the personnel were stressed to move forward to the next project. Based on a survey of PBOs in the infrastructure sector in the Netherlands Gieskes and Ten Broeke (2000) conclude that management of projects is predominantly short-term oriented and the strategic component in decision making is often absent. Another issue is the reliance on post-project reviews, or lesson learnt databases, intended to share knowledge across projects. These kind of tools are rarely used in projects than in a ritualized way (Swan *et al.*, 2010), and Antoni *et al.* (2005) claim that these approaches are doomed to fail, since this improvement structure usually is of low priority, and long project life cycles make it difficult to remember problems from earlier phases. Kotnour (2000) also mean that the learning process needs to be supported by an environment which allows project team members to admit mistakes and openly discuss solutions to problems. Chronéer and Backlund (2015) argue that an organization-wide project learning process could support learning and experience feedback not only at the closure of projects but also support learning between different project phases. Enabling this, the role of process owner needs to be introduced, i.e. responsible for process improvements and development for each of the different phases in a project's life cycle. Gieskes and Ten Broeke (2000) found that communication, which plays a key role in CI, becomes a specific challenge in managing projects due to a commonly geographical distribution of projects. They also highlighted an "engineering-paradigm", i.e. an over-representation of engineers whose prime interest is not necessarily in "soft" issues like improvement and learning. These kinds of professionals rather solve problems of a more technical nature, and where improvisation is valued higher than organized and structured improvements.

CIs—inherent themes

CI might be seen as a straightforward concept for an organization to apply, while some researchers characterise the concept as vague, subject to different interpretations (cf. Jurburg *et al.*, 2015; Corso *et al.*, 2007). Hence, the concept seems to be simple and complex at the same time. The different themes shown below are one way of illustrating CI, based on different definitions or descriptions (i.e. "what CI is"). The themes are not based on an exhaustive literature review of CI. But several significant contributions within the field have been reviewed, including previous literature studies of CI (e.g. Bhuiyan and Baghel, 2005; Fryer *et al.*, 2007; Singh and Singh, 2015; Sanchez and Blanco, 2014). The findings have been structured according to affinity within different levels, presented in six overall CI-themes: a process-oriented approach, a strategic and systematic approach, an organization that involves all its members in the improvement work, an organizational culture encouraging and supporting improvements, an organization that promotes problem solving and learning and a common way of working through standardization of work tasks. The studies used to identify the CI-themes is based on theoretical saturation (Bowen, 2008), i.e. when a group of similar characteristics have been found and further characteristics no longer bring additional insights.

Different themes illustrating the concept CI:

- A process-oriented approach.
A process-oriented approach as a part of CI is emphasized by Jurburg *et al.* (2015), Ali *et al.* (2013), Garcia-Sabater *et al.* (2012), Fryer *et al.* (2007), Jørgensen *et al.* (2003) and Bessant *et al.* (1994). For example, Bessant *et al.* (1994) define CI as a company-wide process of focused and continuous incremental innovation, which,

according to Garcia-Sabater *et al.* (2012) implies a planned, organized and systematic process. Jurburg *et al.* (2015), Ali *et al.* (2013) and Jørgensen *et al.* (2003) also describe CI as a process, intended to achieve performance improvements. According to Fryer *et al.* (2007) CI can also be seen as an overall co-ordinated change process where all employees are able to suggest and implement improvements. According to Jurburg *et al.* (2015), it is important to have a process owner in charge of the CI-process or the process can be chaotic and fragmented.

- A strategic and systematic approach.

A strategic and systematic approach as a part of CI is emphasized by Singh and Singh (2015), Hyland *et al.* (2000), Kaye and Anderson (1999), Jha *et al.* (1996), Lindberg and Berger (1997), Choi (1995) and Bessant *et al.* (1994). For example, according to Choi (1995) the general CI literature appear to be based on operational implications (e.g. work routines), with little attention to the implication it has for strategic change (e.g. formulating a new strategic direction). However, Garcia-Sabater *et al.* (2012) define CI as a planned, organized and systematic process of continued and incremental change, and Singh and Singh (2015) emphasize CI as an important strategic tool. According to Jha *et al.* (1996) CI should ideally be linked with corporate values and strategy. Successfully applying CI will require the development of a well-managed organization with respect to clear strategic support from top management (Lindberg and Berger, 1997). According to Hyland *et al.* (2000) it is important to link CI activity at all levels to the company's strategy, and the ability to strategically manage the development of CI within the organization's structure. In searching of key criteria to be in place for an organization to achieve and sustain CI, Kaye and Anderson (1999) identified, among other things: strategic focus and Integrating CI activities into the strategic goals across the whole organization, across boundaries and at all levels.

- An organization that involves all its members in the improvement work.

An organization that involves all its members in the improvement work, as a part of CI, is emphasized by Garcia-Sabater and Marin-Garcia (2011), Fryer *et al.* (2007), Wu and Chen (2006), Bhuiyan and Baghel (2005), Jørgensen *et al.* (2003), Hyland *et al.* (2000), Bessant and Caffyn (1997), Jha *et al.* (1996) and Imai (1986). For example, according to Jørgensen *et al.* (2003), in order to be called CI improvements should be extended throughout the company and adopted by all staff members of the organization. Hence, Hyland *et al.* (2000) and Lindberg and Berger (1997) used the concept "involvement-oriented CI." According to Jha *et al.* (1996), a CI effort need not be "total" in the sense of involving every part or process of an organization, i.e. an organization's entire workforce from top managers to workers (Garcia-Sabater and Marin-Garcia 2011; Wu and Chen, 2006; Bessant and Caffyn, 1997; Imai, 1986). Bhuiyan and Baghel (2005) also emphasize the active involvement of everyone in the organization. CI is where all members of the organization work together on an on-going basis improving processes and reducing errors to improve overall performance for the customer (Fryer *et al.*, 2007). Although the potential benefits of such high involvement are considerable, the implementing of such an approach is not easy (Bessant and Caffyn, 1997).

- An organizational culture encouraging and supporting improvements.

An organizational culture encouraging and supporting CI is emphasized by Singh and Singh (2015), Fryer *et al.* (2013), Granerud and Rocha (2011), Jabnoun (2001), Garcia-Sabater and Marin-Garcia (2011), Hyland *et al.* (2000), Kaye and Anderson (1999), Jha *et al.* (1996) and Bessant *et al.* (1994). For example, according to Hyland *et al.* (2000) the importance of culture is particularly important in the CI. Consequently, Singh and Singh (2015) define CI as a culture of sustained improvement aimed at eliminating waste in all organizational systems and processes. According to Granerud

and Rocha (2011) CI demands a strong culture to drive improvements in production and managerial processes. In a similar way, Bessant *et al.* (1994) claim that CI success will depend upon becoming part of a life pattern of shared beliefs, values and behavioral norms in an organization, i.e. an organizational culture that encourages and supports improvements (Fryer *et al.*, 2013; Kaye and Anderson, 1999). Ideally CI is linked with corporate or organizational values (Jabnoun 2001; Jha *et al.*, 1996). According to Hyland *et al.* (2000) supportive management across all levels of management is essential to the success of a CI initiative, where, for example, lack of management involvement has connection to lack of resources dedicated to CI-initiatives (Garcia-Sabater and Marin-Garcia, 2011).

- An organization that promotes problem solving and learning.

An organization that promotes learning and problem solving, as a part of CI, is emphasized by Savolainen and Haikonen (2007), Bhuiyan and Baghel (2005), Bergman and Mauléon (2003), Hyland *et al.* (2000), Bessant and Francis (1999), Bessant and Caffyn (1997), and (Jha *et al.*, 1996). For example, Hyland *et al.* (2000) mean that an effective CI-process imply the ability to enable learning to be captured and shared all levels. Hence, CI can essentially be seen as a long-term learning process and requires a commitment to learning (Savolainen and Haikonen, 2007; Bessant and Francis, 1999). The practice of CI involves universals of problem solving as well as application of problem-solving tools specific to quality improvement (Jha *et al.*, 1996). According to Bessant and Caffyn (1997) it is through problem solving that learning takes place. The PDCA-cycle (Plan-Do-Study-Act) can be seen as a symbol of CI and continuous organizational learning (Bergman and Mauléon, 2003), i.e. that learning generates improvements that can lead to learning and again to further improvements (Savolainen and Haikonen, 2007). At a group level CI involves problem-solving tasks at a broad level, while individual level CI deals with improvement on a micro scale at each of these levels (Bhuiyan and Baghel, 2005).

- A common way of working through standardization of work tasks.

A common way of working, through standardization of work tasks, as a part of CI, is emphasized by Singh and Singh (2015), Kaye and Anderson (1999), Berger (1997), Jha *et al.* (1996) and Imai (1986). For example, according to Imai (1986) there can be no improvement where there are no standards. Hence, CI (Here Kaizen) cannot be inseparable from maintaining standards, since it is a prerequisite for accumulation of the small on-going improvements to an overall contribution to organizational performance (Berger, 1997). Hence, according to Singh and Singh (2015), the Kaizen philosophy stresses on continual improvements in existing standards rather than innovation. A major element of CI is thus to reintegrate remaining activities and stabilize processes at their new levels (Jha *et al.*, 1996). According to Berger (1997) standards enhance learning through the deployment of experience from one individual to another, between individuals and the organization and from one part of the organization to another. The improvement cycles, PDCA and SDCA (S for Standardize), can be used to spread a culture of CI as a standard practice within an organization, meaning that an organization should never settle on a status quo (Singh and Singh). Processes, standardization and measurement are important and common themes in CI identified by Kaye and Anderson (1999).

Method and research design

A research design should be appropriate with the type of research questions asked, providing a framework for collecting and analyzing data. As the aim with the study is explorative, a qualitative research approach is suitable for trying to understand how an individual or a group of individuals interpret a phenomenon (Denzin and Lincoln, 2011, p.3). The approach is

also considered suitable when a phenomenon can be considered complex, implying that rich descriptions of the social world are needed to increase understanding (Denzin and Lincoln, 2011, p.13). In this study, focus group interview has been chosen as a data collection method, which is also commonly used in organizational and management research. As managers usually are busy, the choice of using focus group interview instead of individual interview was based on the assumption that dynamic interactions between participants could generate rich data during a limited time (Morgan, 1996). Also, the ability to observe how participants agreed or disagreed was seen as a unique strength of using a focus group approach.

Sampling

For the selection of PBOs (based on the definition given in the introduction section) purposive sampling was chosen, which is a suitable way of arranging focus group interviews (Barbour, 2005). To avoid difficulties in the interpretation of results the PBOs were all involved within a similar project context, i.e. engineering and construction projects. The PBOs were located in the northern part of Sweden, which facilitated visits during focus group interviews and making follow-up studies if needed. For a more detailed description of the organizations, see Table I.

PBO A, B and C can be described as subsidiaries to a parent company. This means that they carry out projects primarily initiated by other departments of the parent organization. It also means that they do not have external customers and consequently do not have a focus on selling their services. PBO D, E and F operate as contractors and therefore need to acquire new business in parallel with carrying out current contracts. During the time of the study, none of the PBOs were involved in comprehensive improvement programmes such as, for example, Lean or Six Sigma.

Practical approach and group dynamics

Since management and support is a fundamental prerequisite to succeed with a CI-initiative (Hyland *et al.*, 2000) the PBOs' management teams have been in focus of the study. Focus groups with six management teams (in different PBOs) were planned for, an amount in accordance with Morgan (1996) who recommends four to six focus groups to obtain information saturation. Most participants were managers, while some had roles as project coordinators or business developers. In order to maximize participation the focus groups took place at respective organization, in conjunction with regular management meetings. The amount of participants in the groups was based on the number of members in each management team. Hence, between seven and nine persons participated in each focus group, which was considered manageable and suitable for group discussions.

PBO	Standalone/ Subsidiary	Type of company	Project environment	Employees, parent company	Employees PBO	Manag. team
A	Subsidiary	State owned	Mining	Approx. 3,680	104	9
B	Subsidiary	State owned	Infrastructure/Road & railway	Approx. 450 ^a	90 ^a	7
C	Subsidiary	State owned	Hydropower	Approx. 500	71	8
D	Standalone	Private company (Contractor)	Infrastructure/ Construction	n/a	100 ^a	7
E	Standalone	Private company (Contractor)	Infrastructure Railway	n/a	102 ^a	7
F	Standalone	Private company (Contractor)	Infrastructure/ Construction	n/a	926 ^a	9

Note: ^aRegional (Northern) business units

Table I.
The project-based
organizations included
in the study

In order to have a common starting point for the focus group interviews, the participants had in advanced received a descriptive summary of the CI-themes. The approach could be seen as similar to a semi-structured interview. Also, in the beginning of each focus group, the authors started with a presentation of the purpose of the study and introduced the themes again (i.e. the descriptive summary). The intention was to use the limited time effectively to discussions of CI-themes (i.e. not for descriptions and explanations). A focus group can be more or less structured with regard to moderator control, i.e. on what topics to be discussed and the way that the participants interact. A key factor that makes groups more or less structured is the number of questions (Morgan, 1996). Six CI-themes were discussed during approximately one hour. More time with each management team would have been preferable to obtain more in-depth discussions, but was difficult to achieve in practice due to the teams intense meeting agendas. The moderator was forced to control the group's discussions, to make sure that all themes were discussed. However, as the themes were highly integrated with each other, discussions could mostly continue as they covered several themes.

Data collection and analysis

The focus groups were conducted during the period from February to May 2015. One of the researchers held the role as moderator, while the other kept running notes (also the moderator to some extent). The focus group sessions were not recorded to promote a more relaxed environment, in similarity with the reasoning by, e.g., Chua *et al.* (2012). After the meetings with each management team, the notes were transcribed (increasing the readability) and sent to the other researcher. Both were reading them individually and then together discussed the findings. For various reasons, not all respondents could be present during the focus group interview with PBO D. An additional meeting was therefore held, however, two people could not attend on that occasion either. In addition, a telephone meeting was held with one of the team members. Though it is the authors' opinion though that these circumstances only had a marginal influence on the study's outcome. Analysis of focus group data involves much the same processes as analysis of other qualitative data, focusing on the identification and refinement of themes and subcategories (Barbour, 2005). The aim of the analysis consisted of initially categorizing data and in a next step further developing analytical categories to identify relationships and patterns, a procedure advocated by, e.g., Yin (2011, pp. 177-179). The primary intention with the study was to discern categories of challenges in relation to the different CI-themes. Another intention was to make comparisons with findings from previous studies.

In the literature review six CI-themes were identified. During the analysis process, these themes have been an overall guide to structure the findings from the focus groups interviews, considering different challenges (directly or indirectly expressed within each focus group). To avoid influencing each other in an early stage, the authors performed the categorizing of findings individually. Hence, in a first step the challenges revealed within each management team, in form of meanings and phrases, were categorized to each theme. In a next step, challenges within each theme were grouped based on affinity. Comparing findings between the teams (PBOs), i.e. similarities and differences in challenges identified, was made together. To manage the analysis in an efficient way the qualitative research software NVivo (QSR International, 2015) was used. The steps described have been design to promote quality and traceability in the analysis process, and to mitigate preconceived biases that the autos might have.

Empirical findings and analysis

The empirical findings are structured according to the six CI-themes (in the same order as in the above list). Quotations are used to exemplify and making the informants more vivid, and provide the reader with an opportunity to judge for himself or herself to what extent the analysis made is reasonable, an approach advocated by Franke and Arvidsson (2011).

The quotes (translated from Swedish) are based on individual team members, however, representing the view of the entire management team (i.e. in line with other statements in the team and where no other team member orally opposed/disagreed to what been quoted). To make the participants anonymous, neither the organization nor the respondent is named. Initially, some of the findings point out the importance of CI for the PBOs in a general way. For example in PBO E: “To survive, we have to manage these areas [referring to the CI-themes] and that: one of our biggest challenges is to apply CI in our business.” Most PBOs meant that they managed small improvements continuously, but lacked a holistic and systematic way of working with them. For example, according to PBO C: “Managing changes in all parts of the PBO is a major challenge for us. Improvements are usually quick fixes made in the individual projects but are not spread to other parts of the PBO.”

A process-oriented approach

All PBOs applied some kind of generic project model in the specific projects, including guidelines managing project phases and processes. Subsequently PBO E claimed: “The project model is our process.” The models included, for example, procedures checklists and activities. Referring to the overall process-based way of working in the parent organization PBO C meant: “We are a process-based organization.” In a similar way PBO F referred to a process-based approach in their overall quality management system, which was based on process descriptions. However, PBO A experienced: “There are [functional] ‘downpipes’ in the ‘organization, but there is a will to change [towards a process-based organizational structure].” As a way of practicing a process-based way of working, PBO A and B also highlighted the use of the PDCA-cycle, but mainly as overall approach for the improvement work. As a contractor, PBO E experienced difficulties working with improvements in process-based way: “[...] the customer owns the project [and] we have to adapt to their way of managing a project.” As a consequence, the PBO ended with parallel ways of working, i.e. internal and external. However, this issue was not expressed by PBO D and F.

A process view seems mainly to be applied in the specific projects, as a part of a general project model, or to some part based on different kinds of quality management methods and tools (management system and the PDCA-cycle). Hence, managing projects seems not to be a part of an overall “process of projects” in the PBO. For PBOs acting as a contractor, an aggravating circumstance is a need of adaptation to the customer’s project model.

A strategic and systematic approach

An operative focus, in favor of a long-term and strategic approach, was confirmed by several PBOs. For example: “Our main focus is production [of project output] (PBO D).” Time constraints leading to an operative focus was claimed in PBO A: “Time is a strongly controlling factor in what we do and: Operative tasks take a lot of time [...] that is the stark reality.” According to PBO B: “[...] we do not have time to work according to a long-term approach.” More specific: “The [project] tools control our way of working – it is so much to do that we do not have time to reflect and work with a long-term approach. Referring to project’s characteristics.” PBO F: “it’s is difficult to comprehend how we can do it [improvements] in a systematic way, as each project is unique [...]” However, PBO D expressed: “It is easy to view/believe (that) each project is unique, but it’s more in common that you might believe.” In PBO F “it was also expressed: We are working with tenders – which sometimes “clash” with a strategic way of working.”

A main focus on operative activities (“the production”) and an overall time pressure seem to hamper a systematic and long-term approach. The project characteristic of being unique also seems to be a hinder towards a systematic way of working, although more of a mental barrier than a problem in practice.

An organization that involves all its members in the improvement work

Involvement of project managers in improvement work was considered troublesome by several management teams, exemplified by PBO C: "The project managers are very occupied with different activities – their time is about managing projects – That's it! They do not have time for overall improvement initiatives." According to PBO A: "Much of the project work is operative, for project managers probably around 99%." In PBO B they also meant that: Many times side-line jobs take too much of your time, compared to work with overall improvement work. Choosing specific project members to be involved in development or improvement work was another issue discussed during the focus groups. For example, according to PBO D: "(As a manager)] You choose what personnel to be involved—This is something I am ashamed of." However, PBO E meant: "Some personnel do not want to be involved—they only want to do what they are good at."

A holistic view of working with improvement initiatives in the PBOs seems to be insufficient, where project managers and other kind of project members are mainly occupied with operative task in their specific projects. In some PBOs, project members are appointed to be involved in different improvement initiatives, i.e. not including the entire workforce.

An organizational culture encouraging and supporting improvements

Several PBOs highlighted a culture that by the employees could be experienced as not so forgiving considering making mistakes. For example, in PBO A: "Many employees are afraid of making mistakes, it's a part of our culture [including the parent organization]. In a similar way, expressed in PBO D: employees find it difficult to inform about failures." However, according to a member in PBO B: "[...] I have the feeling that many employees are afraid of making mistakes – but in practice it is ok." Hence, several managers (in different PBOs) meant that they in practice had a forgiving culture, and therefore needed to make employees understand that it is acceptable to make mistakes. Several PBOs highlighted the importance of learning possibilities and sharing experiences, both the good and the bad experiences (PBO E). In PBO (A and C) members pointed out high internal and external requirements (due to, for example, regulatory bodies) in their way of performing business, and hence need of high levels of control. For example, in PBO C: "The risks are high, we are almost hypersensitive not pointing out if something is wrong, [...] we have to be very careful." Another perspective of control came from a contractor perspective: "Our clients are in control, we cannot initiate change or improvements [in a project] if they will not pay for it (PBO E)."

Most of the PBOs seem to have an organizational culture that not fully (or explicit) encourage and support improvement initiatives (based on good or bad experiences). From a contractor perspective, improvement work during a project can be hampered due to client control (i.e. decision making).

An organization that promotes problem solving and learning

None of the management teams explicitly discussed learning as a common activity in their PBO. However, this CI-theme engaged most in the teams, highlighted in different ways. For example, according to PBO D: "We are really bad at this [...] we could do so much more, and in PBO E: We want to be better [...] to learn not just from mistakes, but also from good experiences and examples [...]" Most PBOs highlighted difficulties in sharing experiences due to many parallel projects in many different places. For example, in PBO A: "We need more time for learning and distributing experiences. The dispersed work environment [many parallel tasks] is a hindrance [...]" and in PBO B: "[...] there are so many things to do [...]" we have no time to reflect [...]" Final reports were one main activity mentioned in order to collect and share experiences within and between projects, by most PBOs. However, they also meant that these reports often were badly written and/or managed. For example, according to PBO

D: “[...] few care about them [final reports] and final meetings, and reports are seldom available.” Also, according to PBO F: “[...] it is not working [writing or/and managing final reports], ‘it stops’.” One reason complicating the sharing of experiences, discussed by several PBOs, was that project members had to enter new projects before on-going projects had been closed. For example, according to PBO F: “Project managers [...] often have to leave before current project is closed, to begin working in the next one.” Informal approaches of learning and sharing experiences were highlighted by most PBOs, i.e. informal discussions between employees. For example, in PBO D: “There is no problem to ask someone for advice, and it makes it easier to solve problems quickly.” However, as expressed by PBO A: “Sharing experiences becomes limited as it usually stays in a specific project team.”

The strong engagement for this theme can be interpreted as major needed of practicing learning within and between projects in the PBOs, but in the same time not a prioritized activity. An overall time pressure and many project activities going on in parallel (i.e. a project focus), can be a major cause. Sharing experiences informally seem to be most preferable in practice, however, limiting the learning to a specific project team or group. Final reports area a common approach, but not suitable concerning learning and improvements in practice.

A common way of working through standardization of work tasks

According to PBO A: “We strive to make our work based on processes and standardization.” In PBO F they referred to standardized “platforms” used in projection phases, and in PBO E that their quality management system supported a common way of working. Most PBOs also meant that processes and routines in general supported a standardized way of working, but that compliance in practice was a problem. For example, several PBOs claimed that how to perform and manage work in projects many times was up to each individual. For example, according to PBO D: “You manage the projects as you want – each one knows how to manage a project.” According to PBO F: “the more the project progressed, the more you deviate from processes and guidelines.” A reason to non-compliance according to several PBOs were processes and routines experienced as bureaucratic and time-consuming. For example, PBO B: “We have many processes and routines [...] which are very comprehensive and burdensome – you have to depart/derivate some parts of them.” According to PBO D: “We should have no time [to manage the project] if we should have to comply to all documents and routines – and they are not becoming less so to speak.” Most PBOs lacked methods and tools, for example: we lack manuals and tools for problem solving (PBO D). PBO E described their management system where employees could hand in improvement proposals. However: “We do not know how to handle the different proposals [...] and the employees do not get information how the proposals are handled.” Mostly, the PBOs highlighted management systems for handling deviations as a tool for managing improvement. However, according to PBO D it could be difficult to apply a standardized way of working in the PBO, due to different types of projects going on, e.g. construction project, infrastructure project, etc. Also, due to different locations for the project and weather conditions influenced.

A common way of working through standardization of work tasks are applied to some extent in the PBOs, mainly based on common project management models. Some methods and tools supporting problem-solving and improvement work are used, but not in a systematic and company-wide way. A high degree of autonomy among project members and not user-friendly support systems seems to be main reasons to non-compliance in the PBOs.

Conclusions

Management support and commitment is necessary to when introducing a CI initiative (Hyland *et al.*, 2000). Therefore, the management teams in six PBOs have been studied, by means of focus

group interviews. A need and desire to apply CI in the PBOs was expressed, as well as challenges to get there. In comparison with challenges identified in previous studies, presented in the literature study section, several have been confirmed in this study (contributing to theoretical replication). For example, managing projects seem to be short-term oriented, highly stressful and involving communication issues (Antoni *et al.*, 2005; Gieskes and Ten Broeke, 2000; Kotnour, 2000). A general time pressure in projects can to some part explain the focus on operative tasks (i. e. in specific projects), compared to a holistic and long-term view (as promoted in CI). A project and operative focus among project managers seems to obstruct a PBO-perspective on improvement initiatives. These issues all influence the PBOs ability to succeed with a CI-initiative. A process-based way of working mainly concerns specific projects, i.e. a process view embracing all projects in the PBO is lacking (Chronéer and Backlund, 2015). Another finding in line with previous studies is the weakness of PBOs to learn from and between projects, relying on non-satisfying and inadequate post-project reviews (i.e. final meetings and reports) (Swan *et al.*, 2010; Antoni *et al.*, 2005). The approach focuses on the end of a project, not sharing experiences continuously (i.e. in small continuous steps as advocated in CI). The qualitative approach used in this study have to some extent also made it possible to describe some of the challenges in previous studies more nuanced compare with, for example, survey results (cf. Gieskes and Ten Broeke, 2000), and conceptual findings (cf. Orwig and Brennan, 2000). For example, the PBOs in this study operate within a construction and engineering context, and the “engineering-paradigm” (Gieskes and Ten Broeke, 2000) has to some part also been confirmed. The management teams conveyed a great interest in “soft aspects” like improvement and learning, however, not manifested in practice, i.e. an overall challenge.

A high degree of autonomy among project managers was found, which have consequences for CI in the PBOs. The issue implies limited involvement and a rather poor compliance to project models, processes and procedures. The degree of autonomy also promotes a focus on the project’s performance, with less concern about PBO performance. The autonomy in connection with less user-friendly support systems seems also to promote informal ways of sharing experiences among project members. This approach limits the learning within and between different projects, i.e. learning within the PBO. Most of the PBOs seem to have an organizational culture not explicitly encouraging the sharing of experiences (neither bad nor good ones). This culture is to some extent promoted by the management teams themselves, advocating a project perspective compared to a PBO-perspective.

From a contractor perspective, improvement work is even more challenging due to client control in joint projects.

Discussions

The six management teams participated in the study as they believed CI to be an important concept and wanted to learn more about it. Consequently, the management teams during the focus group interviews showed high engagement and a will to improve their PBOs performance. However, the management teams, as representatives for a PBO-perspective, expressed a major focus on the project level. Hence, if going to introduce a CI-initiative, the management teams need to approach the concept more strategically, and in more profound way. Another reflection made concerning PBO A, B and C, as subsidiaries, is that no formal CI-initiatives (for example Lean) took place in their parent organizations. To successfully implement CI in one of these PBOs, it is reasonable to believe that the initiative has to come from and be supported by the parent organization. For PBO D, E and F, acting as contractors, joint collaboration of handling short and long-term improvement initiatives seems to be needed.

