Implementing strategy through PPM in an internal development department

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Abstract

The focus of strategy research has long revolved around strategy formulation rather than strategy implementation, despite the evidence indicating that intended strategies are rarely achieved. Project portfolio management, PPM, assumes a crucial role in enabling strategy implementation and can be regarded as a representation of the organization's actual pursued strategy. Existing research on PPM has predominantly centered around portfolios in the context of new product development, NPD, and research and development, R&D. However, there has been relatively less exploration of PPM within internal development departments, warranting further investigation. To contribute to the understanding on strategy implementation through PPM and its conditional factors, this qualitative case study expands the existing research by studying the PPM process within an internal development department. The study was conducted at the Business Improvement department, which oversees improvement projects for the service branch of EnergyComp, a company specializing in the development of complex energy solutions. Using an abductive research approach, a literature review was conducted in parallel with data collection and analysis. The empirical data was mainly collected through semi-structured interviews at the company, but also through meetings and company documentation.

The results of the study show that PPM actions connected to projects, portfolio and resource allocation are undertaken to effectively implement the organization's strategy within the internal development department. Common to all areas is the importance of accurate and available information that effects the decisions connected to strategy implementation. On a project level, Insufficient information poses challenges in accurately assessing project success, resulting in measurements that fail to cover all strategic objectives. In the context of the portfolio, the absence of project information and uncertainties can lead to a misalignment between the actual prioritization criteria employed in the selection process and the strategic objectives of the organization. Additionally, it may contribute to a less detailed and formal strategic plan. Furthermore, the cost associated with adjusting the portfolio is directly linked to the effort and expenses involved in obtaining project information. Regarding resources, insufficient information on supply and demand creates challenges in considering project dependencies and synergies during the evaluation of project groups. Moreover, limited transparency across functional boundaries within the organization leads to a system where decision rules cannot be established at the portfolio level. Instead, it encourages bottom-up priority decisions. Furthermore, a biased assessment by stakeholders in the functional departments may result in an inadequate screening process, leading to an increased workload in the portfolio structuring process. Finally, the large variation in project types, coupled with diverse impact targets spanning individual and multiple functions, makes it difficult to create relevant project categories for budgeting and portfolio structuring.
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<td>AHP</td>
<td>Analytical Hierarchy Process</td>
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<tr>
<td>KPI</td>
<td>Key Performance Indicator</td>
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<td>NPD</td>
<td>New Product Development</td>
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<td>NPV</td>
<td>Net Present Value</td>
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<td>PBO</td>
<td>Project Based Organization</td>
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<td>PM</td>
<td>Project Manager</td>
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<td>PMI</td>
<td>Project Management Institute</td>
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<td>PPM</td>
<td>Project Portfolio Management</td>
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<td>ROI</td>
<td>Return On Investment</td>
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<td>R&amp;D</td>
<td>Research and Development</td>
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<td>SPM</td>
<td>Strategic Portfolio Management</td>
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Chapter 1
Introduction

The introduction will start with a presentation of the background to then define the problem and introduce the case organization. The purpose of the study will then be presented along with the research questions for the study and delimitations. Lastly, a disposition is introduced.

1.1 Background

Project portfolio management, PPM, is what many organizations use to manage multiple projects collectively, with the aim of reaching strategic objectives (PMI 2013). PPM is, however, about more than just managing multiple projects, it’s about maximizing the effect projects have on the company’s success and welfare (Levine 2005). To do so PPM theory is concerned with, not only doing the projects right, but also selecting and doing the right projects (Levine 2005).

Doing projects right is what has long been at the core of project management and has traditionally been associated with meeting time, budget, and performance goals (Shenhar et al., 2001). These measurements of success have later been expanded to include measurements aligned with the organization’s short- and long-term goals (Shenhar et al., 2001), as well as to take organizational conditions and other projects into consideration, not treating the project as a “lonely island” (Engwall, 2003). A common issue affecting the success of projects is how the resources are allocated between the multiple projects, often associated with a lack of resources leading to reactive behavior or the so-called “resource allocation syndrome” (Engwall & Jerbrant, 2003). Furthermore, it has been concluded that organizations need to use a medium-term-resource-allocation plan to successfully couple the day-to-day planning with the strategic business (Hendriks & Kroep, 1999).

Doing the right projects is in turn related to the selection of projects. In new product development, NPD, portfolio management has been described as the endeavor of making strategic choices, including choosing markets and technologies to invest in, deciding on resource allocation and balancing the project mix (Cooper et al., 1999). When selecting projects or products there has been emphasis put on categorizing the projects by their intrinsic qualities (Engwall, 2003), such as process change and product change, and balancing the portfolio over these categories (Wheelwright & Clark, 1992). Engwall (2003) also argues for an expanded scope where projects are evaluated on an organizational level as well.

PPM is a set of business activities that integrates the world of projects with other business operations (Levine 2005). In the past, there has been a lot of effort put into doing projects right, disregarding if they are the right projects as a consequence of the disconnect between the projects function and other operations at the organization (Levine 2005). Disregarding the importance of the portfolio selection process can lead to approving of projects that do not deliver the promised benefits and to not consider factors, such as risk, synergies between projects, and alignment to strategy, that later effects project and business success (Levine 2005). PPM helps the organization move towards zero failed projects by both doing projects right...
right and doing the right projects, this includes not selecting the wrong projects and addressing projects in the pipeline that do not longer serve the organizations best interest (Levine 2005).

Theory on portfolio selection and optimization gained momentum in the 1950s and have since been the focus of the PPM discipline, including techniques such as scoring, mathematical programming and decision support systems (Hansen & Svejvig, 2022). In the 1960s, however, the limitations of mathematical and formalized models were starting to be questioned and more explanatory variables has since been introduced along with theories on how different selection models should be used in different contexts (Hansen & Svejvig, 2022). Furthermore, management-oriented concepts supporting the selection process has been incorporated into selection and optimization, such as multiproject interdependencies and risk management (Hansen & Svejvig, 2022). It’s first around year 2000 that strategy-oriented PPM began gaining ground, moving on from the traditional efficiency focus of PPM towards a focus on effectiveness, meaning that PPM should align with strategic goals of the organization (Hansen & Svejvig, 2022). Strategic alignment has become an important factor in the successful project portfolio (Meskendahl 2010; Martinsuo & Lehtonen 2007; Patanakul 2015) and the means of which the portfolio aligns with strategy is mainly through the portfolio selection process (Meskendahl 2010). The portfolio selection model, as painted up by Archer and Ghasemzadeh (1999), includes strategic consideration, project evaluation and project selection of new and ongoing projects. The process is constrained by factors such as available resources and organizational governance (Archer & Ghasemzadeh 1999), which therefore are factors to consider when setting up the selection process. Furthermore, organizational context and different practices of portfolio control has an impact on portfolio management framework (Müller et al. 2008), adding to the complexity that forms the conditions for a strategically aligned portfolio.

1.2 Problem definition

When creating a strategically aligned PPM system there are many aspects to consider as well as many sources for potential problems. One way of defining a successful project portfolio is one that maximizes financial value, links the project portfolio to the organization’s strategy and balances the projects of the portfolio with concerns to organization’s capacity (Meskendahl, 2010). Too many projects being attempted with too few resources and no apparent link to the organizations goals and strategies are just a few examples of common errors leading to a portfolio not meeting these success criteria (Englund & Graham 1999).

Successful single project management, or “doing the projects right”, is necessary but not sufficient for portfolio management success (Levine 2005; Martinsuo & Lehtonen 2007). Selection of the portfolio, or “Doing the right projects”, weighs in on the success of the portfolio too (Levine 2005). Since an organizations future in terms of structure, processes, and products is shaped by the sum of project investments, the project portfolio can be said to represent the actual pursued strategy of the organization (Kopmann et al. 2017). A strategic alignment of the project portfolio therefore ensures that the organizations strategy is being implemented and that way becomes the bridge between strategy formulation and implementation (Meskendahl 2010). By not ensuring the strategic alignment of the project portfolio the organization risks not reaching its objectives (Levine 2005). Meskendahl (2010) points out that implementation of strategy is more difficult than formulation and Mankins and Steele (2005) reports that only 34% of deliberate corporate strategies are implemented.
Furthermore, Cooper et al. (2000) mentions the missing link between strategy and project selection as one of six identified problems in PPM (Elonen & Artto 2003). These statements point out the importance of a strategically aligned project portfolio for reaching business success, while also indicating a great difficulty in doing so.

As claimed by Meskendahl (2010) the main emphasis of strategy research has been on formulation and not implementation. At the same time project portfolios are mentioned as a powerful tool for implementing strategy (Shenhar et al., 2001) and strategic alignment of projects has been argued to be best managed from a portfolio perspective (Kopmann et al. 2017). Furthermore, much of the literature done on PPM centers around management of technology and innovation and research and development, R&D (Elonen & Artto 2003), and thus explains common issues when creating a PPM process for these specific organizational contexts. Literature on PPM systems for departments concerned with internal improvement projects are however scarce (Elonen & Artto 2003). Müller et al. (2008) also hypothesizes how contextual characteristics moderates the effect that portfolio control has on portfolio success and points out the gap in literature addressing the contextuality of portfolio management.

This study aims at dealing with the implementation of strategy through PPM and doing so in the context of the internal improvement department, filling some of the gaps in the literature pointed out by both Elonen and Artto (2003), and Müller et al. (2008). The goal is to broaden the understanding of strategy implementation through PPM outside of NPD and R&D organizations and to map out issues faced when trying to align a project portfolio with strategy in the context of an internal development department.

1.3 Purpose and research questions

By studying the PPM process at an internal development department, the aim is to gain a broader understanding of common issues when trying to implement strategy within an internal development department through PPM. The study sets out to answer two research questions:

- What PPM actions are taken to implement strategy within an internal development department?
- What conditions make implementing strategy through PPM difficult within an internal development department?

By answering what PPM actions are taken to implement strategy within an internal development department, the intention is to have a base for finding the conditions that can influence these actions. The answers to both these questions will then help to reach the aim of gaining a broader understanding of the common issues when trying to implement strategy within an internal development department through PPM.

1.4 Delimitations

The PPM process has strong connections to strategy-making, as well as to individual project processes (Levine 2005). Though this study will encounter these areas, the aim of the study is not to investigate issues related to individual projects or to evaluate the strategy formulation process, but rather to investigate how strategy is implemented through project portfolio management of multiple projects.

This study focuses on the internal development department of one organization. This means that projects that are not part of the Business Improvement department portfolio will not be
considered. The investigation of strategy implementation will be limited to the studied department in question and issues that cannot be directly linked to the Business Improvement department and its project portfolio will not be discussed.

Since this is a qualitative study focusing on the PPM processes for one department the findings cannot be said to represent a general case, or even a general PPM process for the studied case company. Some case specific implications of the study might, however, be useful in other organizations with similar processes and issues.

1.5 Disposition

As depicted in Figure 1 below, the introduction will be followed by a Frame of Reference, including relevant theories and models used to address the purpose of the study. The Methodology, that explains how the study was conducted follows next. Moving on, the Empirical Data is presented. Based on the data, the Analysis then uses the frame of reference to answer the research questions. Finally, the answers are concluded in the Conclusion chapter, including implications and recommendations, as well as limitations and suggestions for future studies.

Figure 1 Disposition
Chapter 2

Frame of Reference

This chapter starts by defining project portfolio management, PPM, and by investigating what is meant by a PPM process being successful. It is then followed by a chapter on Strategy and PPM which includes a short explanation of strategy as a concept, how strategy can be connected to PPM, and conditions for strategic effectiveness. Next is a chapter on resource allocation which has ties to both strategy and PPM and, finally, a chapter on project portfolio structuring is presented to review frameworks and models used as means to implement strategy on a portfolio level.

2.1 Project Portfolio Management

PMI (2013) defines a portfolio as a group of programs, projects or operations that are managed collectively to reach strategic objectives. The portfolio components are further described as not necessarily being interdependent or having related objectives, but being quantifiable, meaning that they can be measured, ranked, and prioritized. Project portfolio management, PPM, is then defined as the coordinated management of portfolios to reach organizational objectives and strategies (PMI 2013). Martinsuo and Lehtonen (2007) further defines portfolio management as a dynamic decision process and emphasizes the task of resource management, while Turner and Müller (2003) describe the PPM role as uncertainty reducer. The practical definition of PPM by Blichfeldt and Eskerod (2008) contains activities related to screening, selection, and prioritization of project proposals, as well as the concurrent reprioritization of portfolio projects. On top of the portfolio structuring activities, Blichfeldt and Eskerod (2008) also regard allocation and reallocation of resources according to priority as a defining activity of PPM.