Implications and limitations

As compliance to common ways of working seems inadequate in most of the PBOs, problems and improvement potentials can stay “hidden” in the organization. Different ways of working in

projects also make it difficult to follow up, and increase, effectiveness and efficiency in the PBOs. A practical implication of the study's result is to induce awareness and understanding of different challenges to overcome, if going to introduce CI in PBOs, indirectly promoting management actions. Though the study has some limitations, for example, it has focused on challenges and less on drivers. The focus is made deliberately as challenges have been considered most important to identify and manage, before looking in to (or making them to become) drivers. The study has also focused on the managerial level and only indirectly touched on other organizational project levels. The PBOs have also been sampled from a business environment characterized by engineering and construction projects, and been located in the same country and region. As this approach give the possibility for more in-depth studies of a phenomenon, it also implies that preconditions for generalizations are limited. However, comparisons with findings from other studies have to some extent strengthened the results. Using focus groups in collecting data were seen advantageous and suitable for the aim of the study. However, the approach has also some weaknesses, for example, the influences of the moderator's behavior on the group discussions, even if the same can be said for surveys and individual interviews. As two researchers participated in the focus groups, and together interpreted and discussed the empirical findings, some of the influences could probably be mitigated. The participants had in advanced received a descriptive summary of the CI-themes, and in the beginning of each focus group, the themes were introduced again, with the aim to use the limited time effectively. However, this approach could bias the respondents thinking, which has to be considered when interpretation the study's result. Another issue is about triangulation, and hence validity of the study. Based on reasons stated in the methodology section, the authors apprehend the advantages with several focus group interviews. In the same time, the approach makes data triangulation difficult due to semi-structured discussions. However, due to the exploratory aim, we believe that the approach and the data gathered is relevant for the study, where four to six are recommended to obtain information saturation (Morgan, 1996). We also believe, in accordance with the reasoning of, for example Krefting (1991) and Agar (1986), that terms like reliability and validity have to be interpreted carefully in qualitative and interactive research. Finally, the study has not focused on general implementation factors when introducing new ways of working, i.e. organizational change or change management aspects. The different limitations lead us to discuss proposals for further research.

Proposals for further research

If CI is to be introduced in project-based settings, as advocated in the PMBOK (PMI, 2008), more research initiatives are needed to increase our understanding of challenges and what causes them, at individual, group, project and PBO-level. Hence, there is a need of both deeper studies of challenges within the specific CI-themes, and for surveys enabling generalization of results. Another interesting inquiry would be to perform longitudinal studies of PBOs that committed themselves to, and formally practicing CI. However, it is the authors' experience that such organizations are difficult to find.

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Further reading

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Paper II

Lean in Project-Based Organizations

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Presented at the 24th EurOMA Conference in Edinburgh, July 1–5, 2017

Lean in project-based organizations

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Abstract

Literature on the application of Lean in project-based organizations (PBOs) is scarce. This paper presents findings from two case studies of early efforts to implement Lean in subsidiary PBOs. By focusing on Lean principles we provide insight into how PBO operations are, and potentially could be, aligned with Lean thinking. The findings suggest a fit on an overall level, but that principles need to be aligned with PM methods and tools to allow for flexibility.

Keywords: Project Management, Lean, Improvement, Project-based organization

Introduction/Background

There are several ways to describe Lean, but on an overall level the concept commonly includes a focus on optimizing the value-flow in processes through continuous improvements. Although originally applied in manufacturing and production settings (hence Lean Production/Manufacturing, Hines et al., 2004) Lean has over time been introduced in less repetitive environments such as health care, and as discussed here, related to project management (PM) (e.g. Ballard & Howell, 2003; Saier, 2017; Staats et al, 2011). With the growing application of projects as a way for organizations to both develop and do business (Bakker, 2010), the need to simultaneously manage multiple projects have risen. Managing multiple projects is especially important in project-based organizations (PBOs), where the project is the primary unit for production organization, innovation, and competition (Hobday, 2000). While there is research contributing to the understanding of Lean in projects (e.g. Ballard & Howell, 2003; Saier, 2017; Staats et al, 2011), the literature on Lean in multi-project settings such as PBOs is scarce. A PBO can operate either as a standalone or a subsidiary unit, delivering products or services through projects, to external or internal customers (Pensel & Müller, 2012). The PBO form of organizing is suitable for e.g. managing changing client needs, to manage cross-business expertise, and handle uncertainty, but described as weak for e.g. routine tasks, economies of scale, and promoting organization-wide learning (Hobday, 2000). Interestingly, the weaknesses of a PBO (e.g. organizational learning and routine tasks) are described as the strengths of Lean (e.g. Hines et al., 2004). Further, as with Lean, a process approach (e.g. Packendorff, 1995) focusing on value creation (Winter et al., 2006) is promoted in PM. Granted that value creation through processes is central to

Lean thinking (Womack & Jones, 2003), the promotion of said approach would indicate a basic prerequisite to implement Lean in PBOs. Based on empirical observations, we argue that a subsidiary PBO may be more or less forced to incorporate Lean, as the result of Lean being implemented in the parent organization. Consequently, the PBO can choose to either reactively adapt to, or proactively adopt, Lean. Hence, this paper explores the potential to introduce Lean in a multi-project setting. To narrow the scope we have chosen to focus on Lean principles (and underlying values), since research related to Lean originally centers around organizational principles (Womack & Jones, 2003).

Design/methodology/approach

In order to understand the challenges faced by PBOs when approaching Lean a case study approach was chosen, since limited previous knowledge regarding Lean on a PBO level could be found (Edmondson & McManus, 2007). Another reason was the rich access granted to both case organizations, offering the opportunity for a deeper understanding of the fit between Lean and PBO operations (Yin, 2014). Based on the case study approach we focus on exemplifying (Flyvbjerg, 2006) as a way of understanding the phenomena under study. The two case organizations (Table 1) can be seen as subsidiaries (or departments) of their respective parent company, with the responsibility to oversee and manage projects for internal customers. By producing the majority of their products and services through projects, serving internal customers, they fall under the definition of project-based organizations (Pensel & Müller, 2012).

Table 1 – Case study organizations

	Country	Projects	Industry (parent company)	Project investment / year (approx.)	Employees (approx. no.)
PBO A	Sweden	Construction & Engineering	Mining	370M €	100
PBO B	Sweden	Construction & Engineering	Hydropower	100M €	50

PBO A was part of a 5-year (2013-2017) longitudinal case study, focusing on continuous improvement in PBOs. During the later stages of this period the parent company decided to implement Lean, starting the rollout in 2016. As a consequence, PBO A would encounter Lean both in the projects, and within the PBO, although formal implementation (in the PBO) had not been initiated. Initial discussions had been initiated regarding how to adopt Lean thinking and principles, in order to raise awareness and be prepared within the PBO (A). Data from PBO B was gathered as part of a master thesis in the industrial engineering and management program (MSc.), during the fall of 2016. PBO B had initiated the implementation of Lean on a senior management level during spring 2016, as part of a company-wide effort to further increase efficiency and effectiveness in the organization. The respondents were selected based on the senior position they held, and interviewed using a semi-structured approach. In PBO A, members of the PBO management team (Table 2) as the responsible party for PBO operations were selected, while in PBO B, where the implementation of Lean had started, the seniors responsible for the PBO as well as the implementation of Lean were selected (Table 2). All interviews were recorded to complement the field notes, as well as to facilitate the analysis in a later stage. For the data gathering and analysis we chose to focus on the five principles (see *Lean Principles*) of Lean as defined by Womack and Jones (2003), as they represent the core idea of Lean, while still being

general enough to be discussed in seemingly diverse contexts. By comparison, the five principles correspond to *Process* and *Problem-solving* of Liker’s (2004) 4P-model. Consequently, Liker’s corresponding principles (principles 2-8 & 12-14) were used to provide an updated and more operationalized formulation of the content of Womack and Jones (2003), although not explicitly discussed. Coding and structuring the data according to the principles provided a framework to analyze and present the findings.

Table 2 – Respondents

PBO A (individual interviews)	PBO B (focus group interviews)
<ul style="list-style-type: none"> - VP of Projects - Senior Manager, Projects (North) - Senior Manager, Projects (South) - Senior Manager, Projects (Logistics) - Productivity development Manager (Responsible for corporate Lean rollout) - Technology Manager - Administration Manager (7 of 7 managers interviewed)	<ul style="list-style-type: none"> - PBO senior manager - Senior manager update & renewal projects (projects > 3M€) - Business development manager - Lean implementation manager - 5 (out of 10) project managers (update- and renewal projects)

Lean thinking and lean principles

What is Lean? There exist many different definitions of Lean and according to Hines et al. (2004) the concept is constantly evolving, implying that any ‘Lean definition’ can be seen as “moving target, only being valid in a certain point in time”. As we agree with the argumentation by Hines et al. (2004), we are also of the opinion that many Lean definitions are too narrow, i.e. going into specific Lean methods and tools (e.g. 5S, Kanban, and Value-stream mapping). Hence, this paper discusses Lean as a way of thinking, i.e. mainly the set of principles described by Womack and Jones (2003) focusing on value creation and the reduction of non-value adding activities in an organization. These principles, if considered properly, provide guidance to apply suitable methods and tools for the specific context or environment of an organization. In their book “Lean Thinking” Womack and Jones (2003) describe five Lean principles that characterize the Toyota Production System (or the Toyota Way): (1) specifying value from the customers’ perspectives, (2) identifying the value stream, (3) making the value-creating activities flow, (4) customer pulled-value, and (5) pursuit for perfection. While these principles mainly comprise the production system, Liker (2004) later took on a wider perspective including *Philosophy* and *People*, illustrated in a 4 P model (where the other two P:s are *Process* and *Problem-solving*). While Womack and Jones (2003) present principles related to the value stream on an aggregated level, Liker (2004) provides principles on a more operationalized level covering all organizational aspects of Lean. Liker’s 4P model, including 14 Lean principles (see *Findings*), has been a well-recognized reference to Lean by practitioners and researchers. The last principle to strive for (i.e. the top of the pyramid) involves striving to become a learning organization, through reflection and continuous improvement. Becoming a learning organization is also considered desirable in the PM literature, e.g. promoted as the highest level of PM maturity (e.g. Pretorius et al., 2012). However, Scarbrough et al. (2004) discuss that while projects constitute favorable settings for learning, the autonomy might also limit the incorporation of the lessons learned in the wider organization (e.g. the PBO). Hence, one of the reasons for studying the implementation of Lean thinking in PBOs is that organizational learning from projects is a well-documented challenge (e.g. Scarbrough et al., 2004). Another reason is that a precondition to manage projects effectively and efficiently in a PBO, an organizational project-process view is needed (Chronér & Backlund, 2015).

Lean and Project Management

By comparison, Lean and PM appear to be opposites of each other. Lean has its roots in a manufacturing setting, characterized by well-defined (discrete) and repetitive processes. PM on the other hand is often characterized by uniqueness, with a high degree of uncertainty, and ad hoc problem solving throughout the project. Also, while Lean promotes a long-term holistic view (Liker, 2004), PM is often described as focusing more short-term, mainly centered on the steering parameters of cost, time and scope (e.g. Geraldi & Söderlund, 2016). However, there are also similarities, for example both Lean and PM aims at creating value for customers through a process approach. There are limited articles to be found on the topic 'Lean Project Management' (Lean PM) in the research literature ("lean project management", Scopus, n=10, Web of Science, n=3). The main body of research literature regarding Lean PM can be found within the field of Lean construction, a concept coined by Koskela in (1992), where construction projects are viewed as temporary production systems. When such production systems are structured to deliver the product while maximizing (customer/client) value and minimizing (project) waste, they are said to be 'Lean' (Ballard & Howell, 2003; Saier, 2017). According to Pons (2008) the construction industry has moved from a craftsmanship approach towards standardized construction processes, which makes Lean an attractive way towards increased efficiency and effectiveness. In a similar way, Lean PM can also be found related to product development, i.e. with a focus on reducing costs and time-to-market (see e.g. Nepal et al., 2011), though how is not fully understood (Pons, 2008). For example, removing any slack to create efficient processes may be an issue, as projects may imply high uncertainty and a need of dynamic structures. Similarly, Nepal et al. (2011) argue that simultaneously working on multiple projects could cause delays, but since resources can be shared, it's not necessarily 'waste'. Hence, In order to link Lean manufacturing to Lean PM, it is important to clearly understand and define non-value added activities in PM processes (Nepal et al., 2011). Further, Staats et al. (2011) studied the applicability of Lean principles in software development projects, as an example of 'knowledge work', i.e. the management of information. They give three examples of differences from a manufacturing context, which impede the use of Lean principles since knowledge work: 1) typically has a more dynamic character, 2) processes are often abstract, and 3) often includes both high- and low-level exploration. However, Staats et al. (2011) conclude also that Lean has potential for improvements in knowledge work, for example in problem solving, and in streamlining and simplifying processes. While presenting several interesting results concerning Lean in different project contexts, more studies are needed (Ballard & Howell, 2003; Pons, 2008; Staats et al., 2011).

Findings

The following section presents the findings from the case studies of two subsidiary PBOs, PBO A and PBO B (see Tables 1 & 2). The findings are structured in accordance to Liker's (2004) Lean principles, specifically those related to *Process* and *Problem solving* (principles 2-8, 12-14). Each principle contains a short concluding analysis. The subsequent sections discuss relevance and contribution.

Principle 2 - Create a continuous process flow to bring problems to the surface

In Both PBOs a formal and documented project model was employed, defining the PM process. The focus group (PBO B) described it as difficult to find a usable process description due to abstract activities (e.g. flow of information). Given the long time-

span of their projects (3-5 years) it was considered a challenge to finding a process level that both captured the overall progression towards completion, and that was detailed enough to encompass progression between meetings. An existing PM process had been implemented on a corporate level, however the respondents indicated that the project managers did not follow it, and that the degree of compliance varied. In PBO A a PM process had already been defined prior to the introduction of Lean, in terms of the previously described PM process. Two of the respondents described having identified a problem with the process description for basic engineering, in that the description was not detailed enough. The output from the basic engineering process was input to the construction process, at which stage the input was identified as inadequate many times. The identified cause of the problem was an insufficient process description, resulting in inadequate reports from inexperienced project managers. In addition, experienced project managers produced reports that exceeded the description, and as a consequence the respondents had started to update the process description to reflect the good practice.

The difficulties in PBO B to describe a useful process indicate that the project process could be hard to define to serve the purpose of *Principle 2*. However, the example from PBO A illustrates how process descriptions can contribute to bringing problems to the surface. The defined processes in PBO A were described as ‘tailored’ to their activities, indicating that having tailored processes can help bring problems to the surface (at least some problems, see *Principle 5*). The main issue for principle compliance is the lack of a PBO-level process, defining the value stream on an aggregated level. This poses both a challenge and opportunity for subsidiary PBOs.

Principle 3 - Use “pull” systems to prevent overproduction

All respondents discussed “pull” in terms of customer demand. Projects are commissioned to the PBOs, but the respondents in PBO A described a problem with customers who defined their need based only on their own business, risking misalignment with company strategy (i.e. sub-optimization). Early project phase involvement of the PBO (identifying and defining the need) resolved this, but many times the customers initiated projects on their own. Further, the focus group (PBO B) mentioned over-deliverance in terms of the technology delivered in projects (more advanced than requested). The reason for this behavior was accredited to generous budgets, and a desire to deliver ‘the best technology possible’ within the technology department. The over-capacity could potentially be a problem if it will never be utilized, since the resources consumed could have been put to use elsewhere.

The findings describe “pull” in terms of customer demand, not described as part of the defined processes (as intended in Lean). Further understanding of how “pull” is practiced within the processes is consequently needed. The abstract nature of projects (Staats et al., 2011), as well as being temporary and changing in nature, pose an interesting problem regarding a “pull” approach.

Principle 4 - Level out the workload (both people and equipment)

The workload for project managers was described as varying, and all respondents emphasized that projects were always ‘tail-heavy’, meaning that the workload inevitably increases in projects near completion. In PBO A non-regulated working hours were applied for the project managers, making it difficult to monitor the workload. One respondent explained a work-relationship built on trust, and that if a

project manager felt overburdened that individual would raise the issue (however that seldom occurred). Further, as the majority of project managers managed more than one project at a time (parallel and overlapping), the management team assigned projects to avoid assigning two projects with the same, or close, deadlines to the same project manager. In contrast to projects being described as ‘inevitably tail-heavy’, respondents (PBO B) described a culture of procrastination, with project managers postponing activities closer to project delivery. The effect of this behavior was described to be an increase of risk, since unforeseen problems would be more difficult to resolve closer to deadline. No further inquiry as to the effects, or causes, of procrastination was made.

As varying workload was considered as natural in PM, and no one seemed to complain, we cannot know for sure if this is a problem. Staffing project managers with overlapping rather than parallel project could be seen as one way to level the workload. From a Lean perspective leveling the workload is important to avoid problems, and the example above (procrastination) suggests that there is at least some room to level out the workload (i.e. improved planning) and make project less ‘tail-heavy’. Further study is needed.

Principle 5 - Build culture of stopping to fix problems, to get quality right the first time
One respondent (PBO A) explained that, “once a project is started, it can not be stopped.” Instead restarts or revisions were used if projects deviated or the intended outcome would not be delivered. Instead of stopping projects several respondents explained that problems were often resolved ‘on the go’ (quick-fixes within the project). However, no indications were given as to whether improvements were made to prevent the problem from occurring in future projects.

Stopping the process to fix problems seems to be an issue in PBOs. The findings indicate that problems are resolved locally (within projects) rather than globally (to benefit everyone). The example in *Principle 2*, regarding updating the basic construction process, however suggest that problems are resolved also on a global (PBO) level. As the process cannot be stopped, a system or routine for reporting problems is needed, managing the problem timely at the project level and to identify and resolve the root-cause at PBO level.

Principle 6 - Standardized tasks and processes are the foundation for continuous improvement and employee empowerment
On a general level all respondents described the approach to managing project as varying among employees. The opinion was that it did not matter which tools and methods they used, as long as the PM process was followed. One respondent (PBO A) emphasized the importance of having processes and standards that on one hand ensured delivery of the intended output, and on the other hand allowed for flexibility in methods used. The focus group (PBO B) described having multiple standards (e.g. meeting templates and progress reports), but that the standards were not always aligned with practice, as well as not used. Respondents also indicated that efforts to update standards would be very time-consuming.

The findings indicate that standards are being used on all levels in the PBOs, but to a varying degree. Project managers are described to deviate from standards if and when they experience a lack of fit between the standard and practice. The struggles to find an appropriate level of detail described in *Principle 2* indicates that the challenge is more

of finding an appropriate level of description, rather than standards not being useful or applicable. Also, enabling rather than coercive (see Adler & Borys, 1996) standards seems to be needed to fit the dynamic nature of projects. In conclusion *Principle 6* was not followed in either PBO, since deviation from standards was considered natural, and only limited follow-up an evaluation was reported (see *Principle 2*).

Principle 7 - Use visual control so no problems are hidden

In PBO A a new project management software with a graphical interphase had been implemented, providing some visual control of projects. They also utilized a ‘traffic-light’-system (green-yellow-red) to report on project progression during meetings, where ‘lights’ changed as problems occurred. As part of the Lean implementation the focus group (PBO B) described initial tests with visualization of projects and their progress, using boards. By using the boards the workload for the project managers had increased slightly, but they were positive and described the upsides to be easier governance and increased transparency, with a perceived increase in identified problems as the result.

Limited use of visualization was reported. Since knowledge work is often abstract (Staats et al., 2011) visualizing the process could pose both a challenge and an opportunity. The reported test from PBO B indicates that it is possible and can help to identify hidden problems (the example of basic engineering in *Principle 2* also supports this).

Principle 8 - Use only reliable, thoroughly tested technology that serves your people and processes (technology should be “pulled” by, not “pushed” to, manufacturing)

Projects utilize technology in several aspects, and as described in PBO B technology could refer to (1) technology as part of the delivery and (2) technology as part of managing projects. Delivered technology was considered to be well tested and dependable, often more robust than needed (see *Principle 3*). Technology for managing projects referred to business systems, e.g. for documentation and reports, and was many times considered to be time-consuming and non-value adding. The lack of standards for which systems to use, and when, was considered a problem in PBO B. Similarly, several respondents (PBO A) described having an abundance of business systems in their parent company, causing frustration in the projects. The frustration was related to a feeling of spending time in things (e.g. reports) that no one ever looked at or used (‘waste of time’). However, one respondent (PBO A) presented a contrasting opinion arguing that it was natural for large companies to have several systems to work with, since different departments had different needs (i.e. learn to deal with it). Related, project managers were rushed to new projects when the previous was delivered (high demand), but not completed (e.g. documentation and unresolved minor issues). The behavior could potentially generate long-term problems (e.g. future projects or repairs) due to incomplete documentation. Another respondent described that it was not uncommon for experienced project managers to skip steps on the way in projects, as they were considered ‘unnecessary’ in terms of project delivery.

The principle seems to be applied for the delivered technology, but not for managing projects. The experience of having to work in several systems that did not support the project delivery could be an indication of technology being ‘pushed’, but as noted by one respondent all systems was not always intended to support projects, but instead to

support the company. Create routines and clarify the purpose could be one potential way forward to deal with the feeling of ‘wasting time’.

Principle 12 - Go and see for yourself to thoroughly understand the situation

To what extent ‘go and see’ was applied varied from individual to individual. On a project level some project managers (PBO B) spent a lot of time on site, while others almost never visited their sites. One reason for this was the remote location of many of the sites. In PBO A spending time on site was considered as praxis. Both PBOs had project offices close to the customer to facilitate site visits. On a PBO level senior managers (PBO A) were often part of the project steering committees as ways of understanding the situation. One respondent (PBO A) further explained that all senior managers also worked part time as project managers. This provided valuable input to the PBO level as they too got to experience the challenges and problems associated with project management. Another respondent (PBO A) explained that project had been delayed due to subcontractors not visually verifying their design, which was based on a blueprint that was not updated (by the company).

‘Go and see’ seems to be practices in PBOs, but the varying degree indicates the need to further formalize the principle. Interestingly, the example above suggests that it might not be sufficient to implement a ‘go and see’-principle only on an organizational level in PBOs, but also to make sure that everyone involved (e.g. subcontractors) follows it as well (e.g. through contracts) to ensure project delivery.

Principle 13 - Make decisions slowly by consensus, thoroughly considering all options; implement decisions rapidly

Project management involves continuously making decisions, many taken by the project manager solely (part of the job). However, it also includes continuously informing and updating stakeholders to verify planned actions. Decisions affecting the projects (time/cost/scope) was taken in project steering committees, and described as consensus decisions (PBO A). On a PBO level (management team) one respondent (PBO A) described the ambition to always make decisions in consensus, a practice confirmed by the other respondents. In PBO B decisions were described as timely, but that execution would vary (see ‘procrastinate’, *Principle 4*).

All respondents described consensus as the preferred, and practiced, way of decision-making. In projects the continuous dialogue with stakeholders could be seen as a way of seeking consensus before taking action. To what extent decisions were executed rapidly was not clear, but the culture of procrastination suggest room for improvement.

Principle 14 - Become a learning organization through relentless reflection and continuous improvement

The final principle discusses is that of becoming a learning organization working with continuous improvement. The example from *Principle 2* shows how the senior managers (PBO A) continually work on improving the performance. Other similar examples were provided, and lists of problems and improvement initiatives were applied and frequently updated on both a PBO and program levels. However, no systems, routines, or standards existed for learning and improving the organization. One senior manager, new to the PBO (A), had observed that many of the improvement efforts undertaken were rather extensive. Described as more or less ‘complete overhauls’, rather than continuous incremental improvements, the efforts seldom

reached full potential since it was difficult to see the large initiatives through. Another respondent (PBO A) described a shift in focus as part of the new management philosophy, from a focus on efficiency (delivering projects), to one of effectiveness (which project to deliver, and why, i.e. the value delivered for the company). One example of an activity to support organizational learning was the use of post-project reviews in the final project report (both PBOs). However, problems resolved during the project had often been forgotten at the end, and only limited information was included in the report. A desire to find a way to continuously capture lessons was expressed, but no solution had been found. One respondent (PBO A) described his position as an enabler of bringing together project managers who could learn from each other (e.g. resolve some issue). The approach was useful but had its shortcomings, since the transfer of lessons was limited to a few, not all, project managers, and the outcome depended on one single person (the manager).

Becoming a learning organization is a well-known challenge for PBOs (Scarbrough et al., 2004). Post-project reviews were employed in both PBOs in order to capture lessons learned, but the approach has its shortcomings (e.g. lessons forgotten at the end, unwillingness to document mistakes). Although not formalized, the senior manager pairing project managers to support each other is one example of continual informal learning between projects. Scarbrough et al. (2004) describe that learning takes place in two levels, the project- and the organization level. The challenge then is to bridge these levels. The example regarding process update in *Principle 2* illustrates an effort for organization-wide improvement based on a problem (and solution) identified on the project level. However, there was no formal way of disseminating the lessons learned to the PBO, instead it would be up to each senior manager to update and educate the staff of the changes.

Conclusion

The findings suggest that Lean principles are relevant in PM settings, and in many different ways can support a PBO in managing projects efficiently and effectively. However, based on the study of two PBOs introducing Lean thinking, each principle have to be applied and followed up at the different organizational levels (PBO, project, individual) to obtain the full potential. Though, compliance to processes and the lack of standardized ways of working seems to be a general issue in PBOs. To define customer value is a central aspect of Lean (Womack & Jones, 2003), but has not been explicitly addressed in this paper. However, value was discussed in the interviews, and preliminary findings indicate that for subsidiary PBOs 'customer value' seems to be somewhat complex, due to PBO and customer belonging to the same organization. We intend to present a more thorough analysis of 'value' in a future paper.

Relevance/contribution

We provide an empirically based discussion of opportunities related to Lean in PBOs. We also suggest that the nature of PBOs allows for the adoption of general Lean principles, but that they need to be aligned with PM methods and tools to allow for flexibility. Further, the findings suggest that adaptation of Lean is not only necessary for different contexts, but also within a specific organization. To further understand the challenges and opportunities of adopting Lean in a subsidiary PBO more research is needed. Revisiting the case organizations, or to identify PBOs with more Lean experience, would be one way to understand how the principles are adjusted to the PBO, and how the PBO adjust to the principles.

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Paper III

Maturity Assessment: Towards Continuous Improvements for
Project-Based Organisations?

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Maturity assessment: towards continuous improvements for project-based organisations?

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Abstract

Purpose – The purpose of this paper is to contribute to the empirical research on project management (PM) maturity assessments, specifically based on a maturity model.

Design/methodology/approach – The empirical data are based on a case study including in-depth interviews with a semi-structured approach, followed by a focus group interview. A survey was distributed within a project-based organisation (PBO) and to client and stakeholder representatives, and then analysed. The organisation in the case study is a project department within a Swedish mining company.

Findings – Careful considerations are needed when choosing a PM maturity model (PM3) as the model structure can influence the assessment's focus. It is also important to include both internal and external project stakeholders in the assessment to achieve an efficiency and effectiveness perspective when analysing PM capabilities. Valid information from an assessment is crucial, therefore, clear communication from management is important in order to motivate the participants in the assessment.

Research limitations/implications – Improved understanding for implementing and applying a PM3 contributes to the increased knowledge of drivers, enablers and obstacles when assessing PM maturity, which also creates a basis for further research initiatives.

Practical implications – An increased knowledge of drivers, enablers and obstacles should be valuable for practitioners introducing and applying a PM3.

Social implications – Projects are a common way of working in many businesses. Activities which aim to improve PM capabilities should contribute to more effective and efficient project performance.

Originality/value – This case study gives an in-depth insight into the implementation of a PM3 within a PBO. Through conducting a literature review, it was found that this type of empirical research is rare.

Keywords Project management, Evaluation, Maturity, Assessment, Case study, Maturity model

Paper type Research paper

1. Introduction

The business environment poses many different kinds of challenges for organisations. In order to stay competitive they need to revise and develop their structures and processes continually (Bessant and Caffyn, 1997) in an endless pursuit of improvements (Bhuiyan and Bagehel, 2005). Hence, organisations, which mainly perform their business through projects, need to continually improve their project management (PM) capabilities. However, numerous project-based organisations (PBO) seem to ignore evaluating their capabilities and instead choose to live in the present and ignore future strategic aspects (Qureshi *et al.*, 2009). Through conducting a literature review focused on

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organisational assessment and PM maturity models, Mullaly (2006) claims that having an understanding of an organisation's capabilities is essential for organisational learning and improvement. The concept maturity model can be seen as a model that reflects certain capabilities and defines qualitative attributes, which are used to classify a competence object into one of several pre-defined areas (Kohlegger *et al.*, 2009). The concept of maturity can also refer to a state where an organisation is in a perfect condition to achieve its objectives. Project maturity would then imply that an organisation has perfect conditions for managing projects (Andersen and Jessen, 2003), where a fully matured organisation is something to continuously strive for (Andersen and Jessen, 2003; Pretorius *et al.*, 2012; Besner and Hobbs, 2013). Hence, PM maturity is an increasingly important success factor (Bushuyev and Wagner, 2014), especially for organisations dealing with a variety of projects, programmes and portfolios (Young *et al.*, 2014). In order to implement improvements successfully, organisations require a thorough understanding of the strengths and weaknesses in their PM capabilities. Therefore, recent interest and attention has been given to the development of different PM maturity models (Grant and Pennypacker, 2006; Mullaly, 2006; Qureshi *et al.*, 2009; Demir and Kocabaş, 2010). According to Brookes *et al.* (2014) and Grant and Pennypacker (2006) this can be seen as one of the most widespread approaches towards improving PM performance. Over time, organisations that continuously manage projects should accumulate more project experience and improve their PM capability. Measuring and defining such improvement can be seen as a function of PM maturity (Pasian, 2014).

There are several drivers for applying a PM maturity model (PM3). For example, performing a PM assessment by means of such a model provides the organisation with a structured and systematic framework to identify the strengths and weaknesses of their PM capabilities, and thereby can plan and prioritise improvement initiatives (Hillson, 2003; Grant and Pennypacker, 2006; Mittermaier and Steyn, 2009; Demir and Kocabaş, 2010; Lianying *et al.*, 2012). Applying a PM3 also opens up the possibility to compare with competitors and best-in-class organisations (Mullaly, 2006). Applying a PM3 also implies that decisions are based on facts rather than intuition and experience (Cooke-Davies and Arzymanow, 2003). Another important aspect for using PM3s is to decide the direction of the company, prioritising actions and initiating cultural change, such as changing behaviour and habits (Crawford, 2006). A majority of the available PM3s evaluate PM maturity according to five levels, where level five is the highest level and implies that an organisation has fully applied continuous improvement into their management of projects. However, several studies, mainly based on surveys, clearly point out that many organisations only achieve lower maturity levels (one, two or three). The reasons for only reaching the lower levels are rarely scrutinised further. Several studies can be seen as "snapshots" of the current state of PM capability within an organisation, within different kinds of project contexts (cf. Pennypacker and Grant, 2003; Cooke-Davies and Arzymanow, 2003; Pretorius *et al.*, 2012). An implication for practitioners is that there is no widely accepted PM3 model, making it problematic to know what kind of model is most suitable to use (Mullaly, 2006). Several PM3s are also considered too complex in their structures, making assessments difficult to achieve and interpret and usually requires a large amount of resources and time to implement within an organisation (Jugdev and Thomas, 2002; Hillson, 2003). As described by Maier *et al.* (2012), most organisations are willing to undergo an assessment, as long as it does not take too long or cost too much.

According to Mullaly (2006) the evaluation of organisational development requires the ability to follow up results successively, but that the lack of longitudinal studies of

PM capability development is a serious drawback. Grant and Pennypacker (2006) have examined several case studies focusing on PM maturity assessments using a PM3, which mainly are described in different conference proceedings. They claim that few, if any of these studies, are based on structured empirical research. They also state that there is a paucity of published empirical research that investigates or addresses important issues related to measurement or improvement of PM maturity. Similarly, Brookes *et al.* (2014) claim that there is a lack of empirical investigations into understanding the modus operandi of applying PM3s, how they are used and how they contribute to improvement of project performance. Their opinion is that an increased understanding of how organisations implement and apply PM3s is needed. We argue that PM3s must be seen in a larger context, i.e. as an integrated part of a PM maturity assessment process. Therefore, the aim of this paper is to contribute to the empirical research on PM maturity assessment, i.e. to explore the assessment process within a PBO. More precisely, we want to understand what kinds of aspects need to be considered when performing a PM maturity assessment, and propose a framework for a sustained assessment process.

The structure of this paper is as follows: a literature review was conducted to examine the nature of PM maturity assessments, specifically based on different types of PM3, providing a context to critically discuss empirical findings. The empirical findings are mainly based on a single case study, following the implementation of a PM3 for industrial engineering and construction context. Based on the analysis that compares empirical and theoretical findings, a conceptual framework of an assessment process is proposed. Finally, the results are followed by a discussion and conclusions, including proposals for further research.

2. Literature review

2.1 PM maturity models and assessment

According to Grant and Pennypacker (2006) and Jiang *et al.* (2004), the development of PM3s is a relatively recent phenomenon, which can be traced to the development of the Capability Maturity Model (CMM). The CMM was developed by the Software Engineering Institute at Carnegie Mellon University between the mid-eighties and mid-nineties. Successful applications of the CMM in the software industry inspired practitioners and researchers from the PM field in the development of different PM3s (Jiang *et al.*, 2004; Lianying *et al.*, 2012). However, the concept “maturity model” has its origin in the field of quality management, with a focus on process maturity, including statistical process control and continuous process improvement (Cooke-Davies and Arzymanow, 2003; Demir and Kocabaş, 2010; Albrecht and Spang, 2014; Pasian, 2014; Mullaly, 2014). According to Mullaly (2014), Crosby (1979) initiated the first conceptual model for maturity models, suggesting a five-level framework by which to evaluate the quality of organisational processes. A large number of different PM3s have been developed over the years (cf. Ibbs and Kwak, 2000; Cooke-Davies and Arzymanow, 2003; Hillson, 2003; Crawford, 2006; Grant and Pennypacker, 2006; Yazici, 2009; Lianying *et al.*, 2012; Jugdev and Thomas, 2002). As with the CMM, the majority of PM3s consist of five distinct levels. Level one is the initial level, or “Level zero”, which is unawareness (Demir and Kocabaş, 2010), i.e. where no established PM practices exist. It extends to level five which can be seen as an “optimized” level, where the organisation is considered to be matured and focused on continuous learning and improvement (Pretorius *et al.*, 2012; Demir and Kocabaş, 2010). However, five levels are not the only way to present different stages of maturity. For example, Hillson (2003) describes a PM3 including four maturity levels:

Naive, Novice, Normalised and Natural. Many PM3s are similar in their structures when considering the number of maturity levels, with the highest level emphasising continuous improvements (CI). However, the ways to reach these levels differs considering content and structure of the specific steps. PM3s can also be categorised according to the approach of gathering data, such as models based on surveys, interviews, self-assessment or a mixture of these. PM3s based on survey and interviews seem to be the most common in the literature. Examples of such models are the Project Management Capability Maturity Model (P2CMM), which is based on the PM model PRINCE 2 (Lianying *et al.*, 2012), the Organisational Project Management Maturity Model (OPM3) (PMI, 2008), and the Portfolio, Programme and Project Management Maturity Model (P3M3) (OGC, 2010). Some organisations are also evaluating PM maturity as a part of an organisation's overall assessment of the quality of its business processes, using self-assessment models such as the Malcolm Baldrige National Quality Award or the EFQM (European Foundation for Quality Management) Excellence Award (Cooke-Davies and Arzymanow, 2003). Similarly, the PM Performance Assessment model (PMPA), developed by Bryde (2003) includes six criteria for assessing PM capability based upon the EFQM business excellence model. On a similar basis the German PM Association developed the Project Excellence Model in the early 1990s, which was also based on the EFQM's excellence model (Bushuyev and Wagner, 2014). PM Delta is another PM3 based on a self-assessment approach developed in the late 1990s (Bushuyev and Wagner, 2014). PM3s that combine survey and self-assessment are for example the Project Management Maturity Model (ProMMM), described in Hillson (2003) and a modified version of the P3M3 (OGC, 2008).

Since maturity model as a concept has its origin in the field of quality management, in which process management is central, most of the PM3s are consequently process-oriented. This means that maturity assessments mostly focus on whether different PM processes are defined, established, applied, controlled and continuously improved (Bushuyev and Wagner, 2014), meaning that a maturity assessment is within a cyclical process (Albrecht and Spang, 2014). This procedure could also be viewed as the improvement cycle which was developed by Deming (1994), structured in the phases Plan, Do, Check and Act (Mullaly, 2014). The PDCA-cycle is a common preference when describing CI (cf. Deming, 1986; Bessant *et al.*, 1994; Starkey, Brewin and Owen, 1996). CI is a widely used concept with various definitions in the literature, but it is commonly considered "a company-wide process of focused and continuous incremental innovation" (Bessant *et al.*, 1994, p. 18). CI is a popular concept due to its low entry barriers and its potential for utilising the creativity of a large number of people working on the same basic problem set, which makes significant improvements possible (Bessant *et al.*, 1994). According to Brookes and Clark (2009) a PM3 can be seen as a strategic link to CI through the understanding of an organisation's current position and where it aims to be in the future. PM maturity is associated with a common organisation-wide understanding and use of PM processes, where a complete mature organisation focuses on CI, based on these processes (Besner and Hobbs, 2013). Hence, the use of a PM3 provides a link to CI, where continuous learning and improvement are common elements in the highest PM maturity levels. As Pasion (2014, p. 187) explains: "improving the organisational capability would come as a result of the increasing maturity until the highest point of CI". In that perspective, applying a PM3 could in itself be seen as a way of working with CI principles (not only as a criteria for level five), i.e. as an organisation-wide endeavour towards a common goal, where the key challenge in order to gain effect is to sustain the initiate over a long period of time (Bessant *et al.*, 1994). However, CI is mainly applied in repetitive environments, such as in manufacturing industries

(Gieskes and ten Broeke, 2000). Therefore, PM could be seen as being in conflict with the principles of CI, since a project is temporary and its results are unique. However, if projects are considered as on-going processes in an organisation it then becomes obvious that CI is not only possible, but highly recommended (Orwig and Brennan, 2000).

2.2 Empirical research on PM3

Surveys on PM3s and obtained levels of maturity. Most empirical research on PM maturity and PM3s are surveys which involve different kinds of PM3s in different organisational contexts. Some major survey-based studies are described in the work of Ibbs and Kwak (2000), Cooke-Davies and Arzymanow (2003), Pennypacker and Grant (2003), Hillson (2003), Grant and Pennypacker (2006), Mullaly (2006), Pretorius *et al.* (2012) and Mullaly (2014). An overall review of the survey-based studies indicates that most organisations perceived themselves as being between maturity levels two or three. In contrast, several organisations reached level five in at least one PM domain in a study by Cooke-Davies and Arzymanow (2003). However, in their study only two interviews per organisation were conducted, implying that the evaluation results were based on the experiences of only a few individuals. Also, Grant and Pennypacker (2006) did not find widespread differences between PM maturity levels when comparing across industries of the current level of PM maturity among industries. This was based on responses from senior-level practitioners representing 126 different organisations. In cases where differences were noted, it was generally the professional, scientific and technical service organisations which had matured most. Further, Cooke-Davies and Arzymanow (2003) found some evidence that the engineering-based industries, are more mature in terms of PM than industries that have adopted the approach more recently, such as the financial services and the pharmaceutical industry. Ibbs and Kwak (2000) found similar results in their study, in which the engineering and construction industry had the highest score and the information systems industry had the lowest.

To summarise, these findings point out rather low maturity levels overall, indicating that many organisations probably need to improve their PM capabilities to stay competitive in a global business environment. Thus, according to Albrecht and Spang (2014), comparisons of similar studies are limited due to the fact that the applied PM3s differ in their design and the degree of access to data. Brookes *et al.* (2014) have similar criticism concerning studies comparing PM3s with different design and content.

Case studies on PM3. As stated by Grant and Pennypacker (2006), there are few case studies of organisations performing PM assessments by means of some sort of PM3s. According to Mullaly (2014) and McBride *et al.* (2004), such studies are often more anecdotal than empirical. A study of PM assessment for a multinational organisation in 2000-2001, applying ProMMM, is described by Hillson (2003). He found that two years after the case study was completed, the organisation reported significant improvements in the performance of its projects. While the case study contains an overall description, there is sparse information on how the organisation implemented and applied the PM3, or how improvement initiatives were managed. Another empirical study is described by Crawford (2006), who shares his experiences from implementing and applying PM maturity assessments in different organisations in the form of recommendations. The PM3 used was based on PMI's nine knowledge areas in PM (PMI, 2003) and evaluated according to five maturity levels similar to the design of the CMM. The first recommendation is the need for a structured approach that promotes a repeatable assessment and provides consistent measurements and results, as a basis for benchmarking with other organisations. It can be

important to focus on one identified improvement area and one level at the time, to achieve improvements in shorter timeframes. According to Crawford this kind of procedure provides opportunities to highlight successes and re-evaluate specific direction while reenergising staff members. Second, an organisation should aim for obtaining similar maturity levels across the various PM areas. Benefits associated with achieving a level five maturity in one PM area may be erased if the other areas are only at the second maturity level. Third, and assumed to be the most difficult recommendation to manage, is setting a direction, prioritising actions and initiating cultural change, such as a change of behaviour and habits. Crawford (2006) also concluded, in agreement with Andersen and Jessen (2003) that determining the level of maturity in an organisation is subjective in nature, and therefore it is important to use an assessment tool that has been tested and proven to achieve consistent and accurate results.

Recently, two interesting and descriptive multi-case studies have been available by Brookes *et al.* (2014) and Albrecht and Spang (2014). Brookes *et al.* (2014) studied seven organisations with the aim to explore the modus operandi of applying PM3s. A mix of small, medium-sized and large organisations was involved in the study, whose business is in an engineering or manufacturing context. In total, over 90 individual self-assessments questionnaires were gathered and 29 follow-up individual and group interviews were undertaken. The PM3 used in the study was the same that was used by Crawford (2006) and Grant and Pennypacker (2006) in their benchmarking study of 120 organisations. In the study, no organisation reached maturity levels four or five. Tentative findings indicated that performance improvement in certain circumstances relates to the structure and the framework of the PM3 used. At lower levels of PM maturity, suggestions for performance improvement focused mainly on the introduction of general PM systems. At higher levels of maturity, organisations appeared to be influenced by the PM3. They either reinforced their efforts in areas of strength (high maturity) or they focused on areas of perceived weakness (low maturity). The study also pointed out the importance to adopt a “wisdom of crowds approach”. Originally described by Surowiecki (2005), this means providing a mechanism for aggregating answers to arrive at an overall maturity level. Therefore, in the planning phase of implementing and applying a PM maturity assessment, efforts are needed to make the crowd as “wise as possible”. When applying PM3s, Brookes *et al.* (2014) recommend involving as many participants as possible, promoting people to contribute with their own opinions (preferably by individual questionnaires), and encouraging individuals to base their information on personal experience. The findings also indicate that practitioners should think carefully about which type of PM3 to adopt, considering the many different models available.

Albrecht and Spang (2014) performed three qualitative case studies with the aim to investigate how organisations could benefit from a certain level of PM maturity. The study included organisational units of two larger and one smaller company, belonging to the automotive and energy sector. As a part of the assessment, they used the questionnaire template included in the framework of the maturity model P3M3 (OGC, 2010). However, the process perspective “Benefits management” was not incorporated into the maturity assessment as it was perceived too difficult for the respondents to grasp, with regards to the specific project context. The study provided some support for a company-specific ideal level of maturity, since the requirements on higher maturity levels were perceived by several respondents as being too resource consuming without adding value. Furthermore, increased degrees of formalisation were shown to be inefficient and ineffective. Overall, Albrecht and Spang (2014) point out that project

complexity influences the needs for a certain level of formalisation, and hence the level of maturity.

2.3 Issues raised in PM3 research

According to Demir and Kocabaş (2010) there is extensive evidence that improving PM capabilities, in a disciplined and realistic way, will generate significant return on the investment. This is confirmed by Qureshi *et al.* (2009) in their study of applying the Project Management Performance Assessment (PMPA) model, which was found to have a positive and significant impact on PM performance. Torres (2014) also found a positive link between PM maturity and performance, where seven of nine performance dimensions had a significant positive relationship.

Yet several studies questioning these previous findings, pointing out an unclear relationship between PM maturity and success (cf. Ibbs and Kwak, 2000; Jugdev and Thomas, 2002; Besner and Hobbs, 2013). According to Mullaly (2014) there is undoubtedly a conceptual appeal to the use of maturity models and a belief that they should provide relevant and useful insight on improving PM capabilities, but there is little evidence that improvements in maturity correspond to improvements in performance or value. He sees a risk in organisations putting their faith in different kinds of PM3s without questioning their underlying relevance or value. To summarise, Pretorius *et al.* (2012) concluded that there seems to be no consensus on whether a higher maturity level leads to improved project performance or not.

Another form of criticism concerns the main focus of measuring PM capabilities against bodies of knowledge. According to Pretorius *et al.* (2012) project success is influenced by a variety of factors other than standardised practices, for example skills and competencies of the project manager and other team members, organisational culture, good communication and support from senior management. In a similar manner, Young *et al.* (2014) and Jugdev and Müller (2005) argue that many PM3s mainly address codified (tangible) knowledge, while a large part of PM knowledge is tacit (intangible). For PM3s to be meaningful, Mullaly (2014) claims that they need to go beyond a limited focus on uniform processes and defined standards, and thus consider the broader organisational and contextual factors that influence how projects are managed. In a similar way, some criticism towards PM maturity assessments concerns the process-oriented and standardised view of many PM3s (Jugdev and Thomas, 2002; Mullaly, 2014). According to Bushuyev and Wagner (2014) processes are an important part of organisations, but are not sufficient to achieve the intended results and outcomes of projects in the most effective and efficient way. To conclude, Mullaly (2014) states that one of the major pitfalls when applying a PM3 is the assumption that all projects within an organisation should be managed in the same fashion. Torres (2014) points out the importance of recognising the value of a maturity assessment considering the project context. In a similar manner, Andersen and Jessen (2003) argue that many PM3 structures are too rigid. However, assessing maturity on the basis of such models makes sense when they are applied in highly defined project contexts, such as architecture, engineering or construction (Pasian *et al.*, 2012). In such projects many activities can be planned for in advance and together constitute different kinds of processes (Pasian *et al.*, 2012; Pasian, 2014). This is also similar to what Turner and Cochrane (1993) call “Type 1 projects”, i.e. projects where the goals and methods are well-defined.

2.4 Managerial implications

While too much control is not always desirable or appropriate, some kind of control is necessary from a stakeholder and quality assurance perspective, as simply allowing projects to flounder is unacceptable (Thomas *et al.*, 2012). In a PBO, some control and standardisation of projects should be necessary to manage projects effectively and efficiently. However, considering the different criticism involved in the assessment of PM maturity, practitioners are encouraged to be careful in their selection and adoption of PM3s, and ultimately, the results generated by them (Pasian, 2014; Andersen and Jessen, 2003).

When choosing a model, it is unwise to evaluate PM maturity with hopes to increase the maturity level just for the sake of obtaining a higher level. According to Crawford (2006), each organisation needs to determine the minimum level of maturity at which desired value is achieved. This view is also taken by Demir and Kocabaş (2010) in their study of PM maturity evaluation in an educational institution. Also, higher maturity usually goes along with higher PM formalisation, therefore considerations should be made concerning the effects of formalisation, standardisation and bureaucratisation of PM structures (Albrecht and Spang, 2014). Another implication is the ways in which data are collected, which is of great importance for the efficacy of a PM3 (Brookes *et al.*, 2014). For example, applying a survey-based PM3 based on questionnaires only assesses the perceptions of respondents and therefore represents a subjective opinion. In addition, a survey can only address those issues listed in the questions. There are also risks for significant differences in respondents' interpretation of questions, especially where unfamiliar concepts are used or where there are language differences (Mullaly, 2006).

2.5 A summary of the literature review

From the literature review, three main managerial implications can be revealed. First, there exist many different PM3s, making it problematic for practitioners to know what kind of models to use. Several aspects are identified that need to be considered when choosing, however, no structured guidelines or decision support have been found in previous research. Second, several authors emphasise the importance of using a structured and systematic framework, and that most organisations are willing to undergo an assessment as long as it is time and cost efficient. Though, how such a sustained framework could be designed is not further discussed in the literature. In general, PM3s are more seen as a tool than a part of an assessment process. Third, it is still unclear if improvements in maturity lead to improvements in PM performance.

The aim with this study is not to compare and evaluate different PM3s considering their suitability in different PM contexts, as a response on the first implication. Though, in line with the second implication we argue for that PM3s must be viewed in a wider context, in comparison with the many studies on PM3s from a tool perspective, i.e. used as snapshots of the current maturity level. According to Albrecht and Spang (2014) and Mullaly (2014) a maturity assessment can be viewed as a cyclical process, a procedure which also could be viewed as a part of an improvement cycle structured in the phases Plan, Do, Check and Act. Hence, we argue that an assessment process can be structured according to these phases, including choosing and applying a PM3. Considering the third implication, it is important to point out the difference between assessment of PM maturity and the success or failure of managing improvement initiatives. We believe that one way to judge if an assessment process is efficient and effective could be to analyse how relevant identified strengths and weaknesses are for the organisation

(i.e. how valuable). Hence, another intention with the study is to describe strengths and weaknesses identified from a maturity assessment. This should make it possible to analyse if assessment results are relevant and useful for the organisation in the improvement of PM capabilities.

3. Research design

This study is of an exploratory nature in order to better understand how an organisation can assess the PM maturity in order to increase PM capabilities, by means of a PM3. Applying a PM3 seems to require a relatively large amount of resources and time (Jugdev and Thomas, 2002). Therefore, it can be assumed that PM3s are most suitable when applied within organisations with the main task to manage and carry out projects, hence the choice of focusing on PBOs. A PBO is classified as an organisation in which the majority of products or services are produced through projects for either internal or external customers (Turner and Keegan, 2000). According to Pemsel and Müller (2012), the PBO can be a standalone organisation or a subsidiary of a larger corporation.

The research design consisted of three main stages. The first stage consisted of a literature review focusing on maturity models and maturity assessment. In stage two, a pre-study was performed, including semi-structured interviews with six respondents, representing six major Swedish PBOs in the engineering and construction industry. Each respondent were considered to have good knowledge about the modus of operandi in their PBOs, see also Table I. The purpose of the study was to obtain initial understanding of how PBOs applying maturity assessment and to compare findings with the main case study (stage three). The respondents were asked if their organisation performed PM maturity assessments and if they used a PM3. The result of the pre-study indicated that maturity assessment mainly was an unknown area within their organisations.

In the third stage, a single-case study was executed with a focus on exploring the practise of a project maturity assessment process in a PBO. The unit of analysis was a project department (PD) and its PM maturity assessment process. A single-case research typically exploits opportunities to observe and analyse a phenomenon that can be otherwise difficult to get access to (Eisenhardt and Graebner, 2007; Yin, 2009). Also, another important criterion for the use of a case study methodology is for occasions when the research phenomenon deals with interrelated issues in a real-life context (Merriam, 1988). We wanted to obtain a "rich story" about the context (Eisenhardt, 1989), i.e. background and the practise of a maturity assessment in an organisation. The chosen PBO thus provided an opportunity to study the introduction of a PM3 and an assessment initiative. Even though a single-case study approach implies several limitations concerning the degree of generalisation of the results, it is a powerful tool for in-depth analysis of a complex change process (Eisenhardt, 1989). Limitations aside, as the study

Table I.
Overall information
about the
PBOs involved in
the pre-study

PBO	Standalone/subsidiary	Type of business context	Role of respondent
A	Subsidiary	Construction (energy sector)	Departmental manager
B	Subsidiary	Construction (energy sector)	Project manager
C	Subsidiary	Construction (energy sector)	Departmental manager
D	Standalone	Construction (general)	Development manager
E	Standalone	Construction (general)	Project manager
F	Standalone	Construction (general)	Development manager

is an attempt to understand the practise of the PM3 application and its assessment process, it is considered to meet the rationale criteria set for the case study methodology. The project PD has approximately 100 employees and is a part of a mining company in Sweden. This kind of industrial engineering and construction context often uses highly defined projects where process definability and control are important, which makes it suitable for assessing PM capability, a reasoning in line with, e.g. Pasian *et al.* (2012) and Pasian (2014).

The PD consists of a business development function and seven divisions (including mining, logistics and construction), each managed by a project manager who is responsible for several project leaders. the management group consists of the departmental manager, the manager of the development function and the division managers. other roles within the PD are construction leaders (responsible for the operative tasks in a project) and project coordinators (mainly administrative support). As the construction leaders are quite few in comparison to the project leaders, and have more of an operative role and not involved in the management of projects, they have not been used as respondents in this study.

The gathering of empirical data in this single-case can be viewed in four interrelated parts (see Figure 1) in which Part I included a review of the answers from the PM3 questionnaire (Survey 1), i.e. secondary data that was collected by a consultant company, as a part of the PD's maturity assessment process. Survey 1 was distributed to the PD during the autumn of 2012 (67 of 92 available personnel answered the survey - giving a response rate of 73 per cent). The questionnaire covered statements about the seven processes in the model P3M3 (related to control, benefits, finance, resource, governance, stakeholder and risk), questions about the PBO's procedures, documentation, and training related to PM, and open-ended questions. The answers of the open-ended questions were categorised by the authors in different subjects of matter showing the member's reflections of the maturity assessment process. These categorisations gave input to Part II of the single-case.