2.1.1 Project Management Success

Project management success has traditionally been measured by how well the project meets time, budget, and performance; sometimes measuring client satisfaction as well (Shenhar et al. 2001). Shenhar et al. (2001) added multiple dimensions to the project success measurement by introducing project efficiency, impact on the customer, business success, and preparing for the future as success criteria. As described by the Shenhar et al. (2001), the importance of different success criteria is affected by the technological uncertainty of the project - moving from lower to higher technological increases the importance of the prepare for the future criteria while lowering the importance of the project efficiency criteria.

2.1.2 Project Portfolio success

The benefit expectations from the above stated success criteria can, however, often only be reached if multiple mutually supportive projects reach their goals (Martinsuo & Lehtonen 2007). Furthermore, single project success cannot sufficiently explain successful project portfolio management (Martinsuo & Lehtonen 2007). Building on the research by Cooper et al. (1997), four dimensions that expands the understanding of project portfolio success beyond just single project success can be identified: the average success of the single project (measured by time, budget, quality, and customer satisfaction), synergies between projects, the portfolios strategic fit, and the portfolios balance (Meskendahl 2010). Martinsuo and Lehtonen (2007)
suggest similar measures for the project portfolio management efficiency being strategic alignment, balance across projects, and value maximization, while Kopmann et al. (2017) suggest five dimensions being: strategic implementation success, future preparedness, portfolio balance, usage of synergies, and average product success. In conclusion a portfolio that is both efficient and successful should therefore fit the strategy of the organization and implement strategy successfully, it should be well balanced and well prepared for the future, furthermore, it should include projects that are successful on an individual level as well as use positive synergies as to maximize the average value of the portfolio (Martinsuo & Lehtonen 2007; Meskendahl 2010; Kopmann et al. 2017).

In the model proposed by Meskendahl (2010), see Figure 2, project portfolio success depends on both the strategic orientation of the organization as well as the project portfolio structuring. The strategic orientation is explained by the organizations analytical, risk-taking, and aggressive posture, while the portfolio structuring consists of Integration, consistency, formulation, and diligence (Meskendahl 2010). Portfolio structuring is the process that in other literature may be referred to as portfolio selection or portfolio prioritization and follows Archer and Ghasemzadehs (1999) definition as a process of periodical strategic consideration, project evaluation, and portfolio selection of new and ongoing projects that meet the organizations objectives without violating relevant constraints, such as exceeding available resources (Meskendahl 2010), see chapter 2.3.1. As presented in the model, the project portfolio structuring process can be directly related to portfolio success (Meskendahl 2010; Patanakul 2022). The strategic orientation of the organization has influence on the portfolio structuring as well as a direct influence on the portfolio success (Meskendahl 2010).

![Figure 2 Model depicting the relationship between strategic orientation, PPM, and success adapted from Meskendahl (2010)](image)

Patanakul (2015) further enhance the understanding of PPM success by dividing the attributes of PPM effectiveness into two perspectives, namely strategic attributes, and operational attributes. Patanakul (2015) departs somewhat from Meskendahl (2010) and Martinsuo and Lehtonen (2007) and defines the strategic attributes as strategic alignment, adaptability to internal and external changes, and the expected value of the portfolio. The operational
attributes then add project visibility, transparency in portfolio decision making, and predictability of project delivery to the list of attributes associated with PPM effectiveness (Patanakul 2015). According to Patanakul (2022), effectiveness regarding all attributes should lead to both long-term and short-term success considering benefits or value, integrity, cohesion, and morals of the project organization. A closer look on the strategic attributes of PPM effectiveness will be presented in chapter 2.2 on Strategy and PPM below.

Project governance has also been shown to affect portfolio management success (Müller et al. 2008). According to Müller et al. (2008) governance through project, program and portfolio management is often implemented either as projects isolated from each other without synergies across objectives, projects grouped by joint objectives, program driven, projects grouped by resources needed, portfolio management driven, or combining and balancing program and portfolio management driven approaches, hybrid. Using a hybrid approach has been shown to be the significantly most successful approach, which emphasizes the importance of portfolio management with consideration of synergies (Müller et al. 2008). Furthermore, Korhonen et al. (2014) propose that the cooperation between project and portfolio managers in uncertainty management improves the success potential of PPM.

### 2.2 Strategy and PPM

In a few words strategy can be defined as a long-term direction of an organization (Johnson et al. 2017). This includes deliberate strategies as well as emergent strategies and can, according to Johnson et al. (2017), be described by three elements, namely: the long-term, strategic direction and organisation. The long-term points to the fact that most strategies are measured over long time periods, typically years, while strategic direction explains the trajectory of the organisation that can either emerge over time or, more typically, be set according to long-term objectives. Lastly the organisational element takes into consideration the internal and external relationships of the organisation, including managing governance and setting boundaries. A key in strategy management is to have a shared understanding of the organisations mission (or position), a set of quantifiable goals, overarching approaches by which the organisation achieves its ends and a specific plan on how to apply the means (Levine 2005). The strategy then can be defined as the approach and means by which the organisation meets its ends, while the specific plan on how to apply those means is what is considered to be the task of project portfolio management (Levine 2005). The formation of strategy can be divided into formulation and implementation, PPM then acts as the bridge in-between (Kopmann et al. 2017).

Kock and Gemünden (2019) state that implementation is the central problem to strategy. According to Diedrich and Lehtonen (2005) successful managing of strategic intention in an organization is the ability to manage the compliance to intended strategies (deliberate strategies) and can be complex due to the dynamic and abstract nature of strategy itself. Diedrich and Lehtonen (2005) measure a successful compliance to intended strategies as how well the objectives of individual projects are aligned with organizational strategy, how well the resource allocation over different projects is aligned with organizational strategy, and how well the project portfolio implements the strategy of the organization. The following subchapters will investigate theories behind strategic implementation in project portfolios, as well as resource allocation and its ties to PPM and strategy.
2.2.1 Conditions for Strategic Effectiveness

When assessing the strategic effectiveness of the project portfolio, there are three attributes to consider, namely, the organisation’s capability to form a portfolio aligned with strategy, that is adaptable to internal and external changes, and that is created with consideration of the expected value of the portfolio (Patanakul 2015). Internal changes can stem from individual projects and organizational complexity (Martinsuo et al. 2014) and could be uncertainties related to resource capacity and organizational capability (Korhonen et al. 2014; Patanakul 2015). Concerning the alignment of portfolio to strategy, it is shown to be positively associated with portfolio performance (Müller et al. 2008) and the portfolio level of management can also be argued to be the ideal level to facilitate effective strategic control (Kopmann et al. 2017). Patanakul (2015) suggests that the attributes of the PPM effectiveness could be the basis for determining the maturity of PPM practices regarding the degree of achieving both the operational and strategic goals of PPM. He suggests that such an approach, for instance, could be utilized for flexibility when developing and implementing PPM. Furthermore, Patanakul (2015) raises the issue of assessing the degree to which an organization conforms to the three attributes connected to strategic effectiveness (capability to form a portfolio aligned with strategy, adaptable to changes, and with consideration of expected value).

In assessing strategic alignment, Patanakul (2015) proposes regarding the project’s alignment to business strategy, whether the projects contain a detailed action plan supporting company direction, if prioritization among projects is done by expected business performance, and if resources are allocated to reflect the strategic direction of the company. Alignment to organizational strategy can, however, be made more complex when considering the possibility of multiple strategies. According to Martinsuo and Geraldi (2020), the fact that stakeholders and resources may have different priorities implies that project portfolios serve multiple strategies. A portfolio only serving one strategy is then a limiting and oversimplified view that, according to Martinsuo and Geraldi (2020), could be an explanation for the gap between strategy design and execution. This should be regarded when developing criteria and measurements for portfolio objects so that different categories of projects, or different portfolios, can be compared credibly, even though they adhere to different strategies (Martinsuo & Geraldi 2020).

Adaptability to internal and external changes can be assessed by whether business cycle changes and changes to organizational capability are taken into consideration when forming and managing the portfolio, if the portfolio contains a mix of projects with the potential of addressing risk and uncertainties, and if the project mix reflects the desired risk profile of the organization (Patanakul 2015). Regarding the last two assessment items, Patankul (2005) states that such a mix of projects can be attained through portfolio balancing. Considering risk, Teller and Kock (2013) suggest using a formal model for risk management that can help stakeholders of the portfolio both identify and understand risk, a process that in turn will have a positive impact on portfolio success (Patanakul 2022). As argued by Sweetman and Conboy (2018) the influence of business strategy on PPM can lead to high correlation between project outcomes and therefore result in a lack of diversity. And a system lacking diversity will not be able to cope with sudden changes in its environment (Sweetman & Conboy 2018). To survive such changes in the environment the diversity of the projects in a portfolio must match the complexity of the environment (Sweetman & Conboy 2018). Having higher amounts of diversity within the portfolio can however result in a need for more resources, and at the same
time it is argued that a scarcity of resources will drive self-organization, something that is encouraged in agile projects (Sweetman & Conboy 2018). Petit (2012) suggests using a requirement board for dynamic environments with constant scope changes. Such a mechanism assesses requests and determines projects that can best handle the task based on the ongoing projects in the portfolio. Instead of creating projects with a large set of features from the onset leading to the need of cutting down on features, projects can add features as the project progresses, a scope-in approach instead of a scope-out approach (Petit 2012). Such a working method resonates well with agile approaches as presented by Cooper (2016) where the scope becomes more flexible, while time and budget is fixed. These agile approaches lessen the up-front planning and reduces the need for change management effort downstream (Cooper 2016).

The expected value of the projects is not always easy to determine (Patanakul 2015). When basing the prioritization on expected value with such uncertainty, the prioritization process itself may become a source of uncertainty. According to Patanakul and Shenhar (2010) the understanding of expected value to the performing organization is important in the prioritization of the project portfolio and helps with the alignment with business strategy. Kock and Gemünden (2019) underscore the importance of assessing a project’s contribution to future projects and not only its direct outcomes. A project’s value should be considered short-term, long-term, and as the option-value it creates (Kock & Gemünden 2019). Such longitudinal interdependencies are often assessed for platform projects but are not a standard principle for whole portfolios (Kock & Gemünden 2019). Kock and Gemünden (2019) introduce two ways of lineage management, being proactive and reactive lineage. Reactive lineage management is about using information and knowledge from past projects, while proactive lineage management is about planning for future project generations. To support reactive lineage management, organizations can work with lessons learnt systems and team continuity, while proactive lineage management can be supported by road mapping practices and corporate foresight activities (Kock & Gemünden 2019).

To determine the expected value of a project or portfolio information is needed. It has been stated that high-quality information is important as an enabler or even a prerequisite for successful implementation of strategy in decision making (Diedrich & Lehtonen 2005). Martinsuo and Lehtonen (2007) even point out information availability for decision makers in the portfolio selection process as the most significant project-level factor for PPM efficiency. Both availability and comprehensiveness of information in the PPM process can, according to Teller et al. (2012) be improved by a more formalized and transparent project management and portfolio management process. Furthermore, Diedrich and Lehtonen (2005) state that organizations that are successful in managing their strategy initiatives evaluate and compare project ideas constantly when selecting new projects, as well as reviews the project portfolio in linkage with the strategy follow-up process in the organization. They also point out that a success factor in managing strategic initiatives is to have a common project management process, or project model, for most projects in the organization. Finally, Patanakul (2022) points out that it is necessary for the organizational structure to be aligned with informational requirements of the project selection process to implement PPM.

### 2.3 Resource allocation

Multi-project environments are described as both competitive and political (Engwall & Jerbrant 2003). Allocating resources in such environments is difficult and includes the important task
of coupling day-to-day planning of individuals to the long-term-business plan of the organization (Hendriks & Kroep 1999). Internal changes at a portfolio level may stem from uncertainty related to resource capacity and the ability to adapt to such changes is described as an indication of PPM effectiveness (Patanakul 2015). Problems connected to resource allocation includes issues with planning actions such as portfolio composition, planning and scheduling, but it also includes issues with in-action resource coordination (Engwall & Jerbrant 2003).

In a study by Hendriks and Kroep (1999), five elements vital to resource allocation in multi-project environments were found: Long-term-resource-allocation, medium-term-resource-allocation, short-term-resource-allocation, links, and feedback. The long-term-resource-allocation is based on the business plan of the organization and specifies the needs for each discipline over a longer period. To be able to make changes in the project portfolio for shorter time periods than long-term a medium-term-resource-allocation is needed to determine the project portfolio. This medium-term-resource-allocation has the long-term-resource-allocation as its main input, and an output in line with the short-term-resource-allocation. The medium-term-resource-allocation process results in the contents of the project portfolio, it also gives decision rules that are used to determine which tasks should be done in case of resource conflicts. Finally, a rough-cut-capacity-plan is done where resources are assigned roughly over the projects and is agreed upon by both project leaders and resource leaders. According to Patanakul (2022), a resource management process well integrated with the PPM process is desirable and should consider resource allocation and availability, review and rescheduling of resources, monitoring resource conflicts, communicating resource decisions, and reviewing performance of the project portfolio. The short-term-resource-allocation uses the rough-cut-capacity-planning as well as the decision rules to make up a day-to-day planning of the resources for the coming weeks and the need for interference of upper management is very limited (Hendriks & Kroep 1999). The resource-allocation for the different levels are then linked together, as shown in Figure 3 below, to assure sharing of information that is needed to make the right decisions and evaluation of input versus real effort works as feedback to make the allocation process better (Hendriks & Kroep 1999).