Part II consisted of field visits and interviews with a total of nine respondents: two project managers, four project leaders, one project coordinator, one business development manager and one business developer. The purpose for selecting these respondents was that they would represent all categories in the PD including both those initiating the PM maturity assessment and those participating in the PM assessment survey (in Part I). The business development manager was the initiator and also in charge of the PM maturity assessment, supported by the business developer. All interviews were based on a semi-structured interview guideline based on the secondary data (categorisation of the open-ended questions in the PM assessment survey in Part I), which lasted for approximately one hour and were conducted within the organisation. All major interviews were performed during the spring of 2013. Since a great amount of information was available from the open-ended questions, the number of respondents was considering sufficiently for the study.



Figure 1.
The data collection
process in the
single-case study

Part III consisted of follow-up interviews during the autumn 2013 and included a focus group interview with the management group. The focus group discussion went on for approximately one hour. The aim with the focus group was to follow-up and discuss in what ways the management group had identified improvement initiatives based upon the PM assessment. For the same reason, an additional interview was held with the business developer, who was supporting the management group in their identification of improvement initiatives. Also, the PD's business plan was reviewed to identify improvement initiatives.

Finally, in Part IV, a second internal survey (Survey 2) was distributed to clients and stakeholders (CS) representatives (project controllers, purchasers and steering group members) within the mining company. In total, 57 respondents were invited and 33 answered, giving a response rate of 58 per cent, which also included answers from open-ended questions. The answers of the open-ended questions were categorised in a similar way as for survey 1. Overall findings are presented in Table III.

4. Studies of PM maturity assessments in Swedish PBOs

This section reports the findings from the initial pre-study, as well as the single-case study, in order to explore the applications of PM maturity assessments in Swedish PBOs.

4.1 A pre-study

The pre-study was performed in order to examine the current understanding and occurrence of PM maturity assessment in Swedish PBOs. Briefly, the study revealed that the majority of these organisations had never applied a PM maturity assessment. Assessments made primarily concerned the governing parameters within specific projects i.e. cost, time and scope. When the concept "maturity assessment" was described to the respondents, several considered it to be too complicated. However, in PBO F (see Table I), a PM maturity assessment had been performed several years ago but, according to the respondent who had been the initiator of the assessment initiative, too few employees and management representatives were committed to the process, and consequently the assessment was discontinued.

4.2 A case study of a PBO introducing a PM maturity assessment

In the mining company, which is the setting for this study and the case company, different types of projects are carried out on a continuous basis. However large, complex projects such as developing new mining drifts or enlarging shipping harbours are mainly managed by a specific PD. The PD's only clients are within the mining company itself, meaning other departments (such as mining and processing), who may want to commission a project. The different divisions within the PD are somewhat spread out geographically due to two major mining areas and two ports for shipping out ore. As the PD primarily consists of project managers, project leaders and project coordinators, additional operative personnel needed necessary for the projects are brought in from other units within the company or from contractors.

The assessment and evaluation of PM maturity was an initiative by the business development manager who chose the P3M3 model (portfolio, programme and project management maturity model) to evaluate and assess PM capability within the PD. One reason for choosing this specific model was due to advice from the consultancy company involved. This model was also used in a national PM maturity assessment survey which was performed annually. Other reasons were that the model was well

known internationally and could be used in future benchmarking studies. The business development manager felt that the most important PM areas were included in the P3M3 model, but that to some degree softer aspects were lacking, aspects such as involvement and culture. The model framework had been translated to Swedish by a consultant company, which also distributed the questionnaires and compiled the evaluation and assessment results. In its original form, the model focuses on the management of portfolios, programmes and projects. However, the business development manager took a decision to focus on the PM part only as the concepts portfolio and programme were not formally used within the PD. The model framework is based upon five maturity levels focusing on the different processes: awareness, repeatable, defined, managed and optimised (where five represents the highest level), see also Table II. The maturity levels are used to evaluate seven PM processes: management control, benefits management, financial management, stakeholder engagement, risk management, organisational governance and resource management. Embedded within each process are a number of attributes and specific attributes are related to a particular process perspective. Generic attributes, common to all processes at a given maturity level, include planning, information management, training and development (OGC, 2010).

In order to fulfil its mission i.e. that the PD perform projects effectively and efficiently, the department manager stated that they must constantly improve their PM performance. According to the business development manager, the aim of the assessment was to make it possible for the PD to compare its PM capability internally and also with other organisations externally as a basis for CI. The intention was to assess PM capability every two years. The manager considered that the assessment in itself would probably imply a major change in working with PM development within the department. He also had a vision that future assessments would involve the entire mining company.

The management team had not discussed the PM assessment concerning aims and goals except for overall improvement and in order to become more effective and efficient. It was not implicitly clear what the different levels really implied for the PD and what level to aim for. Several of the project managers emphasised the importance of learning from projects and that the PM maturity assessments should support that. They were generally in favour of changing the ways in which projects were managed, but also highlighted the difficulty in working with long-term development initiatives as personnel usually became too involved in daily operations. However, the business

Level Content

- | Level | Content |
|-------|--|
| 5 | Does the organisation undertake continuous process improvement with proactive problem and technology management for projects in order to improve its ability to depict performance over time and optimise processes? |
| 4 | Does the organisation obtain and retain specific measurements on its project management performance and run a quality management organisation to better predict future performance? |
| 3 | Does the organisation have its own centrally controlled project processes and can individual projects flex within these processes to suit the particular project? |
| 2 | Does the organisation ensure that each project is run with its own processes and procedures to a minimum specified standard? (There may be limited consistency or coordination between projects.) |
| 1 | Does the organisation recognise projects and run them differently from its ongoing business? (Projects may be run informally with no standard process or tracking system.) |

Note: For descriptions of the levels in more detail, see (OGC, 2010)

Table II.
Characteristics
for the different
levels in the PM3
used (portfolio,
programme and
project management
maturity model,
P3M3)

development manager felt that it was an advantage to perform a PM maturity assessment within a formal PBO such as a PD as this facilitated management and control.

The implementation of the PM3 was managed by the business development manager together with the consultant company. In addition, the business developer assisted him and was in charge of the planning and preparation of the maturity assessment. Information on the upcoming maturity assessment was distributed to the personnel primarily via e-mail. A status report, stating the number of questionnaire responses, was sent out three times to the management team (by the consultancy company) to encourage project managers to motivate their personnel to participate in the survey. The project managers and project coordinators felt that they had received enough information and knowledge prior the study. However, the project leaders did not. Most project leaders would have preferred to have been involved in some type of meeting in order to discuss and prepare before the questionnaire was sent out.

4.3 The assessment process

An electronic survey consisting of structured questions with multiple-choice alternatives was distributed to all employees within the PD in September-October 2012. The questions were structured according to the seven PM processes, with five statements corresponding to the levels 1-5. One open-ended question was also available for each process category in which the respondents were able to be more reflective in their answers. At the end of the questionnaire, additional open-ended questions were presented in order to obtain suggestions from employees about general improvement initiatives, and thus obtain higher maturity levels. The employees were given a period of two weeks to respond and 73 per cent of employees in the PD answered the survey. The results of the assessment were presented by the consultancy company to the management team who also received a final report which included a distribution of the number of responses for each division and a list of answers based on the open-ended questions. The PD scored, on average, 3.2 implying a "Defined level" (see Table II). Process categories with the highest scores were risk management (4.0) and Financial management (3.7), while resource management (2.8) and stakeholder management (2.8) received the lowest scores.

A variety of opinions were given in the open-ended question linked to each PM process category. The number of responses indicated considerable interest from the respondents regarding PM aspects, aspects not fully captured in the structured questions. As the answers were only listed, they needed to be structured and analysed further by the authors. Hence, the answers were grouped together based on similarity, and the next step was structured according to the commonality between the groups. In this manner, overall improvement areas were identified which are described in Table III (including structured findings from the CS category). The three additional open-ended questions which focused on general improvement suggestions contained similar answers and are presented in the category general improvement areas. Most of the respondents found the questions relevant and felt that they covered important PM areas. However, the project leaders felt that many of the questions were unclear, meaning they were difficult to interpret, even though the business development manager and the business developer had adjusted some of the vocabulary before the survey questions were distributed. Several respondents commented that they had difficulty in understanding the questions due to unfamiliar vocabulary – especially questions concerning stakeholder management, benefit management and financial management. They also felt that the questions in the process categories financial

Table III.
Overall improvement
areas identified,
based on answers
from open-ended
questions from
respondents within
the project
department (PD)
and clients and
stakeholders (CS)

<i>Financial management</i>	<i>Organisational governance</i>
ICT-support (PD and CS)	Steering and guiding documents (PD)
Follow up and key performance indicators (PD and CS)	PM model and ICT-support (PD and CS)
Portfolio management (PD and CS)	A common way of working (PD and CS)
Visualisation possibilities and support systems (CS)	Clients and stakeholders PM competence (PD)
A common way of working (CS)	Experience sharing and learning organisation (PD)
	Project plans and reports (CS)
	Communication (CS)
<i>Management control</i>	<i>Stakeholder management</i>
Portfolio management (PD and CS)	Management of external project participants (consultants, entrepreneurs) (PD)
Communication (PD and CS)	Involvement of clients in the project phases (PD)
<i>Risk management</i>	<i>Benefits management</i>
A common way of working (PD and CS)	Clients and stakeholders project competence (PD)
PM model and ICT-support (PD and CS)	Value creation (PD and CS)
	Project group competence (CS)
	Communication (CS)
	Experience sharing and learning organisation (CS)
<i>Resource management</i>	<i>General improvement areas</i>
Collaboration between clients and project (PD and CS)	Collaboration between clients and project (PD)
Resource management (PD and CS)	PM model and ICT-support (PD)
A common way of working (PD and CS)	Experience sharing and learning organisation (PD and CS)
Experience sharing and learning organisation (PD)	A common way of working (PD and CS)
	Overall PM competence (CS)
	Portfolio management (CS)

management and management control were more suitable for clients and other stakeholders to answer. One project leader stated that the questions could have been more thorough and easier to grasp. Also, one project leader felt that there was not enough focus on the project closure phase (the evaluation phase) in the questionnaire.

Most of the respondents agreed that the PM maturity assessment was important to the PD in order to be able to analyse current PM processes and to identify strengths and weaknesses. However, several of the respondents stated that they regarded the survey as an everyday work task with little intrinsic motivation. For example, the project leaders felt there was a duty to answer the questionnaire. Yet, several respondents thought that answering the questionnaire was a good opportunity for project participants to express their opinions about the current PM process. The business development manager was aware of the lack of commitment among some of the employees involved in the PM assessment, but expected an increase in motivation when assessment results were revealed.

After the completion of questionnaire collection, the management team became aware that a client and stakeholder (project controllers, purchasers and steering group representatives) perspective was lacking. Consequently in March 2013, a complementary PM maturity assessment was carried out with a focus on CS. The survey was sent out to 57 respondents and 33 answered, a 58 per cent response rate. The evaluation scored an average of 3.2, i.e. Defined level, the same as the PD. The process categories with the highest scores were financial management: 4.0 (PD: 3.7) and risk management: 3.6 (PD: 4.0), while stakeholder management: 2.5 (project department: 2.8) and benefit

management: 2.8 (project department: 3.1) had the lowest scores. In the answers from the open-ended question, several improvement areas concerning PM processes were identified. The answers from the PD and CS are structured according to the seven process categories and a general improvement category in Table III.

As shown in the Table III, both categories of respondents (PD employees, CS) identified many common improvement areas, many of these within several of the different process categories. However, the client representatives had no comments on the stakeholder management process.

4.4 Improvement initiatives

When the assessment was completed, the business developer discussed the results with several of the divisions in order to obtain deeper and more comprehensive understanding of the answers to the open-ended questions. Based on these meetings and the maturity assessment report, she compiled a list of improvement initiatives as a decision basis for the management team. The poor scores from stakeholder management and benefits management were paid specific attention. Prioritised improvement initiatives were formalised in the PD business plan. Each project manager was responsible for planning and executing these improvement initiatives within their divisions. However, according to the business developer only some project managers held formal meetings to present the assessment results to their divisions. The project leaders said that the assessment results were mainly presented as statistics, with little discussion and reflection in order to consider potential improvement initiatives. According to most respondents, the assessment results confirmed what they already experienced as strengths and weaknesses concerning PM capability within the organisation. However, they believed that the strengths and improvement areas identified were useful information for the PD, although the project leaders felt that the assessment results were of less importance in their professional roles.

5. Analysis

The pre-study indicates that few PBOs are aware of PM maturity assessment, considering it to be a rather complicated concept, and that it can be difficult to sustain an initiative. Hence, the intention with the paper is to better understand what kind of aspects to be considered when performing a PM maturity assessment, and to create a conceptual framework of a sustained assessment process. In the analysis, we have structured different aspects according to the PDCA cycle, i.e. a cyclic process proposed by for example Albrecht and Spang (2014) and Mullaly (2014). However, as the PBO in the study introduced the maturity assessment for the first time, the plan phase can also be viewed as an introduction phase. Also, we analysed the identified strengths and weaknesses from the maturity assessment, as one way to judge if an assessment process is relevant and useful for the organisation in the improvement of PM capabilities.

5.1 Introduction/plan

The PD needed to constantly improve their PM performance to fulfil their mission. However, the management group had not fully considered the maturity assessment initiative, i.e. discussing aims and goals with the PM assessment thoroughly, or what type of PM3 would be most suitable for the department's needs and project context. The model applied in the PD was mainly chosen because it had been used to assess PM maturity in other organisations in Sweden, and therefore could be used in further benchmarking studies. However, no consideration had been made of the model's

suitability for the PBO's specific project environment. Conveniently such a model structure can be suitable in the actual engineering and construction context, which is similar to what Turner and Cochrane (1993) call Type 1 projects, e.g. where the goals and methods are well-defined. The maturity assessment was initially based on respondents from the PD, including CS were not planned for initially. This holistic approach seems, however, to be important as project success is strongly related to clients' and stakeholders' needs and requirements, i.e. an efficiency and effectiveness perspective. Interestingly, the focus on client representatives and stakeholders are rarely discussed in the research field on PM maturity assessment. Overall the PD lacked some kind of supporting structure when introducing the assessment and the PM3.

5.2 Do

It seemed that some PM processes that received low scores (stakeholder management and benefits management) also were considered by many respondents to include "unclear" questions. Higher scores could be traced to PM areas which were more "tangible", for example risk management and financial management. The reason can be twofold, e.g. lack of PM skills and competence among the respondents, or abstract questions. Whatever reason, the situation points out that questionnaire design is an important aspect in a survey-based PM3, and highlight the importance of a well prepared questionnaire and comprehensive analyses of the results. A similar notion was also verified in the study by Albrecht and Spang (2014), where the process perspective "Benefits Management" was not incorporated into the maturity assessments as it was perceived too difficult for the respondents to grasp. Also Mullaly (2006) points out the risks for significant differences between respondents with interpreting the questions, especially where unfamiliar concepts are used. The PM3-model used in the case study included open-ended questions, which constituted a valuable source of more in-depth information from the respondents. However, in the answers from several respondents, a lack of intrinsic motivation can be discerned, which most likely affected the validation of the information obtained in the answers. In addition, relatively few client and stakeholder representatives participated in the survey, which also indicates a lack of motivation or a perceived lack of relevance to them. According to Brookes *et al.* (2014) it is important to encourage the participants to use their personal experience as information for the assessment. The case study also emphasises the importance of motivating the respondents from both an intrinsic and an external perspective, which seems to need thoroughly planning and management support. For example, several project leaders requested opportunities to discuss and reflect upon the maturity assessment before it started. Such activities could probably have prevented some of the misinterpretations of the questionnaire questions, and in the same time increased motivation for the assessment.

5.3 Check

The Check phase includes the evaluation of the data and information gathered from the assessment. The average maturity level for the PD and the groups of CS was 3.2 ("Defined level"), but this differed in scores when considering some of the specific PM processes. The initial evaluation points to a maturity level in line with several surveys on PM maturity assessments, maybe even slightly higher. It should be noted that the assessment did not include programme and portfolio management. However, it is of interest that both categories of respondents identified a lot of common improvement areas based on the information from the open-ended questions, indicating a common viewpoint on improvement needs (see Table III). The findings in the table also partially

confirms the study by Brookes *et al.* (2014) which indicated that for organisations that are characterised by lower maturity levels, improvements mainly focus on the implementation of formal PM structures, rather than specific areas of weaknesses.

5.4 Act

Within the Act phase it is of interest to judge if the assessment process identified relevant strengths and weaknesses, i.e. giving a solid foundation for improving PM capabilities in the particular organisation. Hence, a PM maturity assessment process does not include the implementation and standardisation of improvement initiatives. In Table III it can be seen that both categories of respondents (PD members, CS) identified many common improvement areas (i.e. weaknesses), many of these within several of the different process categories. Even if several respondents meant that the assessment results confirmed what they already experienced as strengths and weaknesses within the organisation, they believed that the findings were useful information for the PD. The project leaders felt that the assessment results were of less importance in their professional roles and several stressed more opportunities to discuss and reflect upon the evaluation results and follow-up actions. The business development manager emphasised that the assessment would probably initiate a major change in working with improvements and the development of PM capabilities. So far, the analysis and improvement initiatives seem to be more tangible in nature and do not focus on culture and the change in behaviours and habits. According to Crawford (2006), initiating cultural change is one of the most important activities in a PM assessment and also the most difficult to manage. This might be the reason why it had not yet been focused on by the management.

6. A conceptual framework of a maturity assessment process

The introduction of a systematic maturity assessment framework should provide a strong foundation for prioritising further improvement initiatives. However, the case study indicates that a PM maturity assessment process has to put a lot of attention to the people involved, for example considering communication and motivation. Hence, focusing too narrow on the measurement and evaluation activities could affect the validity of the data and information received. For example, motivating the respondents (from both an intrinsic and an extrinsic perspective) seems to be fundamental, as it most likely affects the information obtained in the answers, which finally creates basis for making decision on improving PM capabilities. Also, a maturity assessment should involve both project executers and other project stakeholders, to increase validation and to improve preconditions for the implementation of improvement initiatives. This and other issues revealed in the case study points out a need of strong managerial support when starting up and to sustain a PM maturity assessment initiative. Also, in line with the reasoning by, e.g. Mullaly (2014) and Torres (2014), a maturity assessment has to consider the organisational context that influence how projects are managed. Another issue is that PM can be seen from many different perspectives, for example considering tangible and intangible aspects (Young *et al.*, 2014; Jugdev and Müller, 2005). Therefore, the assessment process in itself needs to be assessed and evaluated continuously, including the PM3 used. Hence, an assessment framework is proposed based on the theoretical and the preliminary empirical findings. The framework is structured according to the PDCA-cycle, supporting organisations to choose, apply, check and evaluate the assessment process and its outcome, see Figure 2. The PDCA-cycle should be repeated with the purpose to obtain a sustained assessment process

and hence promote and support continuous improvement initiatives towards the highest level of maturity.

However, the assessment process is also a part of an overall improvement cycle, included in the Check-phase (see Figure 3), i.e. there are two CI processes at work. The improvement cycle includes activities as prioritising, implementation and standardisation of improvement initiatives. It has to be performed several times, i.e. a process, to obtain organisational-wide CI in managing projects. For improvement efforts to take effect and

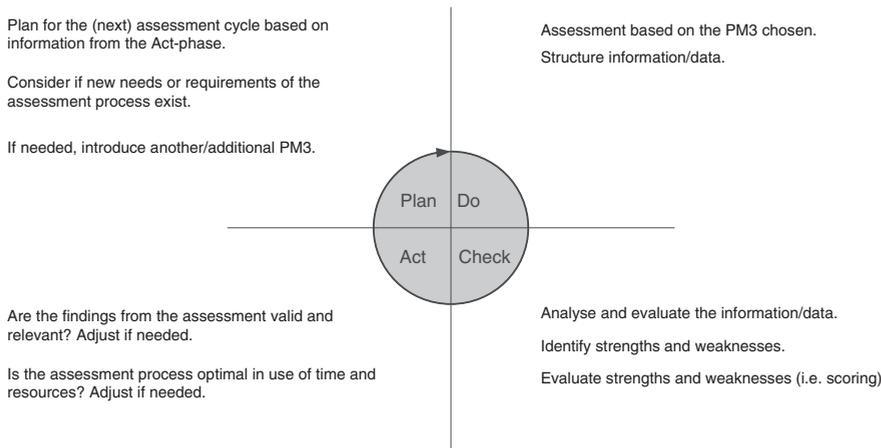
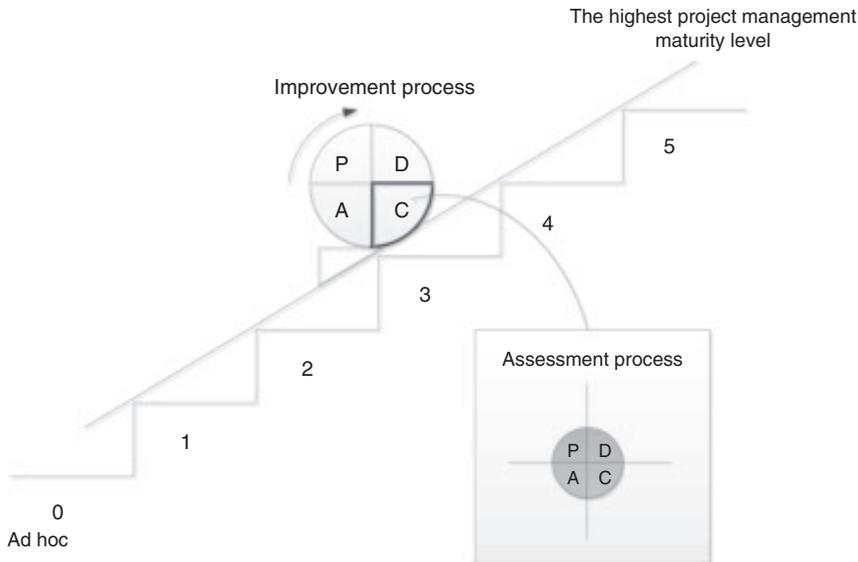


Figure 2. A framework for a PM maturity assessment process, with example of activities in the different phases



Note: For each improvement cycle, improvements have to be standardised and become a common way of working (illustrated by a wedge)

Figure 3. The improvement cycle is repetitive and aiming for level 5

become visible, and hence an incentive to continue an assessment initiative, the organisation has most likely to be patient. One cycle, or even two or three, is probably not enough to show results. Also, when performing a maturity assessment for the first time it is inevitable to have to spend extra time, resources and effort. Based on the empirical findings some aspects, beside those described in the Plan phase, have to be taken in consideration, e.g. what are our needs based on mission and vision, and how to choose a suitable PM3 based on the project context.

7. Conclusions

This study contributes to the empirical research by an increased understanding of how a PBO manage their PM maturity assessment based on a PM3. So far, few case studies exist which focus on the implementation and application of PM3s within an assessment process. Previous studies are mainly based on a snapshot of PM maturity within different kinds of organisations, where PM3s are more seen as a tool than a part of an assessment process. Thus, we argue that previous research literature to some extent lacks in exploration of the maturity assessment processes, hence the need of further research. The aim with the paper has been to increase understanding of aspects needed to be considered when performing a PM maturity assessment, and propose a framework for a sustained assessment process. As several of the theoretical findings are of conceptual character, this single-case has made it possible to confirm several of these findings based on empirical research.

There are few, if any, PM3s whose structures are not criticised in some way, for example, the dominant process-oriented view. In a PBO, a large number of projects are managed. Therefore, at some level, a process-oriented approach with standardised ways of working should be needed for managing projects effectively and efficiently. The PBO in this study mainly manages larger engineering or construction projects, which corresponds to projects classified as Type 1 projects (Turner and Cochrane, 1993) in which the goals and methods are well-defined. Thus, a focus on process-orientation and standardisation should be suitable in this project context. However, being aware of existing criticism is important when introducing and interpret a PM maturity assessment. We also agree with Albrecht and Spang (2014) and Crawford (2006) in saying that it may not be of great importance to obtain a certain level. Rather, it's better to focus on what specific actions are moving the organisation forward, where any PM3 selected must point out a logical path for progressive development.

The initial PM maturity evaluation for the PBO confirms the findings from previous studies, i.e. that engineering-based industries seems to be more mature in terms of PM than industries that have adopted the approach more recently, only reaching the maturity level of one or two (Ibbs and Kwak, 2000; Cooke-Davies and Arzymanow, 2003).

It seems that a major challenge for the next assessment cycles will be to promote and maintain commitment among their personnel, CS. Motivated and engaged respondents are essential to get valid information from the maturity assessment. Another major challenge will be to continually identify, incorporate and standardise improvement potentials, and at the same time evaluate and develop the assessment process to fit the changing needs of the organisation and how it manages projects. A limitation of this research study is the use of a single-case, studying a Swedish PBO which mainly manages major engineering and construction projects.

A practical limitation of the study is that the conceptual framework of the assessment process is only based on one a single-case, of an organisation introducing a PM maturity assessment for the first time. To increase the validity of empirical

findings and usefulness of the conceptual framework we suggest a number of propositions for further research.

Proposal 1: continuous research of the PM maturity assessment initiated at the PD would be valuable, such as learning more about different aspects affecting the assessment process. It would be of interest to study how the PD continues to assess and evaluate PM capabilities according to their initial choice of PM3 (P3M3), and see how the managers handle intangible aspects such as promoting a cultural change in their progression towards CI. This proposal is in line with the reasoning by Mullaly (2006), i.e. that the evaluation of organisational development requires the ability to follow up results successively.

Proposal 2: a comparison of findings from different case studies, i.e. how PBOs perform PM maturity assessments, would increase the ability to generalise results. Also, in line with Grant and Pennypacker (2006), it would be interesting research to explore differences in PM maturity between industries and to investigate possible causes for these differences.

Proposal 3: many different PM3s are invented, which makes it problematic for PM practitioners to know what kind of model to use. We believe that there is no single PM3 suitable for all kinds of organisations and all kinds of contexts. However, it would be valuable for organisations to have some type of guidance, such as selection criteria, on different PM3s and their pros and cons in different PM contexts (e.g. based on the classification by Turner and Cochrane (1993)).

Proposal 4: in most PM3s the highest level implies an organisation which is dedicated to CI. However, the meaning of CI is extensive, and many organisations probably underestimate what it takes to get there. Therefore, more research into considering how to apply CI in PM perspective would be valuable.

Proposal 5: as pointed out by Grant and Pennypacker (2006), Mullaly (2014) and Brookes *et al.* (2014), more research studies are needed to examine how PM maturity relates to project performance and success.

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Paper IV

The Role of Project Managers as Improvement Agents in
Project-Based Organizations

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The Role of Project Managers as Improvement Agents in Project-Based Organizations

Project Management Journal, Accepted for publication

Abstract

We propose that the project manager is implicitly expected to participate in and contribute to continuous improvement in Project-Based Organizations. This paper explores how the project management literature treats the project manager in relation to improving overall PBO performance. The results, supported by case study insights, indicate implicit expectations of the project manager to contribute to organization-level PBO improvement. We argue that, if organization-level improvement should be part of project management practice in PBOs, as promoted in project management literature, the role of improvement agent needs to be formalized for the project manager.