As described by Engwall and Jerbrant (2003) the “resource allocation syndrome” is common in multi-project organizations. In organizations showing sign of the syndrome portfolio
management is overwhelmed with issues regarding project prioritization and distribution of resources between projects (Engwall & Jerbrant 2003). Redistribution of resources then has a negative impact on other projects in the portfolio, forcing management to continuous short-term problem solving (Engwall & Jerbrant 2003). One underlaying mechanism that can cause these issues could be failing project scheduling (Engwall & Jerbrant 2003). When scheduling resources for multiple simultaneous projects, one project lagging could lead to the utilization of that resource not being possible in other projects, making the schedule of resources obsolete (Engwall & Jerbrant 2003). Such a problem could be decreased by using a dedicated team as proposed by agile practices (Cooper 2016), leading to a lower “project scatter factor”, meaning that fewer people are needed for a specific task (Hendriks & Kroep 1999). A low project scatter factor will increase devotion and efficiency of the work done within each project (Hendriks & Kroep 1999). A second cause for the resource allocation syndrome could simply be overcommitment, having too many projects (Engwall & Jerbrant 2003). Thirdly, the syndrome could be caused by dysfunctional management accounting systems incentivizing the wrong type of behavior (Engwall & Jerbrant 2003). Or finally, as an effect of opportunistic project management behavior, where a manipulation of the project is done to gain higher priority or by not sharing resources in fear of not being able to regain them (Engwall & Jerbrant 2003). Abrantes and Figueiredo (2015) further identifies inefficiencies connected to task switching, when resources are allocated to lower priority projects in wait for a new higher priority project, thus increases work in progress and delays later resource assignments. Another source of complications is the assignment of senior experts to projects to increase the likelihood of success, creating a bottleneck when multiple projects contend for the same resource (Abrantes & Figueiredo 2015). Abrantes and Figueiredo (2015) further argues that, in dynamic multi-project NPD environments, it is crucial to implement processes and information systems that enables the organization to quickly determine project progress, visualize different scenarios, explore resource management decisions, and understand chain effects throughout the portfolio.

Stettina and Hörtz (2015) then take the discussion of resource allocation to the realm of organizations concerned with multiple portfolios. According to Stettina and Hörtz (2015), having multiple portfolios within an organization might lead to an untransparent allocation of resources across projects, which can lead to complications when dealing with dependencies across portfolios. Keeping initiatives of all portfolios in sight is important since resources may be drained from one portfolio as they are prioritized for use in another portfolio. Stettina and Hörtz (2015) therefore suggest having a public prioritized list over all ongoing activities, making sure that incentive systems are not encouraging local optimization, as well as appointing a steering group that decide on priorities and resourcing on a regular basis.

2.4 Project portfolio structuring

Project portfolio structuring is a term to describe the process of strategic consideration, individual project evaluation, and portfolio selection (Meskendahl 2010). As proposed by Archer and Gasemzadeh (1999), a framework for such a process should be flexible enough so that methodologies and techniques can be chosen in advance by stakeholders. Furthermore, it is suggested that a formal approach to portfolio selection is followed (Meskendahl 2010). Such a process would follow reasonable and clear rules, rely on suitable and accurate data, adhere to explicit and objective criteria, be led by transparent and known procedures (Meskendahl 2010) and be applied on all current, as well as new projects, on a periodical basis (Archer & Gasemzadeh 1999). As proposed by Teller et al. (2012) a formalized PPM process increases
the PPM quality, and that way has positive effects on portfolio management success. Such formalization increases transparency, facilitates resource prioritization and allocation, and ensures clear responsibilities (Teller et al. 2012). This also means that cooperation between projects may be improved as the reasons for conflicts and resource bargaining are reduced (Teller et al. 2012). Furthermore, it has been shown that successful organizations have a reporting approach to channel information flows from projects to the project portfolio level (Müller et al. 2008). It has also been observed that purposeful evaluation and selection of projects leads to better results, as well as there being a correlation between utilization of specific methods and tools and superior performance (Diedrich & Lehtonen 2005).

2.4.1 Portfolio structuring frameworks

When deciding upon the process for portfolio structuring there is no model that fits all organizations and that can serve all the multidimensional interests of the organization (Müller et al. 2008). Frameworks for portfolio management should therefore take into consideration the organizational context as well as the different practices of portfolio control (Müller et al. 2008). There have been many frameworks and models created to guide the process of project portfolio structuring (Hansen & Svejvig 2022), in this chapter multiple different frameworks and models are introduced to later be further investigated and compared.

2.4.1.1 Framework by Archer and Gasemzadeh (1999)

Below, in Figure 4, the proposed framework for portfolio structuring by Archer and Gasemzadeh (1999) is depicted. In their model they have five major stages being: Pre-screening, Individual project analysis, screening, optimal portfolio selection, and portfolio adjustment. Strategy development and methodology selection, represented with ovals in the figure, are pre-process activities pointed out by Archer and Gasemzadeh (1999). They also include post-process stages in the lightly outlined boxes of the model. For the stage called optimal portfolio selection, Archer and Gasemzadeh (1999) suggests using a two-step approach, first considering the total benefit of the projects, then considering project interactions and constraints, such as resources.

Figure 4 Framework of portfolio structuring process adapted from Archer and Gasemzadeh (1999)
2.4.1.1 Framework by Spradlin and Kutoloski (1999)
Spradlin and Kutoloski (1999) has created a framework for portfolio decisions that is divided into five steps, as can be seen in Figure 5 below. The model starts with a categorization of the projects. Here it must be decided which projects are doomed, equivocal, or favored. If the decision maker for some reason perceives a project not able to be allocated resources or instead to be favored in a way that they will be pursued no matter what any analysis tells him/her, these projects will not be included in the following process. The projects that are included are the ones where the decision maker is undecided about future allocations. Next, alternatives are investigated for every project and put into an alternatives table. The alternatives could be to initiate a project directly, to stop a project, to delay a project, to increase resources for a project, or others. When the alternatives table has been created the portfolio strategy will be considered. According to different portfolio strategies, project alternatives supporting these strategies will be selected creating different portfolios. The different portfolios are then assessed asking if the stakeholders could and would pursue the portfolio, as well as testing them against predetermined criteria essential to the organization. Moving on, the alternatives present in the strategy table for the individual projects are evaluated by experts in the organization. These values are then used in the last step to evaluate the combined values of the portfolios. If a decision still cannot be done, the evaluation can be used as a basis for identifying key determinants of value for the different portfolios.

Figure 5 Steps in the decision model adapted from Spradlin and Kutoloski (1999)

2.4.1.2 Aggregate planning model by Wheelwright and Clark (1992)
Wheelwright and Clark (1992) created a model for planning the portfolio of NPD projects, called the aggregate project plan. In their model they propose the eight steps, as can be seen in Figure 6 below. The first step of Wheelwright and Clarks (1992) model is to define the project types. Wheelwright and Clark (1992) argue that the most useful dimensions to map development projects after are degree of change in the product and degree of change in the manufacturing process and they have created several types according to these dimensions, as seen in Figure 7 below. Other dimensions than the ones exemplified in the figure can, however, be used. When types have been decided, the existing projects are categorized according to set types. Then, needed resources and time is identified for each type and the existing resource capacity is established. Using a map over the project types and the information over need and existing resources, a desired mix of projects over the project types can be decided and the number of projects that can be supported by the resources is investigated. Lastly, all information from previous steps is used to decide which projects to pursue and work is done to improve the development capabilities of the organization.
2.4.1.3 **Framework by Cooper et al. (1997)**

In the framework by Cooper et al. (1997) two approaches to strategic alignment are presented, to build the strategic criteria into the project selection tools, and to use top-down strategy models. In the first approach Cooper et al. (1992) state that strategic alignment can be ensured simply by adding strategic questions to the scoring model used when selecting projects. Furthermore, strategic criteria can be used to weed out projects that do not align with strategy during project screening, as well as during gate meetings.

A top-down strategic model that can be used to ensure strategic alignment is the *Strategic Bucket Model*. This model starts with senior management deciding on how to divide resources over different dimensions that reflect the strategy for the business, creating “buckets”. Some strategic dimensions could be strategic goals, product lines, project type, geography, or familiarity matrix. After creating the buckets, a spending split for the different buckets is decided, and the projects can then be divided into the different buckets. By analyzing the gap between the budget for each bucket and the actual spending, decisions can be made on how to adjust the portfolio as well.
Another top-down model for strategic alignment is what Cooper et al. (1997) call Strategic Check. Instead of dividing the projects based on “buckets” as in the previous method, the projects are first ranked according to the organizations preferred method and then the resulting list is compared to business strategy to assure alignment. If there are gaps between strategic goals and the ranked list, changes can be made to assure strategic fit.

### 2.4.1.4 Models for portfolio structuring by PMI (2013)

In the standard for portfolio management by PMI (2013) they differentiate between defining a portfolio and optimizing the portfolio as two different parts of the portfolio structuring process. The process they call define portfolio include creating an up-to-date list of qualified projects, as well as organizing the projects into relevant groups and evaluating the projects. The step called optimize portfolio is then to optimize and balance the portfolio for optimal performance. One key aspect of portfolio optimization is to evaluate trade-offs between different portfolio perspectives, such as short-term against long-term objectives. Other aspects are to balance resources according to strategic priorities and to ensure inclusion of dependencies between projects.

PMI (2013) also points out important inputs to the portfolio structuring process being the strategic plan for the portfolio, a portfolio charter, a portfolio roadmap, and strategic change management. Some key contents to the portfolio strategic plan are, according to PMI (2013), a portfolio vision and objectives, measurable goals and guidance, and a portfolio prioritization model. All contents of the portfolio strategic plan should be aligned with organizational strategy. The model used for prioritization guides the decisions on which projects should be added to the portfolio and can include criteria that ensures the alignment to strategic goals. The portfolio charter is then described by PMI (2013) as the document that authorizes the application of resources to the portfolio components. The charter is what describes how value will be delivered to the organization through the portfolio. To do so the charter can include portfolio objectives, management roles and responsibilities, key stakeholders, portfolio justification, dependencies and risks. The roadmap is then what is used to communicate the connection between projects and strategy, to map out portfolio milestones and dependencies, and to identify risks and challenges. Furthermore, it can be used to map out priority of the portfolio elements over time. Lastly, strategic change management is the process of analyzing and reacting to changes in strategy. To help with the strategic change management, process stakeholder analysis and gap analysis can be used, as well as a readiness assessment to assess if the organization is ready to perform steps needed to bridge the gap between what is and what is to be.

### 2.4.2 Portfolio structuring steps

Based around the frameworks and models described in the previous chapter the coming subchapters will compare different approaches to portfolio structuring and their use cases under the categories of strategic consideration, project evaluation, portfolio selection and portfolio balancing.

#### 2.4.2.1 Strategic consideration

PMI (2013) provides guidelines on how the strategy used for the portfolio structuring process can be organized into a strategic plan, charter, roadmap and change management. The portfolio strategic plan is the basis for the portfolio strategy and should be created using organizational strategy and objectives (PMI 2013). The portfolio strategic plan includes, but is not limited to,
a portfolio prioritization model, it can also include more basic strategic guidance such as portfolio vision and objectives, and other strategic factors such as risk tolerance (PMI 2013). This strategic plan can then be used in helpful models such as the portfolio roadmap and to guide the selection of evaluation criteria that best support organizational strategy and objectives (PMI 2013). In the framework by Archer and Gasemzadeh (1999) strategy gets implemented in screening, selection, and adjustment. What sorts the projects in the screening process is, for instance, how well they fit the strategic focus of the portfolio, which are guidelines set during strategic development (Archer & Gasemzadeh 1999). Fitting to the framework of Archer and Gasemzadeh (1999), Cooper et al. (1997) lifts two general approaches to achieving strategic alignment that are connected to selection and adjusting the portfolio. One approach is to build in the strategic criteria into the project selection tools, and the other to use top-down strategic models. When building in strategic criteria into selection, certain criteria to evaluate the projects alignment strategy can simply be chosen to rank the projects and help with Go/Kill decisions (Cooper et al. 1997). These criteria can be used both for portfolio review and gate meetings and can be divided into “must meet” criteria, as well as “should meet” criteria used for prioritization (Cooper et al. 1997).

The Strategic Bucket model steers the selection of projects and could therefore be said to connect more to the selection stage of the portfolio structuring process, while the Strategic Check model instead ties to the adjustment of the portfolio. In the model by Wheelwright and Clark (1992) strategic consideration too comes into play in the adjustment of the portfolio as it is steered by the desired mix of project types. Wheelwright and Clark (1992) advocates for a mapping of existing projects to identify gaps in the existing portfolio when compared to the strategic objectives of the organization. The method by Spradlin and Kutoloski (1999) then connects strategy to the selection process as the strategic table is used as a basis for portfolio selection. Instead of comparing project types, Spradlin and Kutoloski (1999) advocates the comparison of different portfolio configurations that are the embodiment of different strategies. Below, in Figure 8, is an example of a strategic table that shows how different project configurations can be explored as part of different portfolios.

<table>
<thead>
<tr>
<th>Portfolio</th>
<th>Project A</th>
<th>Project B</th>
<th>Project C</th>
<th>Project D</th>
<th>Funding Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Momentum</td>
<td>Momentum</td>
<td>Momentum</td>
<td>Momentum</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>Momentum</td>
<td>Delay</td>
<td>Stop</td>
<td>Momentum</td>
<td>Borrow $100</td>
</tr>
<tr>
<td>3</td>
<td>Momentum</td>
<td>2x resources</td>
<td>License Out</td>
<td>Stop</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>Delay</td>
<td>2x resources</td>
<td>Momentum</td>
<td>Momentum</td>
<td>Sell Plant for $50</td>
</tr>
</tbody>
</table>

Figure 8 Strategic table adapted from Spradlin and Kutoloski (1999)

According to Archer and Gasemzadeh (1999) the strategies need to be set before the portfolio structuring process, but as seen in the models by both Wheelwright and Clark (1992), and Spradlin and Kutoloski (1999), methods can be used during the structuring process to investigate and compare strategies as well. Furthermore, Cooper et al. (1997) states that, even though strategic fit can be achieved through scoring models, the top-down approaches are the only methods that ensure a portfolio truly reflecting the organizational strategy.
2.4.2.2 Project evaluation

Evaluation of the individual project proposals and ongoing projects is an important step in multiple portfolio structuring frameworks. In the model by Archer and Gasemzadeh (1999) evaluation is done for project proposals after the initial pre-screening, as well as for ongoing projects, in combination with project gates or milestones as part of the portfolio adjustment process. The re-evaluation of ongoing projects is preferably done at the same time as new projects are considered for selection (Archer & Gasemzadeh 1999). Following the strategic bucket model proposed by Cooper et al. (1997) projects should have been categorized in different buckets before individual project evaluation, but whichever method is used for strategic alignment, or if there is none, a categorization of the projects in the portfolio is recommended (Englund & Graham 1999). In the model by Spradlin and Kudioski (1999) all projects are evaluated for all different project configurations present in the strategic portfolio alternatives. This means that the perceived value of a project will take into consideration variables of when, and with what resources, the project will be executed. Furthermore, project relations can be considered for this type of evaluation. As a basis for dependency evaluation the roadmap model, as described by PMI (2013), can be used to map out projects over time. Kock and Gemünden (2019) points out that a roadmap can be used to map out potential impacts or the necessity of exploratory projects as a basis for prioritizing decisions and that such proactive roadmapping activities will have a stronger impact on the portfolio performance when there are many exploratory projects in the portfolio. In the aggregate planning model by Wheelwright and Clark (1992) the focus of evaluation is on resources and time. Here, the evaluation of projects is not done to put projects in a prioritized order but to map out the total spending on project types.

According to Archer and Gasemzadeh (1999), individual project evaluation can be done using methods that are situation dependent, however, the projects should be evaluated using a common set of measures. Englund and Graham (1999) points out that the criteria can be set different over different project categories or groups, but that it is important that the criteria for assessing the projects are set before discussing the projects and not the other way around. These criteria should be expanded towards broader business objectives to achieve portfolio-level results (Martinsuo & Lehtonen 2007) and be identified as the criteria with highest significance to the organization (Englund & Graham 1999). According to Levine (2005) the evaluation process should address project values and benefits, estimated costs, an appraisal of risk in achieving these benefits, resource availability and allocation, and an idea of the optimum or acceptable size of the portfolio. Cooper et al. (1997) does, however, point out the difficulty in providing data that supports the degree of precision that is implied in many of the portfolio evaluation models. Englund and Graham (1999) suggest that a thorough description of each criterion is made to ensure the understanding of expectations of what data must be supplied to fulfill it. They also suggest that a pairwise comparison is done to the criteria, that way prioritizing and putting a weight to the different criteria.

A primary evaluation criterion often used is return on investment, ROI (Levine 2005). Levine (2005) does, however, press on the fact it cannot be used alone, but must be accompanied with factors such as alignment with the strategic plan, balance between different types of projects, effective use of resources, risk, and nonfinancial benefits. As stated by Englund and Graham (1999), all projects should not have to promise a high financial return as it diminishes cooperation across the organization and since some projects have greater strategic value than

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monetary value. Consideration of some of the factors do, however, not have to be done in individual evaluation, but could be done in other parts of the selection process or adjustment of the portfolio as will be shown in coming chapters.

In advance to the evaluation of individual projects, Archer and Gasemzadeh (1999) states that there should be a screening process to eliminate clearly deficient projects. Some screening criteria could be meeting a marginal requirement regarding internal return rate, not matching strategy, or simply lacking sufficient information to base decisions upon (Archer & Gasemzadeh 1999). Englund and Graham (1999) also points out that when gathering data for new projects they should be funded just enough to be able to determine feasibility.

2.4.2.3 Portfolio selection

Using the evaluation criteria created in the previous step of the portfolio structuring process, the portfolio selection can be done. When selecting projects for the portfolio, the evaluation criteria are used to compare and rank the projects using a preferred selection technique (Archer & Gasemzadeh 1999). Project interactions through dependencies and resource competition must be considered, as well as the time-dependent nature of the consumption of project resources (Archer & Gasemzadeh 1999). There should also be a possibility for decision makers to adjust the selected portfolio, as the system is there to assist decisions, not to make decisions (Archer & Gasemzadeh 1999). Furthermore, the number of projects should be considered since the number of selected projects impacts the number of projects that get completed (Englund & Graham 1999). As stated by Henriksen and Traynor (1999) the purpose is not to encourage a portfolio of many small projects, but to promote cost effectiveness and maximum utility.

In the model by Archer and Gasemzadeh (1999) the selection process is divided into two stages, where the first stage is for determining relative total benefit for the portfolio and the second stage is for optimizing the portfolio when considering project interactions, resource allocation, and other constraints that act upon the portfolio. If the portfolio handles smaller sets of projects, Archer and Gasemzadeh (1999) suggest using a comparative method for prioritizing the projects. Examples on such comparative methods are Q-sort, pairwise comparison, or AHP. In these methods the weights for the criteria are set first, then each project is compared to every other project to decide how well they contribute to the objective that is the criteria (Archer & Gasemzadeh 1999). Englund and Graham (1999) points out that using such a method for all projects in the portfolio is not fair, instead projects should be separated into their respective categories during these procedures. If the portfolio handles large sets of projects Archer and Gasemzadeh (1999) instead suggest using scoring methods to prioritize the portfolio. As pointed out by Henriksen and Traynor (1999) there have been various forms of scoring techniques in the literature since the 1950’s and they are mainly appropriate when there is a low degree of interdependence between projects. Here, the projects are given a score with regards to each criterion that are then combined using a weighting factor to yield an overall benefit measure for each project (Archer & Gasemzadeh 1999). It is important that each scoring level is clearly defined to make sure that there is a consistent evaluation of each project (PMI 2013). PMI (2013) also states that mandatory criteria deserve particular attention so that regulatory or operational requirements are ensured to be included in the final portfolio. Spradlin and Kutoloski (1999) instead argues for mandatory projects to be set aside even before the prioritization as part of “framing the problem”.

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In the second stage of Archer and Gasemzadeh's (1999) selection step, project interactions, resource limitations, and other constraints are included for optimization of the portfolio. As stated by Archer and Gasemzadeh (1999), it might be tempting to just select the highest valued projects from the first stage until resources have run out. Such a method would however not ensure that an optimal portfolio has been selected since a combination of lower rated projects could be valued higher than the top-rated projects selected in order (Archer & Gasemzadeh 1999). According to Chien (2002) synergistic portfolio attributes can only be measured when preferences among alternative portfolios are considered. Spradlin and Kutoloski (1999) handles this issue by comparing combinations of projects and project configurations in different portfolios with the strategic table. That way project interactions and other constraints gets baked into the comparison and the portfolio/portfolios with the overall best value gets selected.

If the organization works with projects gates it must be taken into consideration when designing the selection process since, according to Cooper et al. (1997), there can be a conflict between portfolio selection and gate decisions, although they should both be working well and be integrated and harmonized. An organization should not rely on only one of the processes for prioritizing among projects and resource allocation decisions cannot be dedicated only to portfolio reviews (Cooper et al. 1997). Flechas et al. (2019) also points out that there is a difference between selection methods better used for managing risk and for managing uncertainty. According to Flechas et al. (2019) the methods better suited for managing risk is also better used in incremental innovation projects and that methods appropriate for managing uncertainty are better suited for radical innovation projects. Furthermore, information availability for the decisionmakers should be reviewed for the selection process since it, according to Martinsuo and Lehtonen (2007), is the most significant project-level factor for portfolio management efficiency.

2.4.2.4 Portfolio balancing
As described by Archer and Gasemzadeh (1999) the adjustment of the portfolio should be done to balance the projects of the portfolio. For instance, it can be done to favor projects that are under-represented but still desirable (Cooper et al. 1997). Carefully considering the long-term projects needs to be done since firms tend to select easy and short-term projects (Meskendahl 2010; Archer & Gasemzadeh 1999). The overall timing of projects also has an impact on cash-flow, a factor that should be considered during portfolio balancing (Martinsuo et al. 2001). Other dimensions to balance the portfolio over are risk versus reward, ease versus attractiveness, by project type, market, product line (Cooper et al. 1997), and project size (Archer & Gasemzadeh 1999). By having too many high-risk projects the organization is subject to danger by the fact that several projects could fail (Archer & Gasemzadeh 1999). Too many low-risk projects could, however, mean a return on investment that is too low (Archer & Gasemzadeh 1999). Having all resources bound in few but large projects can also be dangerous if multiple projects fail, and too many long-term projects could have negative impact on cash flow (Archer & Gasemzadeh 1999).

Tools for aiding the portfolio balancing process are, for instance, various charts that can visualize the projects stance in the chosen dimensions (Cooper et al. 1999). In NPD it has been recommended to categorize projects by process change versus product change, resulting in breakthrough, platform and derivative projects, over which a mix can be chosen according to business strategy (Wheelwright & Clark 1992). Cooper et al. (1999) recommends the usage of
an NPV versus Probability of Technical Success bubble diagram for businesses that are financially driven, and if the financial projections for the new products are fairly predictable. PMI (2013) further suggests aiding the balancing process by performing capability and capacity analysis’s as well as quantitative and qualitative analysis’s, such as a SWOT-analysis and a probability analysis.

2.5 Model of Analysis

The aim of this study is to gain a broader understanding of common issues when implementing strategy within an internal development department through PPM. To reach this aim, the study is first interested in the PPM actions taken to implement strategy and then the conditions that effect these actions, as can be seen in Figure 9 below.

This study recognizes that strategy implementation can be assessed over the three areas mentioned by Diedrich and Lehtonen (2005), being, project level, portfolio level, and resource allocation. Using the theory on success criteria for the project portfolio, as described in chapter 2.1.2, this study aims at identifying PPM actions related to the project level. The resource allocation model by Hendriks & Kroep (1999) is then used to identify actions related to resource allocation and the frameworks, and models on portfolio structuring in chapter 2.4 are used to identify PPM actions related to the portfolio level. Among the portfolio structuring frameworks, the one by PMI (2013) provides a formal approach to structuring that connects the formulated strategy to the strategy implementation through inputs such as the strategic plan. The framework by Archer and Gasemzadeh (1999) along with the framework by Spradlin and Kutoloski (1999) explain different approaches to portfolio evaluation and selection, and
Cooper et al. (1997) then provides three different models for strategic consideration that can be used in conjunction with the other frameworks. Portfolio adjustment is mentioned in the frameworks by Archer and Gasmazadeh (1999) and Cooper et al. (1999), but a more detailed example, through portfolio balancing, is given in the aggregate planning model by Wheelwright and Clark (1992).