Keywords: Project-based organization, Improvement, Project manager, Role, Behavior, Long-term

Introduction

This paper explores the role of the project manager in relation to improvement efforts in Project-Based Organizations (PBOs). Improving (i.e., making something better) Project Management (PM) practice is part of the PM research tradition (Jacobsson & Söderholm, 2011) but is recognized as difficult to achieve at an organizational level (c.f. Fernandes, Ward, & Araújo, 2014; Scarbrough et al., 2004). PBOs, i.e., subsidiary or standalone organizations that produce the majority of products or services through projects (Pemsel & Müller, 2012; Turner & Keegan, 2000), have, for example, adopted maturity models as a strategic tool for improving processes, contributing to a systematic approach to identify and coordinate improvement actions but with limited or no knowledge regarding the effects on performance improvements (Kwak, Sadatsafavi, Walewski, & Williams, 2015). However, there is evidence of PM performance influencing project success (Mir & Pinnington, 2014), although the general level of project success (deliver within time, cost, scope) is still considered to be low (Fernandes et al., 2014).

According to Hobday (2000), PBOs operate on two distinct levels, the project and the organizational level. Previous research has shown that, for example, learning at one level may inhibit learning at another level, as high levels of learning in projects are appropriated to a limited extent on the organizational level (Scarbrough et al., 2004), consequently limiting potential organization-level improvements. Further, considering knowledge governance in PBOs, Pemsel, Müller, and Söderlund (2016) argue that achieving a long-term and successful interaction between these levels has proven to be difficult. Similarly, Müller, Glückler, and Aubry (2013) emphasize the conflict between the short-term nature of projects and the long-term perspective of organizations, e.g. for achieving organizational learning. Findings provided by Loo (2002) and Chronéer and Backlund (2015) indicate that project managers prioritize project-level activities (short-term delivery) over organization-level activities that benefit long-term organizational improvement efforts, such as learning activities (e.g., post-project reviews). Consequently, the transfer of generated knowledge and lessons learned from the project to the organizational level are identified as problematic and insufficient in PM research.

As the PM field has evolved, the expectations of the project manager have also increased, e.g., to include a long-term focus on value creation (Andersen, 2014; Shenhar, Dvir, Levy, & Maltz, 2001), to be involved in early project phases to ensure strategic alignment of the

project (Pinto & Winch, 2016), and to learn in projects to benefit the PBO (e.g., Scarbrough et al., 2004). Consequently, the project manager is expected to focus on both the project and organizational level. However, the behavior of prioritizing project-level activities (Chronéer & Backlund, 2015; Loo, 2002) indicates that the role of the project manager cannot encompass all expected tasks and behaviors, consequently forcing the project manager to prioritize.

Floyd and Lane (2000) argue that an organizational position, such as the ‘Project Manager’, can contain a number of roles, both primary and secondary. Primary roles are often formalized and related to the everyday practice of a position, while secondary roles support the organization’s objectives but are often not explicitly defined and are more disconnected from the day-to-day practice of a position. A role can be defined as ‘the set of behaviors that others expect of individuals in a certain context’ (Floyd & Lane, 2000). For the project manager the role is traditionally described as focusing on planning and delivering projects within time and budget (e.g., Lindkvist, Söderlund, & Tell, 1998; Lundin & Söderholm, 1995). Floyd and Lane (2000) also emphasize that the more clearly expectations are expressed, the more likely the possessor of the role is to conform to the expectations; hence, formalization and articulation increase the likelihood of individuals (i.e., project managers) that adopt desired tasks and behaviors. Given the limited extent to which project managers seem to prioritize activities not directly related to project delivery, this paper proposes that PM tasks and behaviors are divided into primary and secondary roles in a PBO. One secondary role, here termed the ‘improvement agent’ (IA) (see Figure 1), i.e., the project manager as a contributor to PBO-level improvement initiatives, is specifically targeted, and we argue that the IA role is expected but not clearly expressed or formalized and, consequently, not fulfilled.

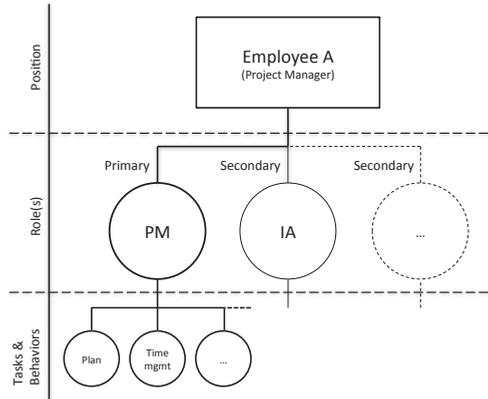


Figure 1. Illustration of a position as composed of not one but several roles, which in turn consist of tasks and behaviors (examples) expected to be fulfilled. PM (Project Management), IA ('Improvement Agent')

The need to explore this secondary project manager role was indicated in a case study in a subsidiary PBO (within construction and engineering), suggesting that there are several expectations of project managers related to organization-level improvement work, which are neither clearly articulated nor fulfilled. Based on a literature overview and reflections from practice, the purpose is to explore how this secondary role of a project manager, as an organization-level 'improvement agent' in a PBO, is portrayed in the PM field. We know that PBO-level improvements are challenging to achieve (e.g. Kwak et al., 2015), but what do we know about the expectations on the project manager to contribute to these efforts? The project manager's role in PBO-level improvement work has received little or no attention in previous research. In order to address this issue two questions are posed: what type of organization-level improvement work is required by a project manager in a PBO? And, how can the project manager role as an improvement agent be described?

The project manager role

By questioning the traditional approach to Project Management (PM) (see Lundin & Söderholm, 1995; Winter, Smith, Morris, & Cicmil, 2006), new ways of understanding the role of the project manager have emerged. Pinto and Winch (2016) present one example of extending the role horizontally by arguing for the need to include the project manager in early project phases, much earlier than the established bodies of knowledge suggest. Söderlund (2005) identifies six different PM roles from two successful projects: knowledge-integrator,

globalizer, and pacer, as well as time-pacer, changer, and rhythm creator. These are examples of role-extension for managing the single project.

Loufrani-Fedida and Missonier (2015), on the other hand, discuss PM competencies on multiple levels in PBOs, stating that responsibility should be shared rather than trying to find the 'ideal' project manager. They highlight a lack of organizational and collective competencies in standards today, and as a consequence, the project manager needs to possess 'all' desired PM competencies. Turner and Müller (2003) link the temporary organization to the permanent by identifying the project manager as an agent of the principal (the project owner), underlining the project manager's responsibility to align the project with the principal's strategy. Finally, Medina and Medina (2014) emphasize the project manager's role in the (project-oriented) organization's long-term goals in terms of competence and the importance of involving the project manager in this process, through changes in the project manager's role and responsibilities.

In contrast, Braun, Ferreira, and Sydow (2013) and Ekrot, Rank, and Gemünden (2016) have focused on more informal behavioral aspects of project members. Braun et al. (2013) focus on organizational citizenship behavior in projects, emphasizing, among other things, the value of having project managers that are committed beyond the single project, since such behavior can foster effectiveness beyond the iron-triangle. Ekrot et al. (2016), in turn, discuss voice behavior (i.e., contribution to the long-term development of the organization) and stress the importance (or benefit) of having project managers that experience a sense of belonging and commitment to the organization (i.e., PBO), because that fosters voice behavior. Both papers stress the importance of having project managers that contribute to the organization beyond the traditional single-project focus in order to achieve more long-term benefits (e.g., innovation and performance improvement).

The examples above illustrate descriptions of, additions to, or changes to the project manager role in PM literature. The examples both nuance and extend the role – horizontally, for example, by extending the engagement in the project to earlier phases and between projects by cooperation, and vertically, by accounting for long-term strategy and to act as agent of the permanent organization (both company and PBO). However, adding tasks and behaviors to a role could risk resulting in overload, consequently forcing employees to

prioritize activities. For the project manager, that would imply prioritizing tasks and behaviors associated with short-term project delivery and ignoring or neglecting activities associated with more long-term aspects, such as PBO improvement efforts.

The need to improve at a PBO level

Like other organizations, PBOs are encouraged to focus on continuous development and improvement, for example, by building competitive advantage through knowledge governance (e.g., Pemsel, Müller, & Söderlund, 2016), by achieving organizational learning in order to avoid ‘reinventing the wheel’ (Scarbrough et al., 2004), or by increasing project success through PM improvement (Fernandes et al., 2014). Further, as projects have come to be strategic tools for organizations to create competitive advantage, projects success has become a multidimensional strategic concept moving beyond the triple constraint (Shenhar, et al., 2001). For PM to provide strategic value aligning project outcomes with organizational strategy has proven important, covering both short-term operational aspects and the more intangible long-term strategic aspects (Müller & Jugdev, 2012). The general desire to improve PM practice is acknowledged in PM literature (Jacobsson & Söderholm, 2011) but is also recognized as being difficult to achieve (c.f. Fernandes et al., 2014; Scarbrough et al., 2004). Brady and Maylor (2010) provide some insight into the difficulties with organization-level (PBO) improvements, as they observed PBOs resisting change despite the need to improve, which is termed ‘the improvement paradox’. They derived this behavior to the existence of defensive routines as a way for organizational members to balance the uncertain nature of projects by seeking stability in the processes.

In order for organizations working with projects (e.g., PBOs) to improve their capability, the Quality Management (QM) concept of Continuous Improvement (CI) is promoted, both as a suitable component of PM work (PMI, 2008, pp. 190-191) and as the highest level of PM maturity (Kwak et al., 2015). QM principles are often built on a long-term strategic focus, a process approach, and with explicit roles regarding improvement work. In contrast, the prevailing focus in PM practice is described as short-term (project) execution and ‘getting the job done,’ resulting in negative consequences for the organization, such as misalignment with company strategy and a short-term focus (Patanakul & Shenhar, 2012). This indicates a misalignment between the recommended ways to work with improvements in PM literature and practice, raising the question: does PM literature encompass the role of an improvement

agent? To answer this question, an overview of PM literature within specific PM journals has been conducted, focusing on how the expectations of the project manager are described in regards to PBO improvement work.

Method

The proposed project manager role of Improvement Agent is the result of repeated discussions with senior management as part of a case study regarding their efforts to develop and improve the PBO. The senior management described difficulties in achieving PBO-wide improvements, since all PBO members were occupied with their respective project. This spawned the question of how PM literature portrays project manager involvement in organization-level improvement efforts. A literature overview was performed targeting two of the leading PM journals, the *International Journal of Project Management (IJPM)* and the *Project Management Journal (PMJ)*. A keyword search (role, responsibility, best practice, improvement) was performed through ScienceDirect, spanning a 10-year period (2006-2016). In a later stage, one additional search was conducted to include the year 2017. The search generated 306 hits in *IJPM* and 79 hits in *PMJ*. Relevant articles were selected for further study based on title and abstract related to the role of a project manager, resulting in 78 articles from *IJPM* and 36 articles from *PMJ*. Relevant information was then extracted via read-throughs of the selected papers, focusing on descriptions related to or potentially affecting what project managers are and what they could or should be expected to do in their professional role. Relevant information from the PM articles was then manually coded using clustering, resulting in the themes: ‘Strategy’, ‘Performance’, and ‘Knowledge and Learning’. By comparing Caffyn’s (1999) ten CI behaviors to how the role of the project manager is described in PM literature, an overview of existing and suggested project manager improvement behaviors was constructed (Table 2).

In order to complement and nuance the findings from the literature overview, data from a case study is introduced with examples to illustrate the phenomena of the PM roles (Flyvbjerg, 2006; Siggelkow, 2007). The setting for the case study was a subsidiary PBO within a Swedish mining company, working primarily with construction and engineering projects for the parent company. Initially gathered for the purpose of exploring efficiency and effectiveness in a PBO, the data was found suitable, since the discussions implicitly focused on the project manager and behavior in relation to improvement efforts. All respondents in

the case PBO were permanent employees organized in five different project programs (A-E), all with different areas of focus but with a common set of goals, and regardless of position, all managed projects to some extent.

Table 1. Case PBO respondents and data collection methods

Case PBO* Main respondents (13 in total)	<p>PBO management team (6 respondents)</p> <ul style="list-style-type: none"> PBO manager Program manager A Program manager B Program manager C Program manager D Program manager E <p>Program A (7 respondents excl. program manager)</p> <ul style="list-style-type: none"> 5 Project managers (titled A-1 – A-5) 2 Project coordinators (titled A-6 – A-7)
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*Total number of employees in the PBO approx. 100

Data collection methods	<ul style="list-style-type: none"> - Interviews 15 Semi structured interviews, recorded (average 1 hour) and field notes (Main respondents, PBO manager, and Program manager A interviewed 2 times) - Observations Continual over 4 years, field notes, PBO management team meetings, program meetings, project meetings, coffee breaks (Main respondents + 1 additional project manager (C-1) from Program C) - Case study meetings 11 continual over 4 years, meeting protocols and field notes (6 participants: 3 researchers, PBO manager, Program managers A and B) - Documents PBO business and operational plans from 3 consecutive years
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The initial selection of the case was based on the characteristics of being a PBO working actively with improvements. The data was collected between 2013 and 2016, and it is summarized in Table 1. The observations focused on the PBO management team and program A to gain insight into both PBO and program-level activities and their efforts to develop the PBO and the respondents' interaction with colleagues, clients, and contractors (Table 1). All data were recorded in the native language of Swedish. Selected examples and quotes have been translated into English.

Continuous Improvement (CI)

Continuous Improvement (CI), simply defined as “a company-wide process of focused and continuous incremental innovation” (Bessant, Caffyn, Gilbert, Harding, & Webb, 1994), is a Quality Management (QM) concept with roots in several fields (Bessant, Caffyn, & Gallagher, 2001). As a concept, CI refers both to the outcomes and to the process through

which the outcomes can be achieved and does not exist as either/or but as something evolving (Bessant et al., 2001). Jørgensen, Boer, and Gertsen (2003) describe CI in practice as when all members of an organization contribute to improving the performance by continuously implementing small changes in their work processes. A central aspect of CI is the collective and holistic understanding of the organization's direction, guiding the improvement work with a focus on processes. Underlying values also include a customer focus, involvement and support from management, and processes at the center of attention (Bhuiyan & Baghel, 2005; Kaye & Anderson, 1999). Caffyn (1999) identified ten key behaviors that increase the potential of succeeding with CI (Table 2), which include a holistic and collective approach (behaviors 1, 2, 10) and the contribution to improvements by everyone in the organization, as individuals and as a group (behaviors 5, 6, 7, 8; see Table 2).

Table 2. Caffyn's (1999) ten CI behaviors

<ol style="list-style-type: none"> 1. Employees demonstrate awareness and understanding of the organization's aims and objectives. 2. Individuals and groups use the organization's strategic goals and objectives to focus and prioritize their improvement activities. 3. The enabling mechanisms (e.g., training, teamwork, methodologies) used to encourage CI are monitored and developed. 4. On-going assessment ensures that the organization's structure, systems, and procedures, as well as the approach and mechanisms used to develop CI, consistently reinforce and support each other. 5. Managers at all levels display active commitment to and leadership of CI. 6. Throughout the organization, people engage proactively in incremental improvement. 7. There is effective work across internal and external boundaries at all levels. 8. People learn from their own and others' experiences, both positive and negative. 9. The learning of individuals and groups is captured and deployed. 10. People are guided by a shared set of cultural values that underpin CI as they go about their everyday work.

Caffyn's (1999) CI behaviors are related to, and form a basis for, what is known as Bessant's model of CI, which is still applied today (Fryer, Ogden, & Anthony, 2013). Current research has shifted focus towards discussing CI as a dynamic capability and how to achieve CI, but the basic components of CI remain the same (Galeazzo, Furlan, & Vinelli, 2017; Fryer et al., 2013; Anand, Ward, Tatikonda, & Schilling, 2009). As the purpose of this research is not to evaluate to what extent CI is achieved, but to understand if the basic

prerequisites are promoted or exists within PM, the behaviors (Table 2) are considered to be relevant and applicable.

According to Bhuiyan and Baghel (2005), some of the behaviors supporting CI have been found difficult to practice, due to organizations tending to have a hard time adopting a new mind-set. Bessant et al. (1994) stress the complexity of making CI work, despite the seemingly simple definition. CI is an organization-wide task requiring a high level of commitment and support throughout the organization (Bessant et al., 1994), but criticism has been raised as a result of organizations experiencing disappointment and failure, caused by failure to understand the behavioral dimension of CI (Bessant et al., 2001). Bhuiyan and Baghel (2005) conclude that Caffyn's (1999) identified behaviors grasp the key factors for achieving CI but emphasize the need to allow for monitoring and development over time.

If the concept of CI is to be adopted in a PBO, then the project manager corresponds to the employee (organizational member) in CI literature. If the PBO also operates as a subsidiary, there would only be one primary 'customer', the parent organization. The aims, objectives, and strategy of the parent organization will then dictate the perceived value delivered by the PBO and should consequently guide everyday work. From a QM perspective, the project manager is expected to fulfill (at least) two different roles in the PBO to (1) deliver projects and (2) participate in and contribute to organizational (process) improvement, a conclusion similar to Bowen, Clark, Holloway, and Wheelwright's (1994) statement regarding project goals (successful delivery, progressed organizational learning). The following section presents the findings from both the PM literature overview and the case study related to Caffyn's (1999) ten CI behaviors.

The project manager and improvement work

This section presents the findings from the literature overview, focusing on understanding how the project manager is expected to work with and contribute to organizational improvements. Since articles explicitly discussing improvement work were limited, the following section presents articles that discuss the project manager role in comparison to the previously described CI behaviors. Three main themes – (1) *Strategy*, (2) *Performance*, and (3) *Knowledge and Learning* – emerged during the analysis. The role of the project manager, regarding working with improvements, is discussed in relation to each theme below.

Strategy

For the first identified theme, strategy, a general agreement seems to be the need to align projects with overall strategy, ensuring project contribution to achieving the long-term goals of the organization. Project teams should (and could) be asked to do more than focus on project delivery (Patanakul & Shenhar, 2012). Complementing the traditional strong focus on project delivery with an understanding and inclusion of the needs of the higher enterprise is suggested, in order to better achieve business results and create greater customer satisfaction (Patanakul & Shenhar, 2012). Patanakul and Shenhar (2012) argue that, in order to make the transition from a traditional approach ('triple constraint') to the strategic approach, a shift in mind-set is required, both for project managers and higher-level management. Although they discuss project teams, the project manager's role in learning and understanding the needs of the higher enterprise, and planning and executing projects accordingly is explicated. Patanakul and Shenhar's (2012) suggestions are related and similar to the behaviors of including and focusing on contributions to overall strategy (behaviors 1, 2), learning (behaviors 8, 9), and satisfaction, i.e. customer value (behavior 10).

Similarly, effective management of single projects is considered insufficient to guarantee organization or company-level success. The evaluation of project contributions to achieving organizational strategy is therefore suggested as a complement to the assessment of budget and plan (Dietrich & Lehtonen, 2005). This is one of few findings related to assessment (behavior 4), arguing for the need of additional variables in order to understand 'success'. Consequently, the project manager needs to be prepared for the evaluation of project contribution to organizational strategy.

Further, Morris, Jamieson, and Shepard (2006) acknowledge the need to link projects more clearly to a business' purposes as well as to add increased understanding of value management. They also discuss the need to emphasize learning and development in relation to people factors, since projects start and end with people. More emphasis on learning and development suggests including new (additional) tasks and behaviors for the project manager as well as strengthening already-existing ones. Similarly, as stated by Pinto and Winch (2016), the purpose of every project should aim to maximize stakeholder value, indicating that the long-term effects and contribution of the project should be the first priority for the project manager, a finding supporting a focus on customer value (behavior 10).

To summarize, strategic alignment should be coordinated between individual projects, between project and program/portfolio, and with PBO-level management. Projects, and hence project managers, are primarily evaluated based on time, cost, and scope. Several of the findings in PM literature emphasize the need to complement the triple constraint with contribution to business purpose and overall organizational strategy, adding both awareness of and practice according to a superordinate process that includes goals and strategy. As a consequence, the role of the project manager is widened, moving from a focus on short-term delivery to long-term strategy. Findings related to strategy were in line with CI behaviors 1, 2, 6, 7, 8, 9, and 10, as well as 4, to a limited extent (Table 3).

Performance

The second identified theme related to the project manager role is performance. PM performance usually refers to the common definition of budget and deadline compliance together with scope delivery (triple constraint). According to Aubry (2015), these metrics only provide a partial view of overall project performance, and more aspects are needed in order to understand PM performance.

Leadership behavior among project managers has been studied from a single-project perspective (Chen & Lee, 2007; Hyväri, 2006). Hyväri (2006) identifies *planning/structuring* and *networking and informing* as the most significant managerial practices for project managers, regarding project effectiveness and performance. Despite a single project focus, some of the identified behaviors and practices could also potentially be useful outside the single project, for example, *building relationships, giving and seeking information*, and, similarly, *networking and informing*. These behaviors and practices also correspond to the CI behaviors of cooperation and sharing of lessons learned (behaviors 8, 9). Traditionally, the project manager is often asked to manage information or to find solutions to problems in their projects on their own (Chen & Lee, 2007), instead of cooperating between projects, or to share information in networks, extending the single project (e.g., the PBO), as promoted in CI (behaviors 7, 8, 9). Effective PM seems to be treated as being confined to the single project – not clearly considered as (potentially) affected by historic events – or potentially affecting future events or concurrent projects, for that matter.

In the context of construction projects, Luu, Kim, and Huynh (2008) promote CI as a suggested part of PM practice, without mentioning how to apply it more specifically.

Focusing on benchmarking as a way to improve PM performance, Luu et al. (2008) argue for the combination of CI and benchmarking as a way to strengthen PM in construction firms, i.e., to learn from others. Anantatmula (2008) extends the performance discussion outside the single project by discussing how technology can aid project-manager interaction, consequently promoting cooperation between project managers (behaviors 7, 8, 9). He also suggests that project managers must perform project reviews throughout the PM life cycle in order to effectively capture lessons learned and, by extension, improve performance. Hence, the need to work not just within but also between projects, in parallel and over time, is emphasized. This consequently promotes a holistic and cooperative approach similar to what is promoted in CI (behaviors 1, 2, 6, 7, 8, 9).

Several findings also challenge the traditional role of the project manager by suggesting a widened approach to PM. Walker and Dart (2011) argue for the advantages of focusing on long-term customer benefits and business sustainability rather than on the (traditional) triple constraint. Others suggest broadening the competence base of the project manager to also include reflective management in order to increase organizational effectiveness (Lee-Kelley & Blackman, 2012; Winter et al., 2006) – a call in line with the CI behaviors of, for example, organizational awareness and the sharing of lessons learned (behaviors 1, 2, 8, 10). Despite having different foci (general PM and PM training), Winter et al. (2006) and Lee-Kelley and Blackman (2012) similarly stress the need to challenge and change the traditional approach to PM. A reflective practice in this sense includes approaching the project in its context and continually reviewing what is and has been done and what contributions have been made to the context (i.e., customer and organization). In order to include reflective practice, such reshaping boundary objects as ‘best practice’ models, ‘bodies of knowledge’, processes, and the PM vocabulary (Lee-Kelley & Blackman, 2012), as well as shifting focus from product to value creation (Winter et al., 2006), are suggested. A reflective practice with a focus on context, long-term performance, and value creation corresponds to a QM approach as CI, in terms of adopting a holistic approach focused on value creation (behaviors 1, 2, 10). Based on the described shortcomings, it is also an indication of the misalignment between current PM practice and the practice of CI. The call to include reflective practice can be seen as a suggestion to adopt QM principles in a PM context, since reviewing current practice for the purpose of future improvements is, in many ways, the core of (incremental) improvement work.

For multi-project settings (e.g., PBOs), Görög (2011) emphasizes the potential importance of projects and project-related operations to the overall performance of the organization, stressing, among other things, the need for a long-term perspective (strategy) in projects too. Connecting projects to each other indicates the potential to work both across projects and between PBO levels to increase performance, e.g., through cooperation. Görög's (2011) arguments are in line with CI in terms of focusing on a higher-order purpose (overall strategy) and cooperating between both projects and PBO levels (behaviors 1, 2, 8, 10). Emphasizing the need for a long-term perspective could also imply the need for a dialogue between project and program managers in order to understand and align their undertakings with the overall strategy of the organization and to collectively improve the overall performance (cf. Aubry & Hobbs, 2011).

Project management maturity is one of few findings related to assessment of performance, in terms of capability, on an organizational level (cf. Aubry, 2015). Yazici (2009) for example emphasizes that an increase in PM maturity (along with a results oriented culture) leads to improvements, e.g. increased competitiveness and cost savings. However, she also reports on several previous studies that indicate little or no significant relationship between PM maturity and performance. PM maturity models can be described as management tools for senior management to evaluate PM capabilities, focusing on PM processes (Backlund, Chronéer, & Sundqvist, 2015). According to Yazici (2009), the highest level of PM maturity is 'Optimizing Process', meaning an organization focusing on improving (PM) processes through lessons learned and CI. From the project manager perspective, this would imply fully adopting all CI behaviors, including taking part in or being the subject of assessment (e.g., through PM maturity models). Yazici (2009) found that PM maturity, together with a result-oriented culture, in fact improved competitiveness. Hence, a culture based on sharing, collaboration, and empowerment, which are central values of QM (including CI), is promoted.

Moving back to the single-project perspective, Besner and Hobbs (2008) promote extending the project manager role to be part of the shaping of project requirements, since front-end participation shows strong contribution toward project success. They describe project manager (or program director) participation in front-end activities as a distinguishing

factor of high-performing organizations (in their case innovation projects). Consequently, including front-end participation in the PM process is suggested, thus extending the role of the project manager. The findings related to performance indicate a dominant focus on (single) project performance, with several suggestions to extend performance to include both project and organizational performance, from the perspectives of the project, program/portfolio, and PBO, respectively. However, practical examples of how organizational performance can be incorporated into PM practice seem to be missing. In conclusion, the findings related to performance were in line with CI behaviors 1, 2, 6, 7, 8, 9, and 10 (Table 3).

Knowledge and Learning

The third theme identified centers around knowledge and learning. Walker and Dart (2011) highlight the need for shared client-contractor co-knowledge generation, thus arguing for active dialogue between project manager (and team members) and client. Generating, accessing, and sharing knowledge is thus seen as part of PM practice, both within and between projects, as well as between projects and the PBO. Consequently, the sharing of knowledge from project to PBO is promoted as part of the project manager role, similar to a CI approach (e.g., behaviors 7, 8, 9). The suggested increased focus on client interaction could be related to an increased focus on customer value. Project managers today tend to be judged primarily based on the ‘iron triangle’ (Walker & Dart, 2011), consequently placing less emphasis on how the (project) outcome contributes to customer benefits (it is suggested that increased benefits lead to increased perceived value).