To identify conditions that effects the PPM actions, the conditions for strategic effectiveness from chapter 2.2.1 are used, including the attributes described by Patanakul (2015). Furthermore, the theories by Engwall and Jerbrant (2003), Abrantes and Figueiredo (2015) and Stettina and Hörtz (2015) are used to identify conditions connected to resource allocation for single, and multiple, portfolios.
Chapter 3

Methodology

Research is the act of investigating something in a systematic way (Merriam & Tissdell 2016). In a business context, research is a truth-seeking function used to gather, analyze, and interpret information so that decision makers become more effective (Hair et al. 2007). Research can then be divided into basic research, used to extend the knowledge on a particular interest, and applied research with its intent to improve the practice of a particular discipline (Merriam & Tissdell 2016). Some forms of applied research are action research and appreciative inquiry. Action research focuses on addressing a specific problem occurring in a practice-based setting, such as an organization, while appreciative inquiry is used to highlight positive occurrences in organizations (Merriam & Tissdell 2016). This study aims at improving the practice of a particular discipline, PPM, and can therefore be considered applied research. The study is a form of action study that will focus on the specific issue of aligning a project portfolio with corporate strategy and the following subchapters will further describe how it was chosen to be done.

3.1 Qualitative versus quantitative research
As explained by Merriam and Tissdell (2016), Experimental and survey-based research methods are often used to determine the cause of an event or to describe a phenomenon and are commonly grouped together as quantitative research designs since they usually are presented in numbers answering questions such as “how much?” and “how many?”. A qualitative research design, on the other hand, they describe as being more interested in understanding an experience and does more often use words as data rather than numbers. A researcher conducting qualitative research tries to make sense of a phenomenon in its natural setting in terms of the constructed meaning people give to it. Characteristic to the quantitative research design is also the central role the researcher plays in being the main instrument for both collection and interpretation of data. Furthermore, Merriam and Tissdell (2016) explain, quantitative research is characterized as an inductive process since the researcher builds up theories, concepts or hypotheses based on gathered data rather than testing existing hypotheses, as done in deductive studies.

A qualitative research method was chosen for this study since the research questions were perceived to best be answered using qualitative data. The study was not set out to answer any quantitative questions, but rather to make sense of the PPM process in a specific context through the expressed experience of relevant stakeholders, building an understanding of the process.

3.2 Types of Qualitative research
There are many types of qualitative research designs and no consensus on how to classify them, Merriam and Tissdell (2016) does however describe six common designs that are used: basic qualitative research, phenomenology, grounded theory, ethnography, narrative analysis, and qualitative case study. The interests of a basic qualitative research would be people’s interpretation of their experiences, how they construct their world and the meaning that is given to their experiences with the purpose of gaining an understanding of how people make sense
of their experiences. All qualitative research designs are concerned with these interests, but other types of qualitative research add additional dimensions. Phenomenological studies add the dimension of understanding and depicting the essence of the underlying structure of a phenomenon and can be well suited for studying affective and emotional human experiences. Ethnography is originated in the field of anthropology and focuses on human society and culture. Grounded theory differentiates from other qualitative research types in its focus on building theory and is useful for handling questions regarding process. The goal of the research design is to identify patterns in the data that can be arranged to build a grounded theory. Narrative Inquiry is a form of qualitative research that uses stories as data and tells first person accounts of experience in story form to create an understanding of human experience. Qualitative case studies differentiate from other qualitative studies in multiple ways. One way that qualitative case studies can differentiate is by sometimes mixing qualitative methods with quantitative methods. “Pure” qualitative case studies do, however, differ in other ways, such as being an in-depth description of a bounded system. A situation suited for using such a study is for instance when variables of the phenomenon studied are impossible to separate from the context in which they reside.

Merriam and Tissdell (2016) concludes that the most defining characteristic of a case study is how it delimits the objects that is studied (the case). This means that it is the unit of analysis that characterizes a specific case study and not the topic of investigation (Merriam & Tissdell 2016). There are, however, critique aimed at the case study design for being too situation specific, meaning that it is not appropriate for generalization (Dubois & Gadde 2002). Hair et al. (2007) also points out that the method is mainly used for creating hypothesis rather than testing them. Since the case study is defined by its unit of analysis other types of studies can be combined with this research design (Merriam & Tissdell 2016). They can also be conducted as historical case studies, studying the history of an organization, for instance, and as a comparative case study, comparing data from multiple cases (Merriam & Tissdell 2016). Along with personal interviews, data in qualitative case studies is typically obtained from focus groups and/or company histories (Hair et al. 2007).

For the present study a qualitative case study was an obvious choice since it is the unit of analysis, the internal development department, that characterizes the study. One could imagine that a grounded theory approach could be used to investigate the subject and build theories around strategy alignment within internal development departments. The aim of the study is, however, not to build new theories, but rather to make use of existing theories and make extinctions for the specific case organization. Using multiple cases in a comparative case study could be done to further establish common traits and make the study more appropriate for generalization. A comparative case study could, however, mean more data being gathered and processed leading to an increased workload and was thereby not chosen for the present study.

3.3 Abductive research

As mentioned earlier, a study can use a deductive study approach, or as often is the case for qualitative research, an inductive study approach (Merriam & Tissdell 2016). A deductive approach is used to develop propositions from available theory so that they are testable in the real world while the inductive approach instead uses collected data to generate theory (Dubois & Gadde 2002). As Novikov and Novikov (2013) Explains it, induction is the act of inference from multiple particular objects to a common conclusion, that is, going from separate facts to
a generalization. Deduction instead goes the other way around, from common to particular, from generalizations to particular conclusions (Novikov & Novikov 2013).

As described by Dubois and Gadde (2002), the abductive study approach expands the researchers understanding of both theory and empirical phenomena by going back and forth between different research activities and between empirical observations and theory through “systematic combining”, see Figure 10. They further explain that the abductive research approach is similar to the inductive approach as it is concerned with creating new concepts and theoretical models and not confirmation of existing theory. It is however shaped more towards refinement of existing theories than invention of new ones. What also makes the abductive approach different from both the inductive and the deductive approach, Dubois and Gadde (2002) explain, is the evolving framework. As a result of both unanticipated empirical findings and theoretical insights gained during the study the original framework is modified to better suit the study.

The present study uses an abductive research design since the aim is to both explore a case using existing theory, as well as refining the existing concepts for the specific setting. Following the abductive approach unanticipated empirical findings could help shape the framework and that way lead the exploration. In this study, findings during interviews led the author to explore new topics through scientific articles and that way expand the theoretical framework guided by empirical data. In the same manner, theory expansion led the author to adjust the questions asked during interviews and what empirical data the author searched for. Furthermore, the purpose and research questions changed as the author’s understanding of strategy implementation through PPM became greater.

### 3.4 Literature review

A theoretical framework is the underlaying structure of concepts and theories that inform the study and no study can be done without some question being asked with a theoretical orientation (Merriam & Tissdell 2016). To identify and establish a theoretical framework for a qualitative study one way is to review relevant literature (Merriam & Tissdell 2016). In this study a literature review was done to build up a framework and, following the abductive model explained by Dubois and Gadde (2002), was further evolved throughout the whole research
process by going between empirical work and theory. According to Hair et al. (2007) a literature review should start with the clarification of one’s research questions and objectives for the study. After collecting relevant literature, reviewing the information, writing the initial literature review, and identifying gaps in the literature, the research questions and objectives should be re-examined and redefined.

Following the guide by Hair et al. (2007) the literature review for this study began by clarifying the research questions and objectives. Along with an examination of the problem background they became the foundation for the literature search. In the beginning literature previously examined by the author in management courses taken at Linköpings University was reviewed. By examining common references among the literature combined with relevant free text searches on Linköpings University’ library database and Google Scholar important articles and books on the topic could be found. Especially useful was the literature review by Hansen and Svejvig (2022) that categorized PPM literature by concepts that was used by the author to identify some of the critical articles on the topic. Through interviews with stakeholders in the studied organization and discussions with a supervisor at the organisation, categories were created for the theoretical framework. The categories were strategy, dynamic PPM, project selection, resource allocation, organization and governance, problems and solutions, and others. The literature was then put into the different categories and by assessing the amount of literature in each category an indication was given of what categories needed to be further investigated. The literature of each category was then ordered in a prioritized list by assessing the relevance of each article by reading the abstracts and glancing through the pages. The theoretical framework was then built by reading the articles in the prioritized order, sometimes reviewing literature referred to by the articles, as well as gathering theory based on findings during data collection. Using an abductive approach, as described by Dubois and Gadde (2002), as well as a guide over literature review by Hair et al. (2007), the research questions and objectives were re-examined simultaneous to the theoretical framework writing, along with re-examination of the problem background, leading to the identification of gaps in the literature, redefinition of research questions, and collection of additional literature.

### 3.5 Case organization

The case organization being studied is anonymous and will be called the “Business Improvement department” at “EnergyComp”. The company, EnergyComp, is a well-established organization with many years of experience in making complex energy solutions, where the Business Improvement department is part of the service branch at the company. The Company organization is divided by function, such as M&S and R&D, with focus areas working over the function boarders and the Business Improvement department fits the description of what can be called a project management office, PMO. The department mainly consist of project managers leading business development projects with the prime goal of reducing costs within the organization.

The project portfolio is decided upon by the upper management group, which is a group of representatives from the different functions, including the Head of the Business Improvement department and the Head of the Service Branch among others. The individual projects are then assigned to the project managers by the Head of the Business Improvement department. Project managers are expected to set up a project plan and make sure that there are available resources. Depending on the type of project these resources can almost be scattered around the entire
company and a single project typically ties together resources from many different functions. The resource owners, who make resource allocation decisions, are situated in the different functional departments.

The Business Improvement portfolio is divided into four sub-portfolios according to strategic focus areas. For every sub-portfolio a portfolio owner is designated to hold portfolio related discussions with stakeholders in the different functions. The portfolio owners also have the responsibility of making an initial portfolio proposal that is used by the Head of the Business Improvement department for the final portfolio that includes the sub-portfolios. For the last couple of years, the PPM process, as well as the Business Improvement department, have undergone many changes and the Head of the Business Improvement department is working on improving the process.

The author was in contact with the case organization before the purpose for the thesis was decided. As the department works with internal improvement projects and not NPD and R&D it made the context for its PPM process different from many of the case studies done on PPM and therefore the purpose of the study was set to match this case.

3.6 Data collection
Data was collected from three different sources: interviews, PPM meetings, and the organizations intranet. Before conducting the semi-structured interviews, a pre-study was done to gain an understanding of the organizational structure, relevant processes, and challenges connected to the PPM process. During the pre-study the author held unstructured interviews with multiple stakeholders within the upper management group, the Head of the Business Improvement department, as well as project managers. Going between literature review and empirical pre-study, the problem background was built, and the purpose of the study was decided upon.

3.6.1 Semi-structured interviews
Interviews can be categorized by the amount of structure. Following the categorization by Merriam and Tissdell (2016) there are highly structured interviews, semi-structured interviews, and unstructured interviews. The semi-structured interview uses an interview guide that includes both more and less structured questions to guide towards issues to be explored, questions are used flexibly, and the order does not have to be predetermined (Merriam & Tissdell 2016). Using the semi-structured interview approach the researcher is allowed to respond to the situation and follow new ideas on the topic, as well as collect data that is unique the interviewees experience (Merriam & Tissdell 2016). Using the semi-structured approach also provides a balance between openness and structure, though the result of the interview depends on the performance of the interviewer (Gillham 2005).

The semi-structured interview design was chosen for the study since it allowed for collection of unique qualitative data, while allowing for exploration that was assumed to be beneficial when working with an abductive research approach. Using the information gained during the pre-study and literature review, an interview guide was created to capture important knowledge connected to the process steps in the PPM process (see Appendix 1). The questions in the interview guide were grouped as questions regarding strategy formulation and evaluation, organization, PPM process, and project level. Questions grouped as strategy formulation and evaluation and organization were designed to be asked to the upper management team, while
questions grouped as *PPM process* were aimed at the Head of the Business Improvement department, and *project level* questions were designed for the project managers. The data gathered during the interviews were simultaneously transcribed and analysed, leading to new questions to be asked during remaining interviews to fill gaps identified during the analysis.

Based on the questions in the interview guide a discussion was held with the Head of the Business Improvement department regarding which stakeholders to interview. Table 1 below shows the interview participants role in the PPM process and the duration of the interviews, some were interviewed multiple times (Head of the Business Improvement department and Head of the Service Branch are also members of the upper management team). To be able to go through the interview guide with each interviewee the initial time plan was 45-60 minutes per interview, though some adjustments had to be made to fit with the interviewee’s schedules. Interviews were held both at the company site in person, and via video call.