Pemsel and Wiewiora (2013) recognize the importance of transferring new ideas, challenges, and learning gained from projects to the PBO. They observed that project managers gave low priority to everything not considered directly related to their project(s). In this case, it was about knowledge-sharing and lessons-learned documentation (only doing the minimum to ‘check the box’). They also describe knowledge transferring as ineffective, stressing the need to ensure effective knowledge sharing and integration within and between projects. From an improvement perspective, this implicitly places the project managers in a position as key contributors to PBO improvement, since they are in a position to bridge these subgroups (behaviors 8, 9). Similarly, the authors’ description of the PM office as a knowledge broker indicates the need to work in accordance with behaviors 8 and 9, to capture and deploy learning.

Moreover, project managers were found to share experiences but preferred face-to-face interaction instead of writing and reviewing lessons learned (Pemsel & Wiewiora, 2013). This resistance to documenting lessons learned among project managers also includes the evaluation of leadership and customer care, while aspects related to time, budget, and technology tend to be easily reported (Pemsel & Müller, 2012). These findings underline the importance of project manager engagement in learning activities, similar to CI behaviors. Similarly, Fernie, Green, Weller, and Newcombe (2003) explicitly assign the responsibility of improving knowledge sharing between project members and across teams to the project manager, since it has been shown to build competitive advantage. The responsibility is, however, only explicitly described in a single-project setting. The project manager is implicitly described as the one who should transfer or share generated knowledge from projects with the PBO but fails to do so (at least in a formal manner), as indicated by the findings regarding resistance to documenting lessons learned (Pemsel & Müller, 2012). The need for project managers to feed information back to the PBO (behaviors 8, 9) is further supported by the findings (e.g., Ahern, Leavy, & Byrne, 2014; Fernie et al., 2003; McClory, Read, & Labib, 2017).

PM research also highlights the potential of and need to share lessons learned with the organization, since the project manager can have a strong impact on organizational learning (Chronéer & Backlund, 2015; Müller, Glücker, & Aubry, 2013). Respondents in one study mentioned lack of time as a hindrance to contributing to organizational learning and improvement (Chronéer & Backlund, 2015), indicating a lack of formal requirements to share lessons learned. In line with the role of improvement agent, Chronéer and Backlund (2015) also point out the need for structures, processes, and culture to be in place to support learning. This can be interpreted as the need to formalize other activities than those not directly related to project delivery, in their case, sharing lessons learned (behaviors 8, 9).

Besides highlighting the link between the project and organizational level, Chronéer and Backlund (2015) also emphasize the need for a link between projects to share lessons learned, for the purpose of improving the collective PM capability (cf. Cao & Hoffman, 2011; Kozak-Holland & Procter, 2014). The purpose of cross-project learning is described to bring about improved PM practices (Cao & Hoffman, 2011), similar to the promotion of cooperation and

learning in CI (behaviors 6, 7, 8, 9). However, no responsibility for cross-project learning is discussed.

Transferring knowledge and sharing lessons learned from the project back to the PBO is considered important but difficult to achieve in practice. Individuals at all levels of the PBO need to take an active role in sharing knowledge and lessons learned. The project manager is expected to manage both knowledge and learning within the project and from the project to the PBO, for the purpose of strengthening organizational PM capability and performance. However, the findings indicate that the transfer of knowledge back to the PBO only occurs to a limited and informal extent. No findings were made related to formal evaluation of the management of or participation in knowledge and learning activities. Findings related to knowledge and learning were in line with CI behaviors 1, 6, 7, 8, 9, and 10 (Table 3).

A case of improvement efforts in a PBO

From the case study material, observations and interviews provided insights and illustrations of a PBO's expectations on project managers' behavior in accordance with the role of an Improvement Agent (IA). Both descriptions and observations of behavior associated with improvement work from the PBO, as exemplified by Caffyn's (1999) ten CI behaviors (see Continuous Improvement), are provided to give insights of expectations related to the IA role.

Strategy

The PBOs' ability to deliver ('good') projects (performance) that served the right purpose for the parent company (strategic alignment) dominated the discussions regarding improvements. Projects were initiated in different divisions and departments of the company, or by the top management, making them primarily responsible for aligning projects with overall strategy, hence, leaving the project manager out of the loop. Three managers (PBO, A, B) stated that projects without strategic alignment risked resulting in sub-optimization, due to clients prioritizing their own needs over company needs and that such situations could be avoided through active dialogue between the PBO and the client.

According to the PBO manager, *'Our mission is to deliver efficient and effective projects,'* and *'[...] we need to move beyond strictly adhering to the project plan,'* stressing the need to also consider the strategic aspects of the project. Further emphasizing this by stating that *"I*

do not want to hear 'it was not included in the plan,' then you have not understood your role," stressing the need for all PBO members to consider the strategic aspects of PM. However, program manager A stated that *'the focus among project managers is probably around 99% operative,'* referring to project managers prioritizing short-term delivery.

One example of value of early phase involvement is when the PBO manager and program manager A did not follow the normal routines of project commissioning by starting a dialogue with the client before receiving the project order. By engaging early in the project phase of problem identification, the two senior managers managed to contribute to a revamped project idea that would eventually save both time and resources yet still maintain the required effect of the project. These insights indicate an existing desire to focus on strategic alignment, illustrate limited attempts taken, and identify a potential barrier to be the lack of responsibility for and limited influence over strategic alignment (behaviors 1, 2, 6). This example can also be seen as a case of senior managers leading by example, as promoted by behavior 5.

It is noteworthy that the senior managers discussed strategy in terms of the parent company strategy, but also in terms of the PBO strategy. The latter focused on efficient and effective project delivery and responsibility for company resources, while the former focused on the long-term survival of the company and how to support it (project outcome and strategic alignment). The main body of the discussions regarding improvements concerned PBO-level strategy and how the PBO could increase their performance to best support the company.

Performance

Regarding performance, the PBO manager and two program managers (A, B) described frustration regarding project evaluation; the triple constraint was considered insufficient for evaluating project performance. Budget and plan compliance were described as good measures of performance in relation to the agreed-upon project variables but as insufficient regarding resources spent on the (overall) company level (e.g., alternative investments and strategic alignment). Insufficient metrics made visualization of the benefits of having in-house PM competence difficult (as opposed to hiring consultants or outsourcing). Although current practice focused on the triple constraint, the aspiration to evaluate performance over time and on a multi-project level is in line with a holistic approach of process improvement

and value creation (behaviors 1, 2, 10). In addition, the PBO had previously implemented a PM maturity model as a way of assessing the overall PM capability and performance, as well as identifying areas in need of improvements. As the PM maturity evaluation was based on input from project managers through a survey, the evaluation, in some way, acted as a bridge from the project to the PBO level. However, current improvement efforts were few in number and rather comprehensive (not in line with CI, e.g., behavior 6). These findings indicate an approach in line with ongoing assessment (behavior 4) and a general striving to achieve CI as part of the highest level of PM maturity (c.f. Yazici, 2009).

After project initiation, the primary focus seemed to be directed toward time and budget compliance. The long-term effect of the project was described as the responsibility of the project owner, limiting the project manager's (and the PBO's) influence on project contribution. Prerequisites for and the potential outcome of projects were considered to more or less correspond with the level of PM knowledge and experience among the owners; greater knowledge and experience resulted in 'better' projects. Variation of PM knowledge and commitment among owners was considered as one of the major issues affecting the perceived project performance and strategic alignment. Low degree of PM knowledge and lack of commitment often lead to more change requests, misunderstandings, and difficulties in complying with plan and budget. The insights indicate a desire to work according to the CI behaviors, but difficulties in succeeding. When asked what was needed to increase long-term project performance one senior project manager replied, '*We need more time in early project phases to explore alternatives.*' The answer referred to early phase influence in order to better align the project with the overall strategy of the company to work with the best interest of the company in mind (see strategy section for example), in line with behaviors 1, 2, and 10.

The need to complement project performance with organizational performance in order to account for both short- and long-term performance of the organization indicates a desire to work in accordance with behaviors 1 and 2 and work with and improve processes toward company strategy.

Knowledge and Learning

While performance and strategy relate to *what* to improve, knowledge and learning relate more to *how* to improve. In the case of PBO, the theme knowledge and learning proved to be both important and problematic. The PBO manager and two program managers (A, B)

mentioned competitiveness when asked about the reasons why sharing of lessons learned was considered important. The PBO manager felt obligated to be able to justify having in-house PM competence, compared to the alternative, employing external project managers. The ability to learn from and have access to previous projects and to possess company-specific knowledge was considered a competitive advantage. In order to build and keep the competitive edge, the ability to learn, in order to ensure an efficient and effective PM process, was emphasized. None of the respondents mentioned measuring learning specifically; however, the use of a PM maturity model could be seen as one way to measure knowledge and learning (although not explicated). The general agreement seemed to be that learning is important but not prioritized. Thus, learning is considered important but hard to achieve, indicating a desire to work, according to the proposed behaviors (2, 6, 7, 8, 9).

Documentation of lessons learned was tried as part of project reports, primarily the final reports, but was reported as often being short and inadequate, generally minimally completed only to 'check the box'.

Program manager D stated in an interview: *'[...] I think we have 200 projects going [in total]. In my program we have 60 projects, what are the odds of me having the energy to read a report from [another program]? It will be down prioritized rather fast.'* The respondent further stated that reading reports was only done when a similar project was to be repeated.

When completed, the content was described as dominated by a few good examples only, leaving mistakes out. No clear explanations were given as to why the documentation was inadequate or brief. Speculation from respondents pointed out the unwillingness to expose mistakes as one factor, moreover claiming to be open to and preferring sharing mistakes informally (i.e., face-to-face with colleagues, if approached). As with the project reports, lessons learned were added as a formal part of project meeting agendas, explained as a way of reminding all PBO members to actively share important lessons. Despite good intentions, lessons learned were last on the agenda and repeatedly got crossed off the list, due to lack of time, according to program manager B.

To exemplify how improvement work was manifested, program manager D argued: *‘[...] there is a difference between the equipment we build, and the process we build it with.’*

Program manager B further described this division of practice: *‘We are good at finding alternative solutions in our projects, but poor in finding alternative ways of delivering the solutions.’*

In other words, program manager B considered the PBO to be good at finding alternative solutions within projects but poor at improving or finding new ways to deliver projects (the PM process).

Regarding non-formal sharing of knowledge and learning, the findings highlight the role of IA, both as active and passive. The first example was found by observing project manager C-1 during different project meetings, regarding the rebuilding of a production unit. In a construction meeting with contractors, the identified cause of delay was discussed with the purpose of finding a solution; a critical part in the process was missing, and the lead-time for one far exceeded the project deadline. The cause of the mistake was identified to be non-revised blueprints (a discarded part, and slow company routine for updates), and the design was not verified on site (not requested in the PM process). The subsequent meeting was with the project steering group, of which program manager C was a member. In this meeting, project manager C-1 described the cause of the problem to program manager C, i.e., the slow company update-process and the need to do on-site verification, meaning a transfer of lessons from a project to the PBO level. This can be seen as an example of when the project manager actively contributes to (potential) PBO-level improvement. The information could be used to avoid future mistakes, such as improving company routines for updating blueprints or requiring verification of designs on site.

The second example is from individual interviews with program managers C and D. While discussing CI, the respondents explained that, by staying updated on their project managers’ work, they sometimes identified deviations from the company PM guide. In this case, current practice outperformed the standard, which led the program managers to initiate an update of the guide. This can be seen as an example of when the project managers passively contribute to PBO-level improvement work. The update could then be implemented throughout the PBO.

Table 3. Caffyn's (1999) ten CI behaviors, corresponding findings from the PM literature and insights from practice, either describing an existing behavior, or a request to change the PM behavior, in line with the CI behaviors.

Caffyn's (1999) ten CI behaviors	Identified as existing		Identified as requested (desired change)	
	PM lit.	Practice	PM literature	Practice
1 Employees demonstrate awareness and understanding of the org's aims and objectives.			Cao & Hoffman 2011; Chronéer & Backlund, 2015; Dietrich & Lehtonen, 2005; Görög, 2011; Patanakul & Shenhar, 2012	x
2 Individuals and groups use the org's strategic goals and objectives to focus and prioritize their improvement activities.			Cao & Hoffman, 2011; Chronéer & Backlund, 2015; Dietrich & Lehtonen, 2005; Görög, 2011; Patanakul & Shenhar, 2012	x
3 The enabling mechanisms (e.g., training, teamwork, methodologies) used to encourage CI are monitored and developed.			[Thomas & Mengel, 2008]*	
4 On-going assessment ensures that the org's structure, systems, and procedures, as well as the approach and mechanisms used to develop CI, consistently reinforce and support each other.	Besner & Hobbs, 2013; Thamhain, 2013; Yazici, 2009	x	Dietrich & Lehtonen, 2005	x
5 Managers at all levels display active commitment to and leadership of CI.		[x]*		[x]*
6 Throughout the org, people engage proactively in incremental improvement.	Hyväri, 2006		Anantatmula, 2008; Lee-Kelley & Blackman, 2012; Luu et al., 2008; Görög, 2011; Pemsel & Wiewiora, 2013; Winter et al., 2006	X
7 There is effective work across internal and external boundaries at all levels.				
8 People learn from their own and others' experiences, both positive and negative.	Hyväri, 2006; Pemsel & Wiewiora, 2013; Pemsel & Müller, 2012	[x]*	Anantatmula, 2008; Cao & Hoffman, 2011; Chronéer & Backlund, 2015; Lee-Kelley & Blackman, 2012; Luu et al., 2008; Patanakul & Shenhar, 2012; Pemsel & Wiewiora, 2013; Walker & Dart, 2011; Winter et al., 2006	X
9 The learning of individuals and groups is captured and deployed.				
10 People are guided by a shared set of cultural values that underpin CI as they go about their everyday work.			Patanakul & Shenhar, 2012; Pinto & Winch, 2016	[x]*

*Entries in brackets [...] indicate limited findings

These insights are in line with behaviors 6, 7, 8 and 9, indicating both a desire and a need to share lessons learned and improve processes as well as the difficulties in doing so. The sharing of lessons learned was described as important but not prioritized, since activities related to learning seemed marginalized. The mutually shared idea of the outcome from learning appears to be efficiency and effectiveness of project delivery. From the project manager perspective, the insights indicate a need to actively share knowledge, experience, and lessons learned with colleagues for the purpose of organizational learning (and

competitiveness). No respondent could provide a conclusive answer as to why the sharing did not work in a satisfactory manner.

The findings from PM literature and from practice, in relation to Caffyn's (1999) ten CI behaviors, are presented in Table 3. The findings corresponding to each behavior are sorted based on origin (PM literature or practice) and if they describe an existing or request a change in project manager behavior. In the following sections, the findings are discussed in relation to the proposed PM role of Improvement Agent.

Analysis of behaviors

A summary of the findings from PM literature, together with the reflections from practice, is presented in Table 3. On a general level, Table 3 illustrates the emphasis on an extended or changed behavior for the project manager role, from both PM literature and empirical findings. In the following section, the findings are discussed in regards to the proposed project manager role of Improvement Agent (IA).

Strategy, Performance, and Knowledge and Learning

Based on the identified themes, the findings indicate the need to extend both focus and behavior related to performance beyond the single project, evaluating project long-term contribution to a higher-order purpose (e.g., Görög, 2011). Both the PM literature and the insights from practice seem to indicate a need to account for company strategy in every project to ensure the intended business outcomes (e.g., Morris et al., 2006). Findings under the themes performance and strategy primarily related to what should guide the project manager's behavior, i.e., to focus more long term and evaluate performance accordingly rather than to focus only on the triple constraint. Strategy and performance can be seen as guiding the improvement work, while knowledge and learning can be seen as part of organizational improvement in terms of input to and basis for improvement initiatives to strengthen and improve the PM capability (Pemsel & Wiewiora, 2013).

Project manager CI behaviors (existing and requested)

Few findings indicate that all CI behaviors are part of current PM practice, suggesting that, although promoted, CI is not realized or formalized in PM. The findings, both in PM literature and in practice, indicate that it is desirable to have project managers partake in PBO-level improvement initiatives in line with CI but that it is neither a prioritized activity nor formalized. Within current PM practice and existing behaviors of the project manager,

knowledge and learning constituted the majority of the findings in the research literature. The sharing of lessons learned was described as existing primarily in informal ways (e.g., Hyväri, 2006). Hyväri's (2006) discussion regarding project manager leadership behavior also indicates the existence of cooperation (behaviors 6, 7) to some extent. Insights from practice provided similar indications, where project managers did share lessons learned, primarily informally, but to a limited extent. Both the sharing of experience and cooperation seemed to be initiated in an informal, face-to-face manner rather than as part of any formal PM process.

Several findings in PM literature suggest the need to change the project manager's behavior in various aspects, consequently extending the role beyond a single project focus. Several authors, as well as respondents, argued for the inclusion of aspects related to CI behaviors, such as the need to align projects with overall aims, objectives, and strategy (e.g., Görög, 2011), to improve processes accordingly (e.g., Chronéer & Backlund, 2015), as well as to learn from experience and share those lessons (e.g., Pemsel & Wiewiora, 2013). On an overall level, the request to further include reflective practice in PM (e.g., Lee-Kelley & Blackman, 2012) supports the need for project managers to learn from the past and present in order to improve for the future.

Limited findings relate to the assessment of improvement (behavior 4), but Dietrich and Lehtonen (2005) emphasize the need to evaluate projects – thus, indirectly, the project manager – on the connection to business purpose and overall strategy. The case study management team argued similarly, seeking a way to evaluate both efficiency and effectiveness as well as to place more emphasis on the long-term effect delivered through the project. Concerns were expressed regarding the restrictions inherent in evaluating projects solely on time, cost, and scope, a problem related to responsibility and ownership, according to the management team. The responsibility for strategic alignment and follow-up belonged to the project owner, with little or no involvement of the project manager (or PBO), and the long-term follow-up of project effect was described to be varying at best. While Dietrich and Lehtonen (2005) suggest that evaluations focus on the project level, the PM3s evaluate PM capability on an organizational level (e.g., Yazici, 2009). As tools for assessing the current state of operations, the PM3s should be considered part of (and in relation to) an ongoing improvement process (Backlund et al., 2015). The fact that CI is part of the highest level of

PM maturity (Kwak et al., 2015) is an indication of the aspiration to have project managers actively participating in PBO-level improvement efforts.

Summary

The most common call for broadening the project manager role was found to be a change of focus, including strategic perspective and value creation in projects (behaviors 1, 2, 10) and the need to share lessons learned, both horizontally and vertically, in the PBO (behaviors 6, 7, 8, 9). Limited findings were made regarding explicit calls for the project manager to engage in improvement practice outside the single project (behavior 2), to be subjected to (or part of) assessment of improvement (behavior 4), and to receive support and guidance from PBO management (behavior 5). Findings from the literature and insights from practice present both explicit and implicit expectations of the project manager to contribute to organizational improvement efforts in line with the IA role. The findings also indicate that the IA role is vague or non-existing, since the majority of findings call for a changed behavior rather than descriptions of current practice. Further, the project manager role focuses on the project level, while contribution to PBO-level activities are limited or even avoided, as suggested by Brady and Maylor's (2010) improvement paradox.

Discussion

Given the number of calls found in this paper to extend the project manager role, it is clear that it is suggested (and expected) that the project manager do more than meet project requirements. However, the triple constraint is still present as the main focus, seemingly superseding any tasks or behaviors not directly related to project delivery. Following the role description provided by Floyd and Lane (2000), the tasks and behaviors not directly related to project delivery (e.g., learning behavior and strategic alignment) could be seen as secondary, as they support the organization's objectives and are more disconnected from the day-to-day practice of a project manager (i.e., meeting project requirements). Role fulfillment and conformance to expectations is related to how clearly a role is articulated (Floyd & Lane, 2000). The project managers' down-prioritizing lessons-learned activities, reported by Chron  er and Backlund (2015), and the statements regarding having to conduct improvement initiatives during private time (Loo, 2002) are examples that indicate a lack of formalization (articulation) of behaviors related to organizational improvement. Visualizing and formalizing the tasks and behaviors associated with organizational (PBO) improvement efforts could potentially increase project manager conformance. We suggest that the role of

Improvement Agent (IA) could be one way of doing this, consequently defining and focusing the PM role on project delivery and ascribing non-related tasks and behaviors to the IA role (as one of potentially several other roles).

When it comes to how the project manager and PBO should act in order to implement the role of IA, some general suggestions can be made. The strong single project focus needs to be balanced out with a long-term perspective as suggested by e.g. Müller and Jugdev (2012). Senior management needs to realize the role through assigning formal responsibility to the project managers as well as providing support, follow-up, and evaluation. Additionally, organization-specific metrics need to be developed in order to evaluate performance beyond the triple constraint, for example, related to learning, strategic alignment, and cooperation. The evaluation should also encompass project contribution to the business purpose and overall strategy, to realize the strategic value of projects as argued by Shenhar et al. (2001). The PBO needs to identify activities to support the behaviors, e.g. by ensuring a no blame culture, and to provide the project manager with prerequisites to incorporate the described behaviors in their daily work. The implications for a project manager in a subsidiary PBO include extending the performance focus from the single project to what the project contributes to the company (long-term effect), as well as being aware of project performance in relation to PBO performance, and coordinating the work toward a collective goal (company strategy).

From a project manager perspective, assuming the role of IA in line with CI would involve (behavior 1) having awareness and understanding of the organization's (PBO and/or client) aims and objectives, (6) proactively engaging in incremental process improvement (2) in line with said strategic goals and objectives, (4) taking part in and being the subject of assessment of improvements, and (7, 8, 9) learning from both one's own and others' good and bad experiences that are actively shared through cooperation and effective work across internal and external boundaries. Supported by (5) committed senior managers who lead by example and (3) who create and uphold the necessary prerequisites (e.g., training, teamwork), the project manager (10) bases everyday work on a shared set of cultural values that underpin CI.

CI might not be the answer to moving forward in PM practice in order to increase project success rate, as it has been criticized as being difficult to sustain over time (Bessant et al.,

1994). However, CI stresses the importance of organizational support, which has been proven to contribute to increased employee commitment and contributions to long-term organizational improvement efforts (Ekrot et al., 2016). Consequently, by formalizing an IA role, a PBO could foster project manager behaviors, benefiting both the project and organizational level, such as organizational citizenship behavior (Braun et al., 2013) and voice behavior (Ekrot et al., 2016). Further, a concept similar to CI could support managing Brady and Maylor's (2010) improvement paradox, as the incremental approach is less disruptive than radical changes, thus maintaining a low level of uncertainty in processes. Finally, the findings indicate a lack of formal project manager involvement in moving PM value from providing operational value only to fulfilling the strategic value ascribed to PM (Müller & Jugdev, 2012; Shenhar et al., 2001). As applied here, the concept of CI helps with understanding implicit expectations of project managers to work with organizational improvement and the lack of formal structures to support them. If CI is something toward which PBOs should strive, as suggested by standards and maturity models, then a structured approach is needed, and related activities have to be prioritized to balance the strong focus on project delivery. If CI is no longer considered important, then alternative approaches might be needed in order to ensure strategic alignment and future value creation.

Conclusions

We argue that there is a general desire in PM literature and practice for the project manager to participate in PBO improvement initiatives but that, in reality, priority is given to activities directly related to project delivery. Further, the project manager is implicitly expected to act as an improvement agent in PBOs and contribute to strengthening the collective PM capability. Thus, the existence of an additional PM role, the improvement agent, is suggested. However, this role is neither explicitly discussed in PM literature nor implemented and formalized in practice.

The chosen approach has its limitations; for example, priority was given to depth at the expense of breadth, limiting the literature overview to two journals (*Project Management Journal* and *International Journal of Project Management*) and a time-span between 2006 to 2017. Future research could benefit from a broader literature base, i.e., also including general management. The limitations of the method are also its strengths, since it allows for identification of both explicit and implicit descriptions. For example, many times the role of

the project manager was implied rather than explicitly described, which would have been difficult to find in a computer-based search only. Due to the interpretive nature of the literature overview, no definite conclusions could be made regarding expectations of project manager behavior regarding contributions to organizational improvement initiatives. The literature overview is not exhaustive of all available relevant literature, which means there are potentially additional findings to be made to further nuance the findings in this paper.

For practitioners, this paper emphasizes the existence of one or more additional roles ascribed to the project manager and that any additional roles need to be formalized if those roles are to be realized. For researchers, the paper adds to the understanding of expectations of the project manager role. Further research considering expectations of project managers could provide increased understanding of the difficulties regarding improvement work in PBOs. Additional insights not included, due to delimitations, suggest that the role of improvement agent could potentially differ, depending on the type of PBO (subsidiary or standalone). Also, discussing project performance implies the potential to improve, and the findings here suggest a need for further insight into the mechanisms of improvement in multi-project contexts.

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Paper V

Making Value Transparent in Project Management Work

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Submitted for publication

Making value transparent in project management work

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Abstract

Purpose – The purpose of this paper is to explore the work with value in PBOs, and develop a value centric model for making value more transparent for project management practitioners.

Design/Methodology/Approach – Based on an abductive approach, a single case approach together with a literature overview has been applied.

Findings – A model is developed that highlights three steps for making value more transparent in PBOs. First, a focus on value should be introduced to establish what is meant by “value” in the PBO. Secondly, since different stakeholders define value differently, discussing different perspectives of value is suggested to be important in order to establish a mutual understanding regarding value. The third step concerns clarifying roles and responsibilities of different stakeholders in order to realize value.

Research limitations/implications –The research is part of a larger case study, with a rich data set, but only a smaller part of the data has been collected with the specific purpose of value creation. Further, the developed model would benefit from further testing, to validate its potential to make value more transparent.

Practical implications – The proposed model is intended to help make value creation more transparent in a PBO by providing an overview of different aspects of value throughout the project life cycle.

Originality/value – This paper develops a model for making value more transparent, as previous research has described the concept of value as being multidimensional and dependent on both time and context, as well as “value to whom?”

Keywords – Project-based organization, Value, Model, Project practice, Case study

Paper type – Research paper

1. Introduction

Value in relation to project management has frequently been discussed in the project management research literature as important, both strategically and tactically. Project management is no longer just operated on a tactical level, running specific projects, but it is now a dominant model in many organizations on a strategic level (Aubry, et al., 2007; Killen et al., 2012; Srivannaboon and Milosevic, 2006). Creating PMOs (Project Management Office) is one strategic way to work with project management value and hence make it transparent (Aubry et al., 2010; Hobbs and Aubry, 2007). Another way is to implement specific project strategies in organizations, i.e. highlighting how projects create or add new value in an organization (Morris and Jamieson, 2005; Patanakul and Shenhar, 2012; Shenhar et al., 2007). But a good project strategy includes working with both effectiveness and efficiency, i.e. a full potential of project management means doing the right projects and doing the projects right. Project strategy, is, therefore, both about effectiveness—making the right choices by defining the outcome in the best way—and about efficiency—executing these choices in the right way (Patanakul and Shenhar, 2012).