Table 1 Interview participants categorized by role and their respective interview duration/durations

<table>
<thead>
<tr>
<th>Role</th>
<th>Interview duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head of the Service Branch</td>
<td>34min</td>
</tr>
<tr>
<td>Head of the Business Improvement</td>
<td>55min</td>
</tr>
<tr>
<td>department</td>
<td></td>
</tr>
<tr>
<td>PM 1</td>
<td>1h 17min + 55min</td>
</tr>
<tr>
<td>PM 2</td>
<td>42min</td>
</tr>
<tr>
<td>Upper management team member 1</td>
<td>44min</td>
</tr>
<tr>
<td>Upper management team member 2</td>
<td>49min</td>
</tr>
<tr>
<td>Upper management team member 3</td>
<td>36min</td>
</tr>
<tr>
<td>Upper management team member 4</td>
<td>43min</td>
</tr>
</tbody>
</table>

3.6.2 Meetings
The author attended 15 meetings that were part of the PPM process at the studied organization, as well as some project review meetings, department meetings for the Business Improvement department and meetings with the Head of the Business Improvement department. Through attending the meetings, the author could observe how the PPM process was conducted and that way identify actions that might not have been revealed through interviews alone. Issues identified by the author during the meetings could be further investigated during the interviews and issues explained during interviews could be further investigated during the meetings. Information received during meetings that was perceived as useful by the author, was noted in a word document to be analyzed along with the transcribed interviews.

3.6.3 Intranet
During the study the author had access to the organization’s intranet allowing for information gathering. Information that was used from the intranet was mainly organizational charts, routine documents, project models, and strategic documentation. Information gathered from the intranet is mainly to be considered secondary data used to aid and complement the interviews.

3.7 Data analysis
Data analysis is the process of making sense of the collected data, it is the act of arranging material, developing categories and themes that interpret the meaning of the data (Merriam &
Lancaster (2004) lifts four terms that are closely related to the purpose of analysis, namely, concepts, theories, explanations and understanding. The author explains the terms as following:

- **Concepts:** Analysis often aims at developing concepts for how we think about certain issues or subjects.
- **Theories:** Analysis can also aim to explain something.
- **Explanations:** A form of analysis that seeks to explain why things are the way they are.
- **Understanding:** The development of explanations that seek to develop and underpin knowledge of the meaning of issues, a subject area, or a research problem.

Hair et al. (2007) further emphasizes the close relation of data collection, analysis, and theory and how data analysis is a “loop-like” process. The following subsections describes the steps involved in data analysis and how validity can be assured.

### 3.7.1 Steps in data analysis

In a model by Miles and Huberman (1994), see Figure 11, the steps in qualitative analysis are displayed as **data collection, data reduction, data display,** and **conclusions: drawing/verifying.** Preceding these actions, Merriam and Tissdell (2016) calls for three additional steps. The first step is to acknowledge the purpose of the study. Secondly the epistemological framework should be considered, and the work should be studied through that lens. Finally, the data should be coded focusing on patterns and observations that can be related to the research questions and the purpose of the study. Guiding this process is the theoretical framework and one way of coding the data is by reading the data set, assigning main themes to the different parts of the conversations (Merriam & Tissdell 2016). Coding can be defined as the assignment of meaningful values that facilitates understanding of the data and results in enabling the linkage between data and topics, themes, ideas, and concepts that, furthermore, allows the data to be categorized (Hair et al 2007). Although the analysis follows coding, Saunders et al. (2019) points out how, in practice, analysis and coding will be done simultaneous to data collection, and as can be seen in the model by Miles and Huberman (1994) conclusions from the data display and data reduction are used to guide new data collection.

![Figure 11 Model showing the steps of the qualitative analysis and their relations adapted from Miles and Huberman (1994)](image-url)
Following the model by Miles and Huberman (1994), *Data reduction* is the act of selecting, simplifying, and transforming the data, making it more understandable and manageable (Hair et al. 2007). Resting on the predetermined research questions initial decisions are made, the researcher does, however, continue to seek new meanings and relationships (Hair et al. 2007). *Data display* is the process of organizing the information in a way that facilitates drawing conclusions (Hair et al. 2007). Organization can be done through extracting higher order themes or patterns that could, for instance, be diagrams that links together several themes and develops explanations that relate findings to existing theory (Hair et al. 2007). Two main themes of data display are matrices and networks (Saunders et al. 2019). Matrices are typically made in tabular form with columns and rows, where data is put into appropriate cells, while networks can be described as a collection of nodes that are connected by lines or arrows to indicate relationships (Saunders et al. 2019). The nodes contain descriptions or labels to indicate key points from the data (Saunders et al. 2019). *Drawing and verifying conclusions* are the steps that involves deciding what the patterns and themes mean and how they help answering the research questions (Hair et al. 2007). The objective is to identify the best conclusion or explanation among several alternatives and verify that the conclusions are realistic, supportable, and valid (Hair et al. 2007).

Merriam and Tissdell (2016) provides three steps that can help in data reduction, data display and drawing conclusions. The first one is to step back to analyze the main themes of the study, that could be main insights and answers to the research questions. The second step is to zoom back to the individual codes of data again, asking whether the data supports the main themes identified in the previous step or not. And finally, the third step is to combine the codes from previous steps into fewer and more comprehensive categories, a process called axial coding. Following the steps described by Merriam and Tissdell (2016) the analysis will start out in an inductive manner creating categories based on the collected data. Moving towards the end of the study categories will, however, be examined based on more subsequent data, a more deductive analysis (Merriam & Tissdell 2016).

This study follows the steps provided in the model by Miles and Huberman (1994), as well as the guiding steps by Merriam and Tissdell (2016) with the aim of creating a new understanding and seeking explanations, and not so much of creating new concepts or theories. Interviews held at EnergyComp were recorded and transcribed and notes were taken during meetings. Coding of the data was then done by writing notes in the transcribed data, the codes were then reduced into themes. While assigning themes and connecting the empirical data to the data from the theoretical framework the purpose of the study was considered, guiding the process. The data was facilitated by organizing it into the areas of *PPM Actions* and *Conditions*. Strategy implementation was further broken down into project, resources, and project portfolio. Comparing the empirical data to the theoretical framework, the decided categories, and the purpose of the study it could be reduced. This process was done multiple times and using axial coding categories were combined to further reduce number of categories, the final themes and codes used can be seen in Table 2 below. Furthermore, the comparison of the relevant data and the theoretical framework led the author to conclusions in line with the purpose of the study.
Table 2 Codes and Themes used during the analysis

<table>
<thead>
<tr>
<th>Themes</th>
<th>Themes</th>
<th>Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Level</td>
<td>Project Model</td>
<td></td>
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<tr>
<td></td>
<td>Routines</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Criteria</td>
<td></td>
</tr>
<tr>
<td>PPM Actions</td>
<td>Resource Allocation</td>
<td>Too many projects</td>
</tr>
<tr>
<td></td>
<td>Budget</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Short-, medium-, long-term</td>
<td>Priority</td>
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<tr>
<td></td>
<td>Priority</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Changes</td>
<td></td>
</tr>
<tr>
<td>Portfolio Level</td>
<td>Process</td>
<td></td>
</tr>
<tr>
<td></td>
<td>History</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Current State</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Explanation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Method</td>
<td></td>
</tr>
<tr>
<td>Conditions</td>
<td>Works well</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Works poorly</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Challenge</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Solution</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reason</td>
<td></td>
</tr>
</tbody>
</table>

### 3.8 Validity, Reliability and Ethics

Internal validity can be explained as the extent to which the research findings are credible (Merriam & Tissdell 2016). Multiple ways of assuring validity include triangulation, checking interpretations with interviewees, having peers to comment on findings, and clarifying researcher biases. Overall, the method of triangulation can be said to indicate a consistency within data, improving the validity of the findings (Hammond & Wellington 2020). According to Hair et al. (2007) there are four types of triangulation: researcher, data, method and theory.

- **Researcher** triangulation uses the comparison of methods, analysis, and interpretation of researchers on the same topic.
- **Data** triangulation uses comparison between data collected from different sources and different times.
- **Method** triangulation is done by conducting similar research through different methods to then compare the findings.
- **Theory** triangulation is done by using multiple theories and perspectives to interpret the data.

External validity is the extent to which the findings of study can be generalized or transferred (Merriam & Tissdell 2016). According to Merriam & Tissdell (2016) it is common in qualitative research to leave the generalizability to the reader to decide whether the findings are applicable or not to their situation. This does, however, make the researcher obligated to provide enough description of the study’s context to enable the reader to compare its situation to the study. Reliability can instead be described as the extent to which there is consistency in the research findings (Merriam & Tissdell 2016). Again, this can be enhanced by triangulating data, but also by describing how the study was conducted and how findings were derived from the data (Merriam & Tissdell 2016). Gillham (2005) suggest some ethical principles to follow.
when conducting interviews for researching purposes. Firstly, he points out the importance for the researcher to identify himself to the study participants, including information of the institution that the researcher works for and the researcher’s role. Secondly, Gillham (2005) propose that the research purpose and the expectations of the participants should be known. Furthermore, he states that it should be made explicit how the data is to be stored and used and that the interviewees should have the right to review the transcript of the interviews they participate in.

This study uses data triangulation in some cases by comparing data collected from three different sources, interviews, meetings and EnergyComps intranet. Much of the data gathered through interviews is, however, only compared to other sources only if the trustworthiness is questioned by the author. Theory triangulation is also used by analyzing the data using multiple theories from different scientific papers. Furthermore, data collected during interviews were discussed with stakeholders within the organization to assure its validity. Some measures have been taken to assure reliability, for instance by providing information on what information sources have been used, an interview guide, as well as triangulating data from different sources. As the research relies on records of human experiences its reliability is, however, problematic. Furthermore, the context of the research has been described to enable the reader to decide the study’s transferability. As multiple cases have not been studied the generalizability of the study is, however, questionable. Considering ethics of the research the author has followed the principles stated by Gillham (2005). Before conducting interviews, information identifying the researcher, the purpose of the research and information on data storage and usage has gone out to interviewees.
Chapter 4
Empirical Data

Since the alignment of PPM with strategy cannot be done without having a strategy to align with, organizational strategy at EnergyComp is the first area that will be presented in the empirical data chapter. The strategy chapter will then be followed by a presentation of project management at the Business Improvement department to give a context for the PPM process, as well as to raise some of the effects PPM and other factors has on the projects in the department. Finally, the author will go through the PPM process at the Business Improvement department, which is the main interest of the study.

4.1 Strategy

The strategy for the service branch at EnergyComp is an adjusted version of a strategy set higher up in the organization. In the strategy there are three strategic levers of the organization, and the upper management group has identified three areas of key enablers to reach the objectives of the organization. There are 4-5 actions connected to each key enable area. To measure the advancement for each key enable area and strategic lever, 2-4 KPI:s has been decided per category and for each KPI the upper management group has then set a target. Furthermore, they have pointed out someone responsible for each KPI result (mainly members of the upper management group). In one of the key enable areas the responsibility is solely assigned to the Head of the Business Improvement department. The one responsible for a certain KPI then has the task of breaking that measurement down into suborder KPI:s as he/she see fit. The KPI:s are then reviewed on a monthly basis.

Apart from the strategic levers and key enablers, the upper management group has identified four focus areas. The Head of the Service branch states that these focus areas have emerged from a discussion over what processes need to be focused on when it comes to business improvement. According to one of the upper management members the clustering into focus areas is an important way of connecting the improvement projects to strategy. She does, however, raise the concern that they are not able to see above the focus areas and states that they should be able to put more emphasis on one of the focus areas if that is needed to reach the overarching objectives. According to her, they have been able to move from a detailed project level to a clustered, focus area level, but thinks that they would need to raise it one additional level. Earlier years, the Head of the Service branch explains, there had been budgeted buckets for each focus area, something that was changes this year since he wanted to give more leeway to the strategic portfolio management process, the SPM process, as they call the portfolio structuring process for the Business Improvement projects. He does, however, emphasize the importance of still having a balance over the focus areas.

"We should have 20-30% within each focus area, we must have that sort of balance" – Head of the Service branch 11/4

During the SPM process the categorization of projects into different focus areas has been critiqued in the sense that it is can be hard to define what projects should belong to one of the focus areas. According to one of the focus area owners the objective of that focus area is somewhat unclear. The Head of the Business Improvement department points out that, among
other reasons, one of the reasons for the focus area categorizing of the projects is to make use of existing competences within that certain area.

According to the Head of the Service branch, the global strategy is somewhat unclear, making it hard to know which improvement project initiatives that get global funding. He points out that large projects that are only interesting for the local organization are hard to get funding for. It is also his experience that global projects implemented on a local level works bad.

4.2 Project management

A project at the Business Improvement department is often said to be between 6-12 months, but it happens that many projects go on longer than that. Leading the projects are the project managers at the Business Improvement department that gets the projects assigned to them by the Head of that department. The project also has a sponsor that sponsors the project by clearing obstacles and discussing issues connected to the project in the right forums. According to documents from a strategic workshop at the Business Improvement department, the role of the sponsor is also to ensure the project’s strategic significance to the organization. The sponsor is sometimes also called the project owner since it is often his function that is targeted for the project. According to a project manager at the Business Improvement department it is, however, often unclear who is the owner from a project manager perspective, and he states that ownership should be clearer. It has also been discussed by upper management team members during project reviews for the Business Improvement department that they are seeing a lack of will for some of the projects out in the operational organization and that to succeed with the projects they need project owners in the functions that really wants the projects. The Head of the Service branch points out that changes has been done to clarify the sponsorship role, but that he would like them to take a step even further in ownership. He does not want the upper management group to make decisions on what must be done, but rather want sponsors that are active in the daily work. The Head of the Service branch thinks that the sponsor being better at dragging the projects may be part of the solution to the problem of improvement projects not being effective enough in the execution process.