For long, the project management literature has emphasized a neglect of the less tangible aspect of effectiveness in project work (Jugdev and Müller, 2005) and a lack of understanding regarding the relationships between project management performance and project success (Mir and Pinnington, 2014). But, a study by Serrador and Turner (2015) indicates attempts of moving away from conventional measurements of project success, i.e. the operational aspect of efficiency, toward judging project success by the stakeholders. Still, at the same time, Serrador and Turner (2015) argue that it is a challenge to encourage practitioners not to just measure project success with the iron triangle (solely focusing on project variables as time, cost, and scope). As an example, Shenhar and Dvir (2007) point out the universally low success rate of projects in terms of meeting time and budget goals, as well as scope fulfillment, as a central project management problem that neither practice nor research has managed to overcome. Padalkar and Gopinath (2016) similarly argue, almost a decade later, that another challenge is that the knowledge gap regarding project performance is still not sufficiently understood, and of interest. Both studies also emphasize the lack of a solid theoretical foundation as the second main shortcoming, and calls for the need for practitioners to adopt new perspectives in order to advance the research field.

1.1 Research Gap and Goals

In this study, we are particularly interested of the complexity of working with value in projects, and hence making value more transparent for project management practitioners. The study is inspired by Winter et al. (2006), who responded to the growing need for a new approach to project management, moving from a historical focus on product creation to instead focus on value creation, representing a broader conception of project success beyond the often criticized narrow single project focus (Kapsali, 2011; Shenhar and Dvir, 2007), and stressing the importance of starting with *value to whom?*. Also, Geraldi and Söderlund (2016) revisit the proposed research directions 10 years later and conclude that the concept of value in relation to projects has been broadened, primarily in terms of project success. However, they argue that there is still more to understand in regards to value in and from projects, as well as related to the management of projects, especially beyond the dyad of project management and client/sponsor. They highlight the dynamic nature of value describing it as both time and context dependent. Consequently, those working with project value

need to continually reflect on the perspectives of *value to whom*, and *when*. Therefore, we explore the work with value in PBOs, and hence develop a value centric model for making value more transparent for project management practitioners. We argue that a collective illustration of value is missing, and that such illustration is needed in order to guide practitioners in adopting and implementing a wider approach to and understanding of value in project management. This is achieved by a literature overview identifying categories of value in the project management literature, and by illustrating the stakeholders' multi-views of value in a case study.

2. Value in Project Management

It is no question that project management provides value in an organization, but it is complex and "to be useful, all aspects that are meaningful to an organization must be brought into the organization's own concept of what value project management brings" (Thomas and Mullaly, 2007, p.85). However, the project value concept as such is discussed in the project management literature by e.g. Browning (2014), who highlights the importance to distinguish four aspects of project value: *desired* (stakeholders want a certain amount of value from a project), *goal* (value meeting deadline, budget, and technical requirements), *likely* (ultimate value exists with some likelihood), and *actual values* (outcome from completed project). Though, even actual value resulting from investments in project management has been hard to define and measure (Perrotta et al., 2017).

The primary center of attention regarding value in the project management literature has been the exchange between the project management and the client/sponsor (Geraldi and Söderlund, 2016). But research shows that depending on the discipline, the view of value and the way to create value differs. For example within the strategy management field, value has a focus on the monetary benefits and the *willingness-to-pay* and the *opportunity cost* (cf. Porter, 1985). In the field of economics, value is linked to production in relation to economy-of-scale (Slater, 1997). Also in the lean literature, value is important to identify in relation to the customer (external and internal) (Hines et al., 2004) and strategies to provide customer value are promoted (Bhamu et al., 2014). However, value is a complex concept due to:

- it has tangible and intangible attributes stemming from factors ranging from production processes to brand image (Hines et al., 2004; Levitt, 1980; Oliver et al., 2007).
- it is an outcome of a complex process encompassing a sum of different parts (cf. Browning and Heath, 2009).
- it encompasses a multitude of dimensions (e.g. social, emotional, functional, epistemic, and conditional responses (Chen and Chen, 2010; Patnaik, 2004).
- it encompasses multidimensional properties related to different aspect of service quality (Yung and Chan, 2003) and customer value (Moyano-Fuentes and Sacristán-Díaz, 2012).
- it is multi-faceted with various meaning to different stakeholders (e.g. Bowman and Ambrosini, 2010; Pawar et al., 2009), from a customer-view (Woodruff, 1997), to suppliers (Ramsay, 2005).
- includes different disciplines which focus on different beneficiaries of value ranging from customers, firms and society (Lepak et al., 2007).
- stakeholders are different due to their subjectivity, variation in culture, situation etc. (de Chernatony et al., 2000).

2.1 Value creation

Value creation is a central concept in the management and organization literature for both micro-level (individual, group) and macro-level (organization, strategy) research of which project and portfolio management constitutes a critical part to (Killen et al., 2014; Meskendahl, 2010). In project management, a change of focus to value creation marks a change in the end goal; from product creation to the organizational benefit. Therefore, project management should be carried out in the light of value creation (Sauer and Reich, 2009), which is also the primary focus in projects, programs, and portfolios (Winter et al., 2006). Also, value achieved from deliverables can be expected to change over the life of the project, becoming more important, and hence affecting all parts of a business (Kerzner and Saladis 2011). Yet, there is little consensus on what value creation is or on how it can be obtained (Lepak et al., 2007). Research shows that the process of value creation differ due to (1) whether value is created by an individual, an organization, or society, (2) what value is created, (3) how it is perceived as valuable (use and exchange value), and (4) the source (Lepak et al., 2007). Research also provides evidence on the importance of value in project management but value does not just happen in a project-based organization, preconditions need to be in place (both technical as human factors) (Eskerod and Riis, 2009).

The complex understanding of *value*, depending on *who* benefits and in *what* way they benefit, highlights the fact that the creation of value is often extended over long time periods, that value creation continues long after the project managers have left for other projects (Winter et al., 2006). Previous research indicates that there is a growing concern to ensure maximization of the lifetime value of projects (Bonnal et al., 2002; Khang and Moe, 2008) and to take into account the lifetime costs of a solution to assess the value of a contract, e.g. that the solutions provider may have to accept up-front costs in return for a higher value gains for the customer in the longer term (Brady et al., 2005). But Artto et al. (2016) suggest that a system lifecycle in project management should be examined from the viewpoint of a more general concept of *time*, and that multi-organizational systems should be viewed more broadly as *multiple stakeholders*.

Further, building on the view that projects are conceptualized as a value creation process for various stakeholders (Davis, 2014; Eskerod et al., 2015; Littau et al., 2010; Missonier and Loufrani-Fedida, 2014), the view of project success will differ among the stakeholders and hence require engaged stakeholders throughout the project life cycle (Chang et al., 2013; Davis, 2014). But what, or who, constitutes a project stakeholder has been debated in the project management research, see table 1. Descriptions of project stakeholders tend to start with the core project team and customer, and then include additional stakeholders to various degrees, including management, suppliers, and even society (c.f. Davis, 2014; Geraldi and Söderlund, 2016). Different stakeholders represent different perspectives on value and value creation in projects (Geraldi and Söderlund, 2016). Table 1 presents a selection of project stakeholders to illustrate the different perspectives identified in project management research.

Table 1: Different stakeholders - representing different perspectives on value and value creation in projects

	Focus	Stakeholder	Description
Davis (2014)	Stakeholder groups	Project core team	E.g. project team, personnel, project manager, etc.
		Senior management	E.g. director, investor, portfolio director, sponsor, top management
		Project recipient	E.g. client, consumer, customer, users
McGrath and Whitty (2017)	Stakeholder definition	Invested	Someone who has some control of an activity
		Contributing (primary)	Someone whose participation is required to sustain an activity
		Observer (secondary)	Someone whose acceptance or compliance is required to sustain an activity
		End user (tertiary)	Someone who uses the output of an activity
		Customer	Someone who receives some value from an activity
		Output customer	Someone who receives the output of an activity
	Outcome customer	Someone who receives the outcome of an activity	
Geraldi and Söderlund (2016)	Recipient of value	Society	"Value for all", i.e. value in the broadest of terms

But project value creation as such is a relatively unexplored research area. Hence, Laursen and Svejvig (2016) propose that it should be a research area of its own. They found significant amounts of research on project output success (primarily the iron triangle) but more scattered research related to project outcome (e.g. benefit(s) or change). Further, Laursen and Svejvig (2016) emphasize that it is of importance to separate project output and outcome since output, such as a machine, is merely the means to achieve the outcome—the actual change in the organization derived from using the project's output.

2.2 Understanding project performance and project success

The project management literature shows that project management practice itself creates value (Besner and Hobbs, 2006; Thomas and Mullaly, 2007) and it is important to understand *what* creates project success (Baccarini, 1999; Cooke-Davies, 2002). Research shows that there is a significant relationship between project management performance and project success (Mir and Pinnington, 2014), but there are multiple views of what creates project success (Shenhar et al., 1997; Todorović et al., 2015). Besner and Hobbs (2006) argue that value of project management practice is created when good project management practices and good measurement tools improve project success, and that successful projects provide value to organizations.

Further, an overview of studies investigating the concept *Project Success* in the project management literature (Mir and Pinnington, 2014) shows that the concept is well researched from different perspectives: as a uni-dimensional concept focusing on project management success (internal measures of efficiency as accomplishment of cost, time and quality objectives), or as complex and multi-dimensional (encompassing different attributes) focusing on product success (external measures of effectiveness of the project's final product) (Baccarini, 1999). Similar, performance in relation to projects may refer both to project management performance and project performance (Bryde, 2003). Project management performance is linked to the management process (i.e. how the project is delivered), while project performance is linked to the output and outcome of the project

(i.e. what is delivered through the project). Between the two, project success is described as the overriding measure of success, as stakeholder satisfaction (i.e. experienced value) may be independent of, or of higher importance than, project management performance (Bryde, 2003; Shenhar et al., 2001).

Achieving project success has been described as dependent on the project manager's ability to work with both efficiency and effectiveness, i.e. how the project is managed and what is being achieved (Patankul and Shenhar, 2012; Zidane and Olsson, 2016). In a similar way to Bryde's (2003) description of performance, efficiency then refers to how the project is delivered, and effectiveness is related to what is delivered through the project. Project success can consequently be described as consisting of project management success (based on efficiency and project management performance) and product success (based on effectiveness and product performance). Efficiency, and consequently project management performance and project management success, is the only aspect of project success that can be evaluated at, or close to, project completion (Shenhar et al., 2001). Project effectiveness in turn is argued to be the most challenging aspect of project performance and success to measure, as effectiveness relates to the purpose(s) and objectives of the project (Zidane and Olsson, 2017). Project performance and success in terms of effectiveness has further been described as dependent on factors related to a soft project management paradigm—including social processes, qualitative measures, and ambiguous goals—often described as missing in project management literature (Cicmil et al., 2006; Pollack, 2007; Winter et al., 2006).

Also, the value concept has different meanings to different stakeholders at different points in time and the impact of projects can be seen from both a short-term and a long-term perspective (Besner and Hobbs, 2006). This multi-dimensional understanding of the value concept and thus project success emerge through the interactions of different project members, teams and projects which in turn are influenced by different competences and quality of those interacting in projects (Müller and Jugdev, 2012). Therefore, aspects like project scope, cost, and time management, and discussion of efficiency and effectiveness at different levels (organizational, team and individual) are of importance (Müller and Jugdev, 2012). Albert et al. (2017) emphasize that time dependency of the criteria plays a central role in the assessment of project success. Adding to the complexity and the multi-view, the success dimensions differ by individual personality, nationality, project type and contract type (Müller and Jugdev, 2012). In order to account for all dimensions project managers need to address the dimensions throughout project definition, planning, and execution phases (Shenhar et al., 2001).

One consequence of the multi-dimensional concept is the difficulties in assessing project success and finding adequate measurements that covers several points of views (stakeholders). Therefore, it is easier for project managers to focus on internal measures of efficiency (as cost, time and an acceptable level of performance) (Shenhar et al., 1997). Previous studies explore the different dimensions of project success. One suggestion is a four-dimensional model of project success: project efficiency, impact on customers, business success, and *preparing for the future* (Shenhar et al. 1997; Shenhar et al., 2001). Other studies show the complexity of project success by investigating the relationship between project success factors and actual project success (Andersen et al., 2006), emphasizing *hard features* as professional planning and cost control, but also the *soft skills* as rich communication and learning from experience. But, research has not been conducted sufficiently concerning the deployment of strategic value over time as the project portfolio evolves (Martinsuo and Killen, 2014). Further, depending on the stakeholders and their subjective views, criteria of

project success changes over time (Turner and Zolin, 2012). Hence, different stakeholders will interpret project success in different ways (Mir and Pinnington, 2014) and it is important that the success of projects is connected to the value created (Laursen and Svejvig, 2016).

But in spite of advancement in project management processes, tools and systems, project success has not significantly improved in organizations (Andersen, 2014). As shown by Shenhar et al. (2001), it is only the short-term aspect of project efficiency that is possible to evaluate during project execution in relation to project success or not. The success dimensions of impact on the customer, direct business or organizational success, and preparing for the future can only be evaluated in different timespans after project completion. But as stated by Andersen (2014, p.885), “the modern project manager should focus more on the future value creation of the company, and the various ways in which projects can make their strongest contributions to this endeavor.” But what is needed to make value happen in project management? Winter et al. (2006) have previously emphasized the need for a new way of thinking, new models and ideas regarding project management as existing models, including “value management,” are more aligned with product creation than value creation. Also, Laursen and Svejvig (2016) propose research on project value creation, comprising an approach balancing value, benefit, and cost, and new models and theories using frameworks of independent theory.

2.3 The project management context

In the project management literature, it is stated that project management yields value in organizations (Cooke-Davies, 2002; Söderlund, 2004), but that it is essential to go beyond too simplistic measures to examine the real value of project management. But Hartmann and Dorée (2015) provide some insight into learning and values related to projects, especially between them, and they argue that projects are still treated as island, with a dominant sender/receiver approach. Therefore, there is a need to consider the many and varied levels and types of value that project management provides to organizations (e.g. Davies, 2014). But without understanding the context, it is impossible to know what organizational or environmental activities that impact the resulting value of a project (Thomas and Mullaly, 2007), since value has various meanings to different stakeholders. Thomas and Mullaly (2007) propose a framework where project management implementation and the value of project management are aligned within the organizational context through the notion of “fit,” i.e. the processes and activities that have been implemented needs to be understood in the context of the business orientation and the environment.

Other researchers also emphasize a change of view regarding project management and address it as a “complex integrative knowledge field” (Bredillet, p.4, 2010), and emphasize a need of understanding the context, the interplay between different parameters and variables, and their conditions of change. This understanding of the context in project management is related to the contingency theory, which proposes that an organizational outcome is a consequence of a fit between two or more factors that is the internal and external factors influencing a system, such as the project management outcome. These influencing factors are called contingency factors. For instance the environment, technology, age, size, power, and strategy are often considered primary independent contingency factors that affect organizational design (Lizarralde et al., 2011). Understanding of contingency factors in project management has previously been discussed by Engwall (2003) who states that projects are open system; they are history-dependent and organizationally-embedded, and there is a need of having a contingency approach to project

management. It is important to achieve an understanding of project success and failure in a complex environment and go beyond time, cost, and functionality, to a broader notion of project as intervention in a complex environment, and incorporate the complexity of the task of managing the project (Maylor et al., 2008). Thus, projects should not be viewed separately in an organization and accomplishing tasks independently of other organizational structures and parties (Hällgren and Lindahl, 2017).

2.4 Value-centric view

Value in relation to learning, both within and between projects, is another area frequently discussed in the project management literature (e.g. Kotnour, 2000; Swan et al., 2010), exploring benefits from lessons learned (Torres and Gati, 2011; Weldy and Gillis, 2010). Since learning is a success factor of project management it is important that organizations (not limited to PBOs) can find ways to manage and support project learning (Julian, 2008; Newell et al., 2006; Swan et al., 2010). However, research shows that learning from projects will only occasionally lead to more institutionalized levels of organizational learning, even within highly project-oriented organizations (e.g. PBOs) (Swan et al., 2010). But according to Fuller, Dainty and Thorpe (2011), it is commonly acknowledged as difficult for PBOs to learn from previous projects, as well as to actually implement the lessons in future projects. Overall reasons for difficulties associated with managing learning in project settings are mainly the temporary nature and complexity of projects (Bourne et al., 2004; Keegan and Turner, 2001; Williams, 2003). Swan et al. (2010) for example point out that there are difficulties in capturing and translating learning into new routines and practices, so that the organization can benefit from the learning. Other issues pointed out are for example the lack of (working) project-review processes (Julian, 2008; Schindler and Eppler, 2003), and that project management tools are not used to their full extent, in order to benefit learning and systematic improvement work (Gieskes and ten Broeke, 2000).

What is clearly evident across different sectors and industries is the growing conceptual shift away from the traditional engineering view of projects, towards a more value-centric view, in which the primary concern is no longer the capital asset, system or facility etc. (Winter and Szczepanek, 2008). This leads to an increasing challenge of creating value and benefit for multiple stakeholder groups (Winter and Szczepanek, 2008) and viewing projects more as a “social system” (Jacobsson and Söderholm, 2011). However, this change of view requires new conceptual frameworks to help practitioners think about the value creation aspects of individual projects and programs, i.e. the classical triangle of specification, cost and time should be reframed to include the crucial dimension of value (Winter and Szczepanek, 2008). This indicates a need of a new way of thinking in the project management field, a “fundamental re-appraisal of project management research”, i.e. an idea of viewing projects as a knowledge process (Sauer and Reich, 2009, p.182). Winter et al. (2006) highlight the need to account for and understand the multifaceted nature of value, concerning both place (to whom/stakeholder) and time, as value creation often occurs beyond the project closure. Geraldi and Söderlund (2016) echo this call to focus on value creation, arguing for the need to expand the focus even further, comprising value “for all” (i.e. society). But how can a more uniform perspective be reached? Why individuals continue to have different perspectives on success must be further understood (Müller and Jugdev, 2012).

2.5 Organizing value

Today, project management is no longer considered to just be operated on a tactical level, as running specific projects, but it is also a dominant model in many organizations on a strategically level (Patanakul and Shenhar, 2012; Jugdev and Thomas, 2002), i.e. projects can be a powerful strategic tool, creating economic value and competitive advantage for organizations (Shenhar et al., 2001). But value in project management does not happen by itself, it needs organizing. Known ways of coordinating work with project management value in an organization is by creation of PMOs (Project Management Office) (Hobbs and Aubry, 2007; Pemsel and Wiewiora, 2013) and working with programs, portfolio management (Hurt and Thomas, 2009; Unger et al., 2012), and implementing project strategies (Patanakul and Shenhar, 2012; Shenhar et al., 2007). All these are part of PBOs as permanent structures (Miterev et al., 2017). Project strategy management is recognized as an important means to systematically work and implement different organizational goals (Morris and Jamieson, 2005). Though, it is important that all projects are aligned with the organization's strategic direction for being most effective (Patanakul, 2015).

The general idea behind working with project strategy management and value management is that project management teams must learn how to deal with the business aspects of their projects, as well as better support their company's business strategy and sustainability, rather than just focus on meeting traditional time, budget, and performance goals (Besner and Hobbs, 2006; Patanakul and Shenhar, 2012; Poli and Shenhar, 2003). But this requires a new mind-set (for those working with projects) and an approach that are built on top of the traditional project management concept. For instance, a project strategy needs to include components building on the *why* (perspective), the *what* (position), and the *how* (guidelines) (Patanakul and Shenhar, 2012), i.e. what to do, how to do it, and why it should be done, to achieve the highest competitive advantage and the best value from the project (Poli and Shenhar, 2003; Shenhar et al., 2007).

There are many methods and project management tools available that are value-oriented and research shows that project control concerns have shifted from cost control (e.g. cost/time/scope) and traditional value management to a deeper understanding of the strategic value generated through the projects (Brady and Davies, 2004; Shenhar and Dvir, 2007). Examples of tools and methodologies focusing on value include Value Management (Male et al., 2007; Martinsuo and Killen, 2014; Thiry, 2001), Value Adding Path Map (VAPM) (Shi, 2011), Mission Breakdown Structure (MBS) (Andersen, 2014), models for identifying customer needs (e.g. Functional Analysis, System Techniques, Quality Function Deployment) (Gillier et al., 2015), and methodologies focusing on dissemination of lessons learned (e.g. the "Swiss cheese model") (Duffield and Whitty, 2015; Gillier et al., 2015; Kotnour, 2000). However, it is argued that tools such as value management are still more aligned with product creation than value creation (Winter et al., 2006) and embracing a soft VM that clarify "value for whom" is of importance (Gillier et al., 2015).

In sum, value is a relative concept with different meanings depending on the stakeholder (Pawar et al., 2009; Zhai et al., 2009) and their perceptions of value differ due to their subjectivity, variation in culture, situation etc. (de Chernatony et al., 2000). Further, considering stakeholders from a PBO perspective increases the complexity even further, as stakeholders will vary between projects and between project, program, and organizational level (e.g. McGrath and Whitty, 2017). There is a lack of research that actually show direction of how to make value more transparent in a PBO, and in spite of advancement in project management processes, tools and systems, project success has not

improved in organizations (Mir and Pinnington, 2014). Project management needs adjusted tools and models that focus on how to create value (Couillard et al., 2009). Still, there are capability-building approaches that clearly identify the importance of so called learning cycle occurrence from one project to another, but they are far from being used in the concrete value management toolbox for project management (Maniak et al., 2014). Hjelmbrekke et al. (2017) emphasize that more research is needed that investigates the strategic approach to project success.

3. Method

An interpretative methodology is employed for the single case study, named case PBO. Based on the case study approach (Flyvbjerg, 2006), we focus on understanding the phenomena of value in PBOs, their work with value and hence challenges. In addition, an abductive approach was applied in which a model aimed at increasing transparency of value in project management was constructed. The approach accommodates an exploration of the subjective value judgments emitted from the informants in the case PBO. Our interpretative view is inspired by Service-Dominant Logic view, which as a theoretical lens also offers a methodological approach to examining the value concept as “uniquely and phenomenologically determined by the beneficiary” (Vargo and Lusch, 2017, p47). Some of the informants’ views of the value concept are used in the illustrations of the challenges of addressing value in a project management context.

The study is part of a larger case study exploring continuous improvement work in a PBO. The case study was longitudinal between the years 2013 and 2017. One part of the study explored the concept of value and value creation in a PBO, based on a literature review as well as on empirical findings from the PBO case, a project department at a larger mining company in Sweden. The PBO operates as a subsidiary to (or department of) its parent company, with no external customers. They are however operating on the open market, meaning that their customers are free to commission projects from other firms, with the exception of projects of considerable strategic importance (decided by senior company management). The PBO operates over a larger geographical area, with offices in different cities, and with various types of projects, related to mining, processing, logistics (railway and harbors), and municipal transformation (moving cities due to environmental impact/effect of mining operations). Approximately 100 employees make up the PBO, divided between project programs and administrative staff. Initially the PBO consisted of five programs and one business development function but as the PBO’s role and responsibility within the company was revised (during 2016) the structure changed. After this change, the PBO consisted of three project programs, one administrative unit, one unit for technical administration and development, and one unit for production development. This change meant that the scope of the PBO’s responsibility became broader to also include a strategic responsibility, but projects remained the primary way of working. Four members of the management team remained in the PBO after the change, which means the total number of informants in a senior position was nine individuals.

In the longitudinal case study, informants were selected based on involvement in, and knowledge of the PBO, including experiences about wanting to achieve value in project context as well as the challenges. The PBO management team was selected as the primary group to interview, included program managers and the head of the project department (Vice President of Projects). Semi-structured interviews with open-ended questions were used due to the exploratory approach, which allowed informants to discuss in an open manner, allowing for alternative use of the data, as in this

case. Direct observations have also been applied, in order to scrutinize the views and opinions of informants, allowing for the comparison of what informants say, and what they actually do. Examples of questions addressed are what constitutes a successful project, how the informant would describe the purpose of the PBO, how they provide value to the company, challenges experienced on the job, and what the informant considered to be value-adding or non-value-adding activities. Table 2 provides an overview of the data collection methods used, resulting in approximately 32 hours of interviews, 30 hours of discussions with senior managers during research meetings, and 30 observed meetings.

Table 2: An overview of the data collection methods applied in the longitudinal case study

Method	Variety	Purpose	Documentation
Direct observations	Project, Program, and Organizational level	Insights to how the PBO works, CI thinking in PBO practice.	Notebooks, reflective summaries
Interviews	Semi-structured face-to-face, focus group	Access respondents views and perspective of the matter discussed	Notebooks, audio recordings, audio and video recordings
Documents	Strategic documentation, business plans	Triangulation	N/A

An overview regarding research topics related to value in the project management literature was applied in two steps: (1) initial search performed by using the search Engines as EBSCOhost, Emerald Insight, Elsevier Science Direct, and Google Scholar, (2) a search targeting three of the leading project management journals, the International Journal of Project Management (IJPM), the Project Management Journal (PMJ), and the International Journal of Managing Projects in Business (IJMPB). The concept of *value* was the main keyword search for in titles, abstracts and keyword using primarily search engines, spanning a 12-year period (2006-2018). Keywords related to value from the articles were classified in descriptive categories based on the relation to value, for example as a characteristic (e.g. complex, relative), method/tool (e.g. VAPM, MBS), or perspective (e.g. internal/external, short-/long-term), see table 3. In addition, based on the promotion of a focus on value creation all journal articles citing Winter et al. (2006) have been studied for additional contributions, as Winter et al. (2006) is part of what is described as a milestone in project studies (Gerald and Söderlund, 2016).

Table 3: Emerging themes related to value in the project management literature.

Themes related to value	References
Concept	
Strategy	Hobbs and Aubry (2007); Patanakul and Shenhar (2012); Shenhar et al. (2001); Morris and Jamieson (2005)
Competitive advantage	Shenhar et al. (2001); Poli and Shenhar (2003)
Learning	Kotnour (2000); Swan et al. (2010); Dainty and Thorpe (2011)
Lesson learned	Torres and Gati (2011); Weldy and Gillis (2010)
Dimensions	
Project management/ Project/ Product Success	Baccarini (1999); Cooke-Davies (2002); Mir and Pinnington (2014)
Efficiency/ Effectiveness	Patanakul and Shenhar (2012); Jugdev and Müller (2005)
Hard/ Soft	Pollack (2007); Shi (2011)
Financial measures/ Monetary benefits/ Opportunity cost	Besner and Hobbs (2006); Porter (1985); Brandenburger and Stuart (1996)
Emotions/ Quality/ Service/ Cost/ Time	Patnik (2004); Yung and Chan (2003)
Perspectives	
Value of project management	Thomas and Mullaly (2007); Besner and Hobbs (2006)
Internal/ External	Hines et al. (2004)
Stakeholder	Cooke-Davies (2002); Zhai et al. (2009); Thiry (2001)
Customer	Gillier et al. (2015); Hines et al. (2004); Bhamu et al. (2014)
"why"/ "what"/ "how"	Patanakul and Shenhar (2012)
Short- / Long-term	Shenhar et al. (2001)
Organizational aspects	Levitt (1980); Hines et al. (2004); Oliver et al. (2007)
Customer satisfaction	Grönroos (2008)
Product creation ("opposite" to)	Eskerod and Riis (2009); Winter et al. (2010)
Characteristics	
Complex/ Relative	Svejvig and Andersen (2015); Pawar et al. (2009)
Tangible/ Intangible	Levitt (1980); Hines et al. (2004); Oliver et al. (2007)
Outcome (complex process)/ Sum of parts/ Multifaceted	Browning and Heath (2009); Bowman and Ambrosini (2010)
Time / Context dependent	Shenhar et al. (2001); Thomas and Mullaly (2007); Grabher (2002)
Created/ Captured	Lepak et al. (2007); Laursen and Svejvig (2016)
Multi-dimensional	Moyano-Fuentes and Sacristán-Díaz (2012); Sheth et al. (1991); Besner and Hobbs (2006)
Level	
Project/ Program/ Portfolio/ Organization	Eriksson (2013); Svejvig and Andersen (2015)
Micro-/ Macro-level	Meskendahl (2010)
Method/tools	
VAPM/ MBS	Shi (2011); Andersen (2010)
Value enabler(s)	
PMO/ Preconditions	Hobbs and Aubry (2007); Eskerod and Riis (2009)

4. Challenges working with value in PBOs

In the PBO case, data concerning discussions about the value concept, value creation, project success, the matter of context, organizing value, and methods for value creation were search for. Two main statements emerged; (1) the informants' view on what constitutes *value*, and statements related to value and value creation from everyday situations (practice). This chapter gives some insights and illustrations of how the PBO management team experience work related to value creation, and hence the challenges related to grasping value in project management.