At the Business improvement department there are mainly two project models that are used by the project managers. One of the project models is developed for R&D and one of the project managers describes the model as being very strict and thoroughly worked through. The model works with gates and reviews, and it is well documented what is expected by the project manager. The model is also well established at the company and a Chief Engineer helps facilitating the meetings throughout the process, which according to one of the project managers makes the process much easier.

"[The project model] is developed for R&D and you have to understand that, so that you don’t drown and can’t keep up with the time since you are doing every little step" – PM 14/3 2023

The other project model is less demanding documentation-wise and is easy to follow. Instead of gates, the model builds on milestones and uses a steering committee that reviews the project. According to the Head of the Service branch the project models could need a review, pointing out that the model developed for R&D often is used just because project managers are accustomed to it, but that it may have to be changed to increase speed between gates.
The project manager is expected to keep schedule and to not break the budget. If the project is successful does, however, depend on if the project delivers what is expected and if the “end product” is well received by the business.

“I have a project where we weren’t on time and we didn’t keep the budget, but what we delivered was received with open arms by the business and it was really good” – PM 14/3 2023

To compute the success of the project the project manager has the task of setting up a plan for how the savings, as an effect of the project, will be measured. When the project then is “handed over” to the business, the measuring of the savings starts and continues for 12-36 months and are registered in a shared digital program. The size of a project’s cost savings are presented as how large the savings will be as accumulated over a 12 month period after the project has been ended.

“If you succeed to save money, in edition to the other things, then you really get some feathers in your cap, one could say” – PM 14/3 2023

A project manager also points out that when starting a new project he does not only look at cost savings, but tries to find connections to other KPI:s important to the organization as well.

How the project should be handed over to the operational business has been pointed out as an area that the department has struggled with. A project manager at the PMO states that there has been instances where projects are handed over and then not been used and that the responsibility of making sure that the product is being used sometimes is unsure. According to the project manager there are no routines for how the change management part of the project should be done and by who. The Head of the Service branch points out that improvement projects are let go to early and that they should not be left for the sponsor to be dragged over the finishing line. According to one of the upper management group members there should be an implementation plan and a risk analysis of the implementation of the projects. She states that the implementation is a shared responsibility between the project manager and project sponsor.

A project manager at the Business Improvement department explains the importance of defining what should be measured early in the project, something that has been emphasized by the Head of the Business Improvement department as well. According to the project manager this is something that could be done better by most project managers in the department. The responsibility of measuring the savings of the project previously rested with the project manager in collaboration with the project owner. A project manager at the Business Improvement department explains that there have been discussions of moving that responsibility over to the project sponsor. He does, however, think that there are complications in doing so, implying that the sponsor needs support by the project manager to make estimates of possible savings. Estimates of the savings, often referred to as the business case, are done during the feasibility study with help from people in the operational business and at the project gates the business case is reviewed and updated.

A project manager at the Business Improvement department explains how the organization is complex and that there are many projects that affect each other. The effect one project has on the others may not be visible to the project manager and could lead to sudden changes. According to the Head of the Business Improvement department investigation of project
connections are, however, a part of the feasibility study of each project. There are also changes being made among project team members and it is not uncommon that resources are switched out for the projects. It is the task of the project manager to ask for resources out in the organization. Typically, a resource being part of the business improvement projects will work 10-30% on the project and the rest of the time do operational work in its functional department – operational work often being of higher priority than the improvement project tasks. The decision on which resources will be part of the project and for how long is an agreement between the project manager, the resources owner for the function and the resource. A project manager at the business improvement department emphasizes the importance of having resources that wants to work in the project and says that he never forces anyone to be part of the projects. He also prefers to have the team members be the ones asking the resource owners to stay in a project. The perception of the project manager is that the prioritization among the projects for the resource owners is highly informal and a lot of times based on the resource owner’s belief in the project. The Head of the Service branch states that the improvement projects often are assigned resources in a bad manner, being part of the problems with ineffective project execution. A project manager also points out that it is good for a project manager to know people all around the organization and what they work with in order to get hold of the right resources for the project.

“If you have a project that everyone is not convinced of it is very hard to find resources, even worse if you have to replace resources” – PM 14/3 2023

One project manager at the business improvement department says he has tried different approaches for demanding resources, but that the most successful approach so far has been to only ask for resources for short, 10-week, periods. He also uses “speaking partners” out in the organization that are used for short discussions but never for doing actions. Furthermore, multiple stakeholders point out that a bottleneck for many projects is the IT-resources. According to one of the project managers the schedule is destined to fail if the project needs IT-resources and says that it is hard to get things done if the project is connected to one of the company’s big platforms that only has releases three times per year. According to one of the upper management group members projects that are said to be less complex and should be done quickly can take time due to the resources needed being occupied with other tasks. The resources that are best used for a certain project can, according to him, be hard to get involved. He also states that even if he would get project managers assigned to do improvement projects at his department, he would have to say no to complex projects due to not having enough experts to support them.

Two important objectives for the PMO are to shorten their release times and time to cash. Difficulty in doing so is partly due to the very nature of the projects, being that it takes a lot of effort to understand the problem and then to understand the solution. The Head of the Service branch states that the projects must get earlier wins and that projects must be divided into smaller parts that can be implemented and tested in the organization. A project manager points out that they are often reminded by the Head of the Business Improvement department to plan for early releases but still struggles to do so. A possibility, he says, could be to include a step in the project model that calls for a release plan. An upper management group member also states that the largest projects are hard to finish since there are constant changes to the environment, that then lead to scope changes and the continuing of the project.
4.3 PPM process

The PPM process at the Business Improvement department is called the SPM process, which stands for the strategic portfolio management process. The SPM process is led by the Head of the Business Improvement department and is done once every fiscal year to prepare the department for the coming year.

"From a calendar perspective we do more extensive work during spring to budget next year’s projects, but then we try to update the portfolio quarterly and adjust the course" – Head of PMO

The output of the SPM process is a prioritized list over which projects that will have highest priority to be initiated. When there is a spot open for initiating a new project in the Business Improvement department, the list is used as input on which new project to run. The list is also reviewed quarterly to allow for changes and to open for new projects to be initiated even if it was not part of the prioritization. According to the Head of Service department it is important to not only decide on a final list once a year, but he also states that constantly working with the list is not viable either.

The SPM process is done in six steps, being:

1. Kick-off
2. Portfolio/project review
3. Idea generation and validation
4. Review of project ideas
5. Consolidation of final prioritization
6. Final acceptance by the upper management group

The objective of the kick-off is to inform all stakeholders of the SPM process of their roles in the process, of their responsibilities and to clarify the time-plan. The second step in the SPM process is to review the current portfolio and ongoing projects to create a shared understanding on the available space for new projects. In the third step new ideas are generated and old ones are validated. Here, project ideas that are no longer relevant are weeded out and a discussion is held with each function discussing what projects they want to run. Each function has a responsibility of lifting their project ideas that they deem are in need of business improvement budgeting and leadership. Supporting the functions with their project ideas are colleagues from the Business improvement department assigned with the task. Next, all project ideas are reviewed by a group of stakeholders, assembled by the Head of PMO. The group, that goes under the name the dragon’s nest, consist of people of different disciplines that has the task of understanding the proposals, asking questions, and demanding additional information. A common issue during this phase has been a missing display of the projects business case. All project ideas and ongoing projects are then categorized over the four focus areas. Projects categorized to a specific focus area are later prioritized by the portfolio owner responsible for that focus area, supported by a project manager from the Business Improvement department. The prioritization of each focus area is presented and discussed during a meeting with the Head of the Business Improvement department and becomes the foundation for the final prioritization. Based on the input from the four focus areas the Head of the Business Improvement department creates a single finalized list that is presented to the upper management group, whose agreement is required.
The SPM process has undergone multiple changes during the recent years. For instance, the dragon’s nest group has been increased to involve more disciplines, better information over what information is required for the project ideas has gone out, and supporting roles from the Business Improvement department has been added to help each function with their project proposals. There has also been an increase in time set aside for the SPM process since the process started earlier this year. However, A project manager assigned with the task of supporting one of the portfolio owners still thinks that time has been an issue when making a prioritization for that focus area. Furthermore, the Business Improvement department has grown and according to one of the upper management group members the department has shifted from working with a construction focus towards more of an actual business improvement focus. The Head of the Business Improvement department does, however, think that the prioritization could be better consolidated over focus area and that the process should start with a cross-functional perspective instead of with a function perspective, as it is now. Discussed in the upper management group is the idea of identifying gaps as seen by the focus areas to lead the project proposals and the Head of the Business Improvement department points out that it could be done through workshops with the different functions to create discussions. A member of the upper management group also points out that the SPM process lacks some transparency, as he expresses a missing understanding of the project ideas raised in the forum.

“If you would show me the list of the SPM projects today, I would probably recognize some of them and be able to mention somewhat what they’re about, but it is only the projects from my function that I know well and I think it is the same situation for Heads of other functions” – upper management group member 29/3

Multiple upper manager group members also thinks that there should be more transparency in how the projects are prioritized, and that it is a process that the Heads of the different functions should be a part of.

“You could, for instance, put post-its on a whiteboard over what projects you think are important and then vote with a whole picture perspective and not just for your own function. Sounds almost like a utopia, but it cannot be impossible to get there”
– upper management group member 29/3

Another upper management group member mentions that it would be great to use charts over the projects to get a better understanding of how large they are, how big the investments and how large the benefits are for the different projects. These methods could, according to her, be an aid in discussions about the connections between projects that could later be used by the PPM to prioritize the portfolio. One of the function Heads says that in order to motivate her subordinates she needs to be able to explain why some projects were prioritized over other ones. Another member of the upper management group states that there must be a greater trust in the one that navigates the prioritization. She thinks that for smaller projects the order should be done with regards to resources and project synergies and not be questioned, the frame of what is wanted to be achieved should, however, be agreed upon by the upper management group. Another upper management group member thinks that the SPM process should be more continuous, having introductions of new project ideas presented throughout the year and not all at once. Furthermore, he lifts the importance of having a coherent way in how the projects are presented, making it easier for outsiders to understand the projects.
When prioritizing the projects, the Head of the Business Improvement department, in concurrence with the Head of the Service branch, has come up with prioritization criteria based on the organization’s strategy. The criteria are three fold and consist of return on investment (ROI), Time to cash, and strategic fit. These criteria can then be used to compute a total score for the project using the following formula:

\[
\text{Total Score} = \text{ROI} \times 35\% + \text{Time to Cash} \times 35\% + \text{Strategic Fit} \times 30\%
\]

During one of the SPM-meetings the Head of the Business Improvement department clarified how both business case and time to cash are important factors in the prioritization process and stated that it was important for the participants in the process to know that these are the factors that are used for the final prioritization. Earlier years technical risk and implementing risk has been part of the prioritization criteria as well but has since been removed. The way uncertainties in the benefit calculations are handled now is by having experienced stakeholders discuss the project proposals and run the list by the upper management team that has been working for the organization for up to 30 years and therefore has knowledge about what projects are of highest importance. According to the Head of the Business Improvement department the aim is to base 70% of the prioritization decisions on hard facts, being the project score, and 30% on other strategic aspects. He does, however, point out that all these numbers are based on estimates, making the computations difficult. He also states that ROI is the most important measurement, and that strategic fit is mainly used when ROI cannot be calculated but there still is strategic value to the project that needs to be shown in other ways.

“It is hard to perform exact calculations when so much builds on estimates [...] 80% maybe builds on assessments in the end” – Head of the Business Improvement department

As mentioned by multiple members of the upper management group and by the Head of the Business Improvement department the business case is hard to determine and ROI is therefore hard to calculate, the same goes for time to cash. According to one of the focus area owners the time to cash measurement is somewhat abstract and knowing who in the organization that can best determine its value can be hard. During one of the SPM-meetings it was pointed out that many of the idea owners are not accustomed to the estimation of values for improvement projects, but as stated by the Head of the Business Improvement department, it should be a joint task of the dragon’s nest members to set the final value. He does, however, agree that it will be a value that cannot be fully trusted. Instead, he mentions that a prioritization made by portfolio owners is a better guideline for the final prioritization. A member of the upper management group also states that what makes the prioritization process difficult is the large number of functions with different objectives being part of the same portfolio and the large span on the project dimensions. Furthermore, she expresses the difficulties in choosing between projects with good business cases and projects as a motivational endeavor for the functions. Regarding strategic fit, she mentions that all projects, as far as she can see, can be connected to strategy in some way. The strategic fit has, however, not been visualized or measured in any way for the different projects.

The Head of the Business Improvement department also tries to balance the project mix over focus areas, ensuring that not all projects are associated with only one focus area. What mainly steers the distribution of projects, he says, is however what is wanted to be achieved in each focus area. Earlier years there had been a budget assigned to each focus area, the Head of the
Service branch stated, but this year is different in that there are no assigned budgets, instead they will ensure that each focus area is given a budget roughly between 10-30% of the total budget. Categorizing the projects to the four different focus areas is an effort done by the idea owners with support from the dragon’s nest members. Categorizing the projects is not always easy and the categories has been criticized by the dragon’s nest members. For instance, it was pointed out that, in a sense, almost all projects could be related to one specific focus area. It was decided that a review of the projects in that category might have to be done to remap some of the projects to other focus areas. It was agreed upon, during the meeting, that some projects in that focus areas could belong to the category but that what distinguished those projects from the others was somewhat vaguely defined.

One of the portfolio owners points out that projects have historically been dispersed evenly throughout the functions, but that the department instead should agree on the areas of highest importance. According to him the development process should be steered by the large projects and all other initiatives should be considered with regards to these projects.

“We cannot build our development on the small projects, but we should rather start with the large ones that are our backbone [...] and then there may be holes where we can fit the smaller projects” – portfolio owner 11/4 2023

He also points out that a better way of doing the prioritization may be to focus on what areas are in greatest need of improvement. A member of the upper management group also mentions that she thinks that the prioritization should be led by the ambition of what is wanted to be achieved for different areas of the service process, not focusing too much on the details.

“We need to be able to approve the prioritization on a higher level than project level” – upper management group member 23/3 2023

According to her the ideal would be to have a rough roadmap over what is wanted for the focus areas and then to pick one project at a time according to that roadmap. The Head of the Service branch does, however, state that projects with worse business cases must be allowed for some areas to get an even distribution. According to him they have decided that the focus areas are important, and they should therefore all have a part of the budget.

The relations between projects are something that must be taken into consideration when prioritizing the projects to some extent. One of the upper management group members says that it can be hard to get the whole picture of what effect one project will have, stating that some projects may render another project useless further down the line. Another upper management group member states that the Service department has a higher number of stakeholders in need of improvement projects than other departments, adding to the complexity that makes the priority difficult. At the same time difficulties in deciding on which functions to focus on is lifted. The Head of one of the functions points out that the functions are not equal in that most of them have the capacity of running improvement projects within their own department, while his department must run all their improvement projects through the Business improvement department. One of the members of the upper management group also mentions that many of the Business Improvement projects are targeted towards single functions, meaning that the projects may have a small impact on other functions. This is further exemplified during one of the SPM-meetings where it was stated that process owners will rank projects that are most important to their function highest. One of the portfolio owners had let the process owners
within that area rank the projects, the result, presented during one of the SPM-meetings, was a list of projects where process owners had prioritized the projects very differently from one another. For instance, one of the projects ranked very high by the sales function instead got very low rankings by all other functions. Ongoing projects also had a relatively low priority, with many new project ideas ranking higher, this even though the participants of the SPM-meeting thought ongoing projects should be ranked high. Another portfolio owner instead had taken input from process owners on what are their main concerns and what is most urgent, to then categorize projects into carry over, high, medium, or low priority. Carry over projects were of highest priority, high priority projects were projects argued had to be done, medium priority projects that should be done if resources were available and low priority projects that they did not find enough reasons to run. She had also created a simple roadmap over the carry over projects and high priority projects, showing where they fitted into the timeline. The emphasis by the portfolio owner were mainly on what had to be done, and no project scoring was discussed. Furthermore, she expressed a concern of the missing resource information for each project and that more details on what resources are needed for the projects should be understood before project initiation. The one responsible for a third focus area had made a simple list of what projects were most important for that focus area.

The Head of the Business Improvement department also tries to balance the projects regarding time consumption, having 80% of the projects with a horizon within two years. He does, however, press on the fact that balancing of the portfolio could be done in endless cycles but still not be able to address the issues of great uncertainties when calculating both business case and time to cash and the fact that there are projects that bring value that still cannot be shown with those numbers.

“We can go on and weight the projects for however long we want, but there are still uncertainties to the business case and time to cash. Some projects are done to better the working situation for our employees or to increase customer satisfaction that are criteria to tend to as well, so in the end it becomes a discussion. But we try to use facts as much as possible” – Head of the Business Improvement department

The type of resources needed for the projects are not considered in the prioritization of the portfolio. The capacity of the organization is only considered through the budget and how much is claimed by the project. Furthermore, experience from earlier years is taken into consideration, as the Head of the Business Improvement department counts on initiating roughly ten new projects, similar to last year. According to the Head of the Business Improvement department he has chosen not to make detailed resource plans in this phase of the process due to the uncertainty of the project needs. It is first during the feasibility study that the resource perspective of the project is further investigated. As reported by the Head of the Business Improvement department he does not see this as a large issue since they have a dynamic planning process, meaning that whenever a PM has free capacity, he will get assigned the task of doing a feasibility study for a new project, and if there is a lack of resources the project gets put on hold. The projects that get a “go” are however seldom stopped, instead there might be changes restricting the scope. The Head of the Business Improvement department points out that it is only in exceptional cases that the project is not run, though they might decide on limiting the scope to only solving some of the problems or to do other scope changes. One of the members in the upper management group states that there must be changes done in this regard.
“You must be able to [stop ongoing projects], it’s a tool that must be part of the toolbox” – Upper management group member

Another upper manager group member raises the concern of whether they have a good enough understanding of the projects before they are decided to run or not. In one case she experienced that they had started a project where no one really wanted the solution. According to her this was a global initiative that was being implemented locally.

It has also been discussed if there should be a budget for unknowns, meaning that the Business Improvement department would allocate closer to 80% of their resources, rather than, as one of the participants during one of the SPM-meetings put it, “110%”. According to one of the upper management group members leaving room for unknown project ideas could help starting new important projects earlier, not having to wait until next year, something she says is a “creativity killer”. Multiple stakeholders within the organization says that the Business improvement department runs too many projects. One upper management team member thinks it could be partly due to the organizational culture that, according to her, emphasizes that “everything is possible” and that encourages creativity. She also mentions that new project ideas have been highly demanded and that there has been a push for new proposals to be lifted. Another member of the upper management group says that there might be too many projects running, but that the solution is not to decrease the number of projects, but rather to make sure that the projects that are started gets finished.

“If you only put in one project but no project comes out, then that’s also one project too much” – upper management group member 29/3

According to the upper management group member the problem could be either due to how projects are run, resources of the organization, or what projects are chosen. He thinks that resources should be taken better into consideration and that the prioritization as of now only considers the importance of the project.

“[The priority] can be right on paper, but when the highest prioritized projects cannot be run due to occupied resources then the priority doesn’t mean anything, as long as you don’t lift resources from the operative business, which I have a hard time seeing that you would do” – upper management group member 29/3

Another upper management group member thinks that there is neither a problem of budgeting for unknowns nor the number of projects, but rather that they are having issues with setting deliverables for the projects.
Chapter 5
Analysis

Comparing the empirical data presented in the previous chapter with theories explained in the frame of reference, this analysis chapter aims at answering the research questions of this study. The questions to answer are what PPM actions are taken to implement strategy within an internal development department, as well as what conditions make implementing strategy through PPM difficult within such a department.

As stated by Kopmann et al. (2017) strategy can be divided into formulation and implementation. The Analysis chapter will start off with an analysis of the strategy formulation at EnergyComp, to then move over to the focus of this study, which is the implementation of strategy. Compliance with intended strategies can be measured regarding projects, resource allocation, and project portfolio (Diedrich & Lehtonen 2005) and the Strategy Implementation chapter will follow the same division.

5.1 Strategy formulation
As pointed out by Levine (2005) a shared understanding of the organizations mission is important, something that seem to be considered at the Service branch of EnergyComp, as there is an understanding of the company mission all the way from the upper management, down to project management in the Business Improvement department. Strategic objectives of the global organization are, however, not as transparent, which renders uncertainty in the budgeting work and project ideation since the local organization cannot be sure which projects will gain funding from the global organization. In line with the recommendation by Levine (2005), the Service depart has quantifiable goals set as KPI:s that are broken down for the different departments to be measured and followed up frequently. Focus areas are set by the upper management group based on strategic decisions to then steer the budgeting for different projects carried out in the Business Improvement department. Historically the upper management group had set sharp budgets for the different focus areas in line with the top-down Strategic Bucket model by Cooper et al. (1997) but has since moved over to a Strategic Check method where more freedom is given to the portfolio structuring process, still making sure that the distribution of projects over the focus areas lay between 20-30% of the total budget. Even though the upper management group has clear strategic objectives they are not seeing all the results they were hoping for. Following the reasoning by Kock and Gemünden (2019) it is however often not formulation, but implementation, that is the central problem to strategy, leading us to the analysis of the Service Branch’s strategy implementation.

5.2 Strategy Implementation
The strategy implementation chapter starts with an analysis of the project management process at the Business Improvement department, which, according to Levine (2005) is how an organization works towards its objectives and realizes its strategy. Mediating the project progress and being an important tool for strategy implementation is the resource allocation process (Diedrich & Lehtonen 2005) which is analyzed next. Finally, the project portfolio is analyzed.
5.2.1 Projects
In line with the recommendations by Teller et al. (2012) stating that project management should follow a formalized approach, the Business Improvement department uses formal guidelines in the shape of two different project models used by the project managers. One of the models is presented as stricter and more formal and according to Teller et al. (2012) such a model would improve the availability and comprehensiveness of information in the process. As pointed out the model is not designed for the Business Improvement projects and therefore includes elements that, according to one of the project managers, should be left out when using it. Which project model is used and how it is followed is mostly up to the project manager, leading to different project management practices within the department.

Following the traditional success measures of project management as presented by Shenhar et al. (2001), the projects at the Business improvement department is concerned with meeting time, budget, and performance. Performance is pointed out as the most important measurement for success by one of the project managers. What is considered good performance is, however, somewhat complex as the practical measurement of project success is pointed out as the cost savings, while a project managers perception of a successful project depends on other factors with cost savings being just an additional measurement. Based on these findings the author argues that the perception of project success at the Business improvement department depends on more factors than the traditional ones explained by Shenhar et al. (2001). Following Shenhar et al.’s (2001) suggestion, the project success measures could be extended to include project efficiency, impact on customer, business success, and preparing for the future. A project manager at the Business Improvement department points of that the KPI:s are taken into consideration when initiating the projects, giving additional guidelines on strategic project objectives, but they are not measured in the way cost savings are.

A shortened release time and time to cash are two strategic objectives pointed out as important for the Business Improvement department. Difficulties in improving these measures have been pointed out as a consequence of the project nature, meaning that understanding the problem to come up with a solution takes a lot of effort and leads to large project scopes. As pointed out, project scopes in the Business Improvement department can then be reviewed and limited, a scope-out approach as explained by Petit (2012). Petit (2012) suggests that a better way of working is to start with smaller scopes that can then be extended, a scope-in approach, resulting in higher efficiency. As explained by Petit (2012) such an approach does, however, imply the need of a multi-project mechanism integrated with the project ideation process that can issue new features to existing projects. An Implication by one of the project managers is that shorter release times instead could be reached through changes in project management practices and that changes to the project models that incorporates standards for planning early releases would help the project managers in doing so. Furthermore, the responsibility of the cost measurements as well as the implementation of the project into the operational business has been discussed as it is often the project sponsor that reaps the benefits of the projects, while the project manager is faced with much of the change management and measurement tasks. There are, however, no routines or guidelines for how projects should be implemented.

5.2.2 Resource Allocation
Hendriks and Kroep (1999) divides resource allocation into the three levels: short-, medium-, and long-term. For the projects at the Business Improvement department, long-term-resource-allocation is done through resource budgeting set by upper management. Short-term-resource-
allocation is handled by the project managers who, according to their accepted project budget, requests resources from resource owners in the relevant functional departments. According to Hendriks and Kroep (1999) the medium-term-resource-allocation is what binds the long- and short-term-allocation together and mainly results in the contents of the project portfolio. In the Business improvement department this portfolio selection is done yearly and results in a list of the highest ranked projects, which is then reviewed quarterly. What Hendriks and Kroep (1999) then suggest is that there are decision rules made on a portfolio level to handle conflicts between projects. In the Business Improvement projects they have no such decision rules and resource owners has the last say on what projects will be accepted resources, which ones, and for how long. According to one of the project managers the human resources themselves can, however, affect these decisions. Resource conflicts are also discussed during portfolio reviews, gate meetings and upper management team meetings, and the project sponsor has the task of resolving difficult resource conflicts in these different forums. Interference that, according to Hendriks and Kroep (1999), should be very limited if there is well functioning rough-cut-capacity-plan and decision