4.1 The concept of value in PBOs

Similar to the research literature, the informants' definitions and thoughts about the value concept show that it is a multifaceted concept, spanning over different organizational levels (individual project vs. strategy) as well as different time perspectives (short vs. long). There is no unified view, not even within the same department. Table 4 presents the descriptions of value provided by the informants together with a description of the context of which the description was given as interpreted by the authors (Explanation).

4.2 Successful projects

Regarding the theme *successful projects*, for the PBO case it includes (1) delivering according to the triple constraint, (2) an agreement between the PBO and client regarding the project outcome (for both the client and the company), and (3) a continuous commitment to, and involvement in, the project from both client and users (so that no unforeseen surprises or misunderstandings occur). As one program manager stated, regarding what would constitute an ideal PBO: "*[the ideal situation is] when we can deliver good results (time, cost, scope) and secure the "right" resources, when the operation runs smoothly.*" So in order to reach successful project, a best scenario for the PBO is when there is a common understanding among stakeholders regarding what to achieve in a project. These stakeholders usually include the PBO and project manager, the client, and the user of the outcome (working at the client department).

When asked to describe a successful project, and why it was considered to be successful, both the project and program managers highlighted that client commitment and involvement was central, regardless if the projects were delivered under budget and/or before time, delivered according to the triple constraint, or if projects had increased costs and/or extended time. For projects that met, or performed better than the triple constraint, client involvement and commitment were considered to highly contribute to the perceived success, due to the agreement regarding the outcome which led to cooperation to fulfill the project plan. For projects that deviated from the (initially planned) triple constraint in any aspect, but still was considered being a success, a consensus between the project manager and the client regarding changes was described as a central. This consensus included a common understanding regarding the consequences of the changes, either as a necessity to achieve the scope (e.g. due to unforeseen events), or the potential to achieve an increase in project value an equal or greater to the resources added (i.e. time or money). Clients and users that were not involved and engaged in the project, or misunderstandings between client and project manager, were described as a cause for late changes in projects, consequently negatively influencing project management performance (i.e. plan or budget overruns). Similarly, a short-term focus on project delivery and the triple constraint within projects (i.e. focusing primarily on efficiency) from

both the client and program manager perspective, was indicated as a factor influencing value creation.

Table 4: Examples of definitions of value in a PBO, as provided by the case study informants.

Description of value	Explanation (Authors interpretation)
To some extent a <i>buzzword</i>	One informant questioned the use of the word <i>value</i> , arguing that it is often used without meaning of context, thus becoming <i>empty</i> .
Alternative cost	The value of not turning to external companies for project management service, and keeping the knowledge in-house.
Chargeability	Hours spent working in projects divided by available hours. Strive towards 100%.
Efficient project management	Delivering according to triple constraint.
Project planning	Compress projects through planning activities in parallel rather than sequential.
Minimizing production down-time	Avoiding production loss, to not interrupt the cashflow.
Maximizing cash-flow	To prioritize activities and projects that contributes to increased company profitability.
Maximize production at a set level of quality	Value as securing and improving production at a defined level.
Supporting the company with project management competence	Operating as a resource for the company, in-house project management competence, a strategic perspective.
Deliver projects according to the triple constraint	Smoothly refereeing to easy access to necessary resources, e.g. staff, equipment, and funds.
To review project plans to ensure that projects deliver value to the company	Low levels of project management knowledge and experience among clients resulted in poorly defined projects.
Vetting and selecting projects with the company's best in mind	Evaluation of project requests to best support the company strategy.
To minimize sub-optimization	Projects lacking strategic alignment and defined outcome risked leading to sub-optimization, e.g. unnecessary redundancy.
Delivering both efficient and effective projects	The ability to plan and deliver projects according to the triple constraint (efficiency), with ensured company value (i.e. achieving intended outcome, effectiveness).
Learning	By learning and sharing experience the PBO is able to improve and increase performance.

In sum, value creation thus concerns the phases before and after the project related to effectiveness and product performance (i.e. outcome), while work from the project management process primarily concerned efficiency and project management performance. As stated by Chang et al (2013), the view of project success will differ among the stakeholders so it is required to have engaged stakeholders throughout the project life cycle in order to achieve value. A short-term focus on project delivery and the triple constraint within projects means from a project success perspective a focus on project management success more than product success, and from a value creation perspective a more focus on product creation than value creation (Baccarini, 1999; Bryde, 2003; Winter et al., 2006).

4.3 Cooperation in early phases

Informants (a program manager and VP of Projects) considered that work in early project phases, i.e. before project start, to be the most important in order to influence a potential value creation in and from the project. The benefits of being involved in early project phases was described as having the opportunity to evaluate the project idea from a more holistic perspective (the company), and to perform what could be described as a root-cause analysis of the underlying problem or need in the project. Another benefit was the opportunity to consider not only the short-term benefits of addressing a certain problem or need (from a client perspective), but also to consider the more long-term potential benefits from a company perspective (e.g. avoiding sub-optimization).

Examples of when different units had cooperated to create better project results were provided, indicating that when different stakeholders were in agreement regarding the outcome, the result was improved. As an example, the VP of projects and a logistics program manager visited a client in an early phase; before the project was allocated to the PBO (normal practice would be to initiate discussions after the client allocated the project to the PBO). In discussion with the client, the PBO members were able to identify the root cause of an identified problem and could then early suggest an alternative solution that solved the same problem, thus to a considerably lower cost and effort. The PBO members argued that the suggested solution made resources available (time and money) for other projects, without compromising on the outcome, thus obtaining value from both a client and company perspective. Also, the technical support manager described efforts to increase cooperation with project manager and client early. By collaborating with the project manager and client, a technical expert was able to contribute with knowledge from previous or similar technical solutions, avoiding both reinventing already known solutions and limiting rework in later phases. This meant that by utilizing existing knowledge, the project could deliver value to (1) the client by faster and tested solution, (2) value to the PBO by more efficient project management, (3) value to the support unit by avoiding wasteful documentation and work, (4) value to company by faster results and fewer resources spent.

The benefit of being able to review projects in early phases was also raised by another program manager, stating that clients often focused directly on the solution (the product value), rather than to reflect on the purpose of the project (the project value and its outcome). The program manager described that he often had to raise the question of “*what should be achieved?*” and the importance of “*letting the problem mature,*” in order to reflect on *what* and *why*.

However, one reoccurring challenge for working with value within the PBO was a perceived lack of time in early project phases, e.g. to evaluate the intended project outcome, define the current state, and to perform root cause analysis. Both project and program managers, as well as the VP, argued that the main reason for limited time in early phases was that clients often consumed the available time by rushing towards project start (or starting projects themselves), or that the project plan was insufficient. When clients started a project, they could later realize that they did not have the knowledge or resources to manage the project themselves. If this happened, the PBO had to take charge of the project, with limited resources and no opportunity to reassure that the project delivered value from a company perspective. Regarding insufficient project plans, they were accredited to limited or no project management experience and knowledge among clients. The plans often lacked a clear defined status analysis, making project evaluation after completion difficult.

In sum, the findings indicate a the need of transparency regarding value discussions and creation in relations to project work. Reaching a shared understanding, in early phases, between the client and the PBO of what should be achieved, and why, by initiating a project is suggested to be a key success factor from a holistic perspective, i.e. delivering value to both the client and the parent company. Further, client commitment, engagement, and involvement in their project was described as a main variable influencing project outcome (i.e. value creation). From a PBO perspective, uninvolved clients were considered to be a common reason for unsatisfactory results, e.g. negatively influencing both efficiency (increase in cost and time) and effectiveness (ill-defined effect and unsatisfactory company value), while the opposite, involved and committed clients were considered to contribute to successful projects (e.g. efficient and effective project). The findings suggest that a shared understanding of project outcome contributes to increased project value, tools to help focus on how to create value are lacking (Couillard et al., 2009). Also that the solutions provider may have to accept up-front costs in return for a higher value gains for the customer in the longer term (Brady et al., 2005).

4.4 Organizing value

In the case, informants highlighted the problem of lesson learned and to share experiences from projects. One example of this was described in the case organization, concerning a forum for issues related to quality, environment, and working environment. Participation in this forum was not mandatory, and no senior managers took part, unless the forum members requested so. Meetings were held on a regular basis and were characterized by a less formal agenda. What was interesting was that all members participated on the basis of own interest, since they perceived it as valuable. Also, this forum was described as initiated by the employees, since the saw the need to coordinate and share experience of these types of questions, in order to carry out the work throughout the organization. One suggested reason for why this specific forum worked (others had been tried) was that the topics (quality, environment, work environment) in much were affected by legislation, so they needed to be coordinated.

In sum, an illustrative way to describe the sharing of knowledge in practice is that learning is managed through a *hard* push-approach, where senior management initiates and implements learning activities and routines. Adopting a softer approach would involve greater emphasis on participation and underlying social processes, involving everyone. One way to achieve this could be by adopting a pull-approach to learning instead, where the desire to share lessons learned is initiated not by senior management, but within the organization. Managing a pull-approach to learning would involve fostering a demand for learning activities, for example by providing prerequisites and opportunity for interaction between organizational members.

4.5 The multi value perspectives

It was perceived as difficult to evaluate projects from a strategic perspective due to a lack of clear strategic performance criteria. This led to a limited focus on just efficiency and project management performance, and thus potential strategic value, could be lost. As an example, projects intended to fulfill rules and regulations were considered fairly straightforward in terms of success. If the indicated value criteria were to meet the requirements and to deliver the project as efficient as possible, the project was regarded as success (although the project management performance could have varied). For instance, one program manager described that the client often focused more on the product itself than on the outcome, e.g. on the new production unit itself rather than on an increased or

secured specific production output. These aspects were considered to limit the PBOs ability to work with value from a company perspective, and instead having to focus solely on the client perspective (i.e. to risking sub-optimization).

However, as acknowledged by both a program manager and the VP, more focus would have to be directed towards project effectiveness in order to make sure that value creation also considered the company (strategic) perspective. As an example, beyond the value of securing continued production for the company, the program manager reasoned that the value of planning maintenance projects was to minimize production disturbance, as well as planning when to initiate investments. If a maintenance project would be launched too early, it could mean spending resources that could have provided more value elsewhere, while launching it too late would mean breakdowns and unplanned interruption in the production. For this type of projects, the program manager meant that the potential to widen the project aim to not just consider the needed maintenance work but also would be seen as an opportunity to “do more,” e.g. to implement some improvement work to avoid future bottlenecks. This reflection indicates the potential to provide company value by taking a more strategic perspective in the project by adding other values into the maintenance work.

Further, as maintenance projects were described as ordinary and reoccurring (both between similar units and over time), a program manager argued that they (the PBO) could offer value to the company by accumulating knowledge and experience from one project to the next by contributing to e.g. shorter start-up time and having ready-made fixes to potential problems. This however, was not always the case. The VP of projects explained that since they operated as a subsidiary, their ambition was to always deliver value to the parent company, to learn from experience, and deliver value related to increased efficiency, i.e. improved project management performance. But in order to do so, both project level and organizational (PBO) level improvements needed to be aligned in order to contribute to competitive advantage. Since a primary competitive advantage, according to the VP, was a local, internal, holistic knowledge about the company and its processes. Learning was argued to be a key factor for working with improvements, as learning from and between projects was considered to e.g. reduce start-up times and provide important input to PBO-level improvements. Thus, learning as an internal PBO value generates project management improvements, which can further increase the overall project management performance of the PBO and consequently increase both efficiency and effectiveness.

The findings presented above indicate that one common denominator is the lack of transparency, for challenges related to the view of what creates value. The informants indicate that when projects are initiated by the client, and/or when the project plan is insufficient and unclear, it becomes more challenging to work with and ensure value creation for the company. This is suggested to be an indication of a lack of value transparency, i.e. a mutual understanding regarding the different aspects of value creation has not been achieved. The findings also indicate that focusing on the triple constraint represent only a partial aspect of the total potential value of a project.

Another example related to successful projects illustrates how perceived value from a project is both time dependent and changeable. That is, the evaluated project value can be influenced by external (and out of control) factors and hence change. One of the program managers gives as an example a strategically important project to construct a new processing plant. In this project, there were no specific remarks, neither good nor bad, provided regarding the planning and construction phases of

the project. Instead it was events that occurred after project completion that the informants focused on. Since the main product of the company was iron ore, which is traded in the US dollar (USD), currency changes affected the actual value of the project. That is, shortly after project completion, the USD started to increase in value in relation to the domestic currency, thus contributing to increasing profits for the company. As a result, the predicted payoff time for the plant significantly decreased, resulting in a perceived increase in value created through the project (from an investment perspective). Further, one program manager stated; *“projects with a clear outcome (e.g. meeting regulations) are relatively easy to evaluate in regards to effectiveness, [while] strategic [projects] are considerably more difficult [to evaluate] [...] as the parameters of effectiveness (e.g. increased product quality) are more fuzzy to specify [hence not doing it].”* Consequently in his case, focus shifted towards efficiency (i.e. product creation), and meeting the triple constraint (i.e. project management performance).

In sum, the illustrations above show that the evaluation of value depends on the stakeholder involved and that the value of projects can be influenced by external factors that cannot be controlled. Since value has different meanings to different stakeholders at different points in time, the impact of projects should be seen from both a short term and a long-term perspective (Besner and Hobbs, 2006). Thus value is time dependent and should constantly be evaluated along with evaluating the project planning. Also, the challenges of making value more transparent spanned from early phases (i.e. before project initiation) to after project completion. Before a project start, the challenges were similar to earlier described benefits, revolving around client involvement and commitment, as well as the level of project management knowledge and experience among the clients. Poorly defined projects have previously been discussed by Hobbs and Besner (2016), who found that project definition was the most important predictor of project success (and thus value creation), and that internal clients in general performed worse than external clients on defining projects. Also regarding currency fluctuation, there are variables influencing value that are not controllable, but still identifiable in early phases.

4.6 Making value transparent

Much of the findings from practice, demonstrate the same traditional single project focus, which is criticized in literature (Kapsali, 2011; Shenhar and Dvir, 2007). This is exemplified by the strong focus on time and budget for example, forcing project manager to always prioritize current projects over all other value creating activities (e.g. strategic alignment and learning). In order to overcome this, a shift in focus toward future value creation of the company has been suggested (Andersen, 2014; Winter et al., 2006). Findings indicate that this is a desired and acknowledged approach in practice, but that it seems hard to implement. An increased customer focus in projects might be a first step. One suggestion of how to increase value creation is to impose relatively few mandatory requirements, supported by a well-developed governance structure (Eskerod and Riis, 2009). This is in line with the reasoning of the VP of projects, who mentioned the need to accommodate both diversity of projects, and project management approaches for value creation. Also there is a need of an added soft project management approach (as endorsed by e.g. Cicmil et al., 2006; Pollack, 2007; Winter et al., 2006). Adding to this is the importance placed on the fact that criteria of project success changes over time depending once again on the stakeholders and their subjective views (Turner and Zolin, 2012).

5. Transparency model

The literature overview suggests that an important aspect of incorporating value creation in project management is to place the project in its context and to work not only with the output — the product—but more importantly to make the outcome of the project more transparent —the benefits and outcomes achieved (cf. Bryde, 2003; Laursen and Svejvig, 2016; Shenhar et al., 2001). This is further supported and illustrated by the informants in the case PBO, in their examples of needs, and challenges ensuring successful projects. Therefore, this section elaborates on the parts that can make the work with value creation more transparent in a PBO.

In the literature, the value concept is described as multidimensional due to e.g. the stakeholder perspective. But the informants in the case PBO, provided each a somewhat unidimensional description of value, often associated with some aspects as keeping budgets, time-plans, or in relation to the company's production plan. However, the informants' aggregated description of the value concept (table 4) show a more multifaceted picture, including aspects such as learning and values related to benefits to both the client and the company. The aggregated value description also spans over different organizational levels and cover both a short and long-term time perspective. However, from a stakeholder perspective only the PBO, the client, and the company perspective were represented in the informants' illustrations. They were diverse in terms of *what* creates value but narrow in term of *for whom?* These descriptions of value indicate that discussing value within the PBO to achieve a mutual understanding of what constitutes value and value creation in the organization are of importance. Also, the informants somewhat narrow focus regarding how to relate value to different stakeholders further indicates a need to approach value from a wider perspective in order to include stakeholders beyond the project team and the client (see table 1), for example to understand different stakeholders perception of value (Davies, 2014; Eskerød et al., 2015). Therefore, a transparency model (figure 1) has been developed to provide guidance when discussing value in practice. To display a broader perspective on value creation, the model combine *hard features*, such as planning and output, with *soft skills*, such as learning (Andersen et al., 2006). Further, the model illustrates project success as dependent on both project management success as well as product success to emphasize that a relatively limited aspect of value is provided by the triple constraint.

As a core in the model, a process is used to illustrate the creation of value. Previous research has emphasized working with aspects of *how*, *what*, *why*, and *to whom* in order to deliver value in projects (Davis, 2014; Gillier et al., 2015; Patanakul and Shenhar, 2012). Therefore, the model includes the aspects of: project management (*how*), output (*what*), and project outcome (*why*), and combining this with different stakeholder perspectives (*to whom?*). The model also emphasizes the short as well as the long-term aspects of projects in order to reduce the dominant short-term focus on the triple constraint, often reported in research and in practice. This is illustrated by distinguishes project output from project outcome since it is important to understand the benefits generated by the project (Laursen and Svejvig 2016). In project management, a focus on product-creation includes the project management phase and the product delivered—the output. Thus, a focus on value-creation includes the realization-phase where stakeholders can experience and evaluate the value created—the outcome. Further, what constitutes value is not only dependent on the context and the perspective, but also on time (Shenhar et al., 2001). Time is thus highlighted in the model to

emphasize the importance of continually reviewing *value* not only in the planning phase, but also through the entire lifecycle of the project.

Value has previously been related to project success, and described as consisting of two parts; project management success and product success. But since a focus on the triple constraint is highlighted as the dominant way to evaluate success, it is an important aspect to include in the model. Further, by describing project success in two parts, both a short and long-term focus is included. Success has also been related to performance and the concepts of efficiency and effectiveness. These are included as they are separate but interrelated concepts related to success, and further highlight the existence of both short and long-term aspects of value.

The model further includes the early phases of projects, as these were found to be important from a context perspective. The case study findings indicated that work prior to project start, in the early phase, is of importance for delivering value in PBOs. But, that value is not being sufficiently accounted for in the early stages of a project, especially during problem identification, such as root-cause analysis. Although the realization of value primarily occurs after project completion, as described by for example Shenhar et al. (2001), the findings indicate that much of the work being done before project start both generate short-term value through activities such as prioritization and coordination, and influence long-term value by ensuring strategic alignment. The findings further suggest that PBOs can create, or contribute to creating value before a project has even started, as illustrated by the VP of Projects and the project manager in helping a client to revise the scope of potential project. Similarly, informants mentioned the importance of selecting projects, thus creating value to the company by prioritizing among all potential projects, and selecting the most important project to pursue. In the second example, value to the company is generated in early phases independent of any creation of output, as projects of lesser importance are identified and stopped. Hence, the importance of accounting for value in the early phases is outlined. Therefore, the model highlights the importance of work achieved in the early phases, which also previously has been emphasized in the project management literature, but with limited findings in relation to value-creation.

In the model, learning is included to emphasize the potential to generate value in projects, between projects, and from one project to the next, by working with improvements for example. The value generated and its relation to learning, and lessons learned, are to a large extent indicated to be managed through a capture and disseminate approach. Hartmann and Dorée (2015) describe that treating projects as islands is a dominant approach to learning in relation to projects. If projects are seen as isolated events (islands), one needs to capture the lessons from one project, and transfer them to other projects, in order to create company and strategic value (cf. Hartmann and Dorée (2015). Learning also emerges as a form of internal value as it potentially provides input to improving the project management process, thus indirectly contributing to increased stakeholder value.

Further, learning is treated as a separate activity, but to make learning happen, time is needed. Time available for learning is however described as limited and current projects always get prioritized since operations are evaluated based on time, cost, and scope (thus taking allocated time for learning). If learning instead was seen as a natural part of the operation, and if everyone valued sharing lessons learned, the barriers of taking time to learn might be decreased. An illustrative way to describe this is that learning is managed through a 'push-approach', in which senior management

initiates and implements learning activities and routines. But adopting a softer approach would involve greater emphasis on participation and underlying social processes that can involve all concerned, i.e. by adopting a 'pull-approach' to learning instead. In this pull-approach, the desire to share lessons learned is initiated not by senior management, but within the operation and organization, as given in the illustrative example concerning a forum for issues related to quality, environment, and working environment, where a *demand* for the sharing of experience existed. The example with the specific forum indicates that there are circumstances that can motivate employees to actively share lessons learned, as well as to learn together. Pursuing an approach that is focused on creating *pull* in the organization for activities related to learning, instead of *pushing* activities and routines downwards, can be a key to increase learning between projects, making it a more natural part of project operations, and moving beyond individual learning.

The increasing interest for value in project management can be one facilitating factor in order to achieve a pull-effect regarding learning, especially if the broadened view of value is adopted (cf. Brady and Davies, 2004; Shenhar and Dvir, 2007), emphasizing the strategic contribution (value) of projects. It might also support a holistic approach in PBOs, especially those operating as a subsidiary, changing focus from the individual projects, to the organization and how it creates value and contribute to customers (and parent company).

Finally, table 1 is suggested to be applied together with the model, since including a stakeholder perspective highlights the important to understand different perspectives on value. Engaged clients, but often missing, was indicated to be a key factor for successful projects according to the informants. This is also supported in the literature since the view of project success (i.e. experienced value) will differ among stakeholders and hence require engaged stakeholders throughout the project life cycle (Chang et al., 2013; Davis, 2014). However, previous research shows that engaging multiple stakeholders is not without risk. Inclusiveness increase the danger of losing focus on those stakeholders who possess the most critical resources for the project's survival and progress, and hence increase the danger of inducing stakeholder disappointment due to expectation escalation and impossibility of embracing conflicting requirements and wishes (Eskerød et al., 2015).

The findings on which the transparency model (figure 1) is based, i.e. value discussions in related project management literature and in the PBO-case, indicate three initial steps to increase value transparency when working with projects. Since the triple constraint is described as the dominant focus, the first step is to introduce a focus on value, i.e. what is meant by *value* in relation to ongoing projects? The case study findings regarding the informants' plethora of value descriptions (table 1) further support the need to establish what is meant by value. Secondly, as different stakeholders define value differently, and that value is time-specific and changeable, discussing different perspectives of value is suggested to be important in order to establish a mutual understanding between stakeholders regarding what constitutes value at any given time. The third step concerns the different roles and responsibilities of project stakeholders. As value related aspects such as project effect and the realization of value have been proven to be overseen or not realized, a revision and clarification of project roles and responsibilities regarding project efficiency and effectiveness is suggested.

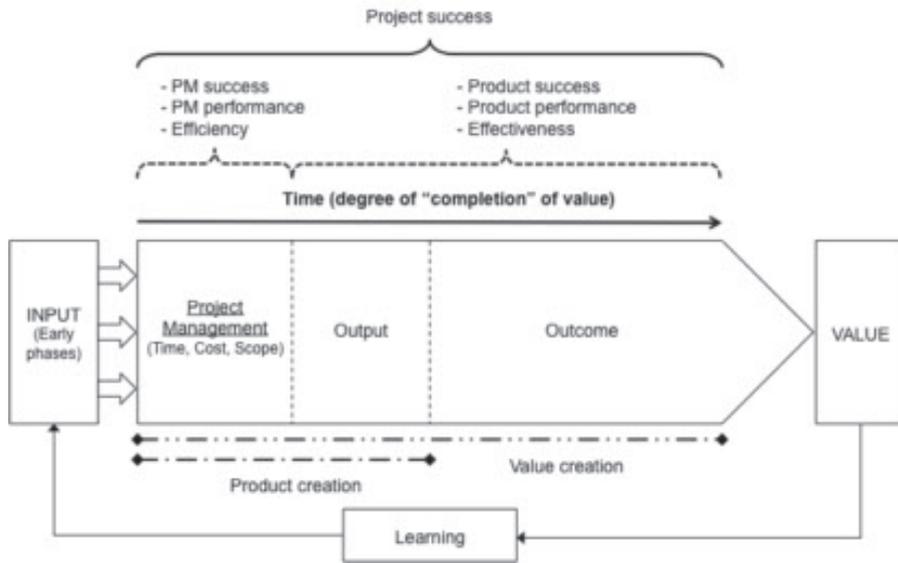


Figure 1: Transparency model, value creation process

6. Conclusions and recommendation

Previous studies emphasize a move from *product creation* to *value creation* (Winter et al., 2006), meaning that a modern project manager should focus more on future value creation of the company (Andersen, 2014). A way to work with value and achieve innovativeness and flexibility in project management is to adopt a systems thinking (Kapsali, 2011). This should be of special interest in project-based organizations operating as subsidiaries, due to their (direct or indirect) involvement in working in alignment with parent company strategy.

It should be noted that the results presented in this paper are primarily based on the perspective of one subsidiary PBO. Studying value creation in relation to projects from a client perspective would further enrich our understanding of how value is planned and created through projects. Similarly, testing the model would contribute to validate its usefulness in making value more transparent. Because of the multifaceted and time-dependent nature of value (Winter et al., 2006), the model should be tested in all stages of a project—before project start, during the project, at completion, and in recurring timespans after completion—in order to understand how project value develops over time, both in and from projects (Geraldi and Söderlund, 2016). To further build on the findings from Hobbs and Besner (2016) regarding variation in practice between projects with internal and external clients, and more specifically, projects with or without a clear contractual agreement, is considered to be of interest to further develop our understanding of value creation and variation in practice within project management.

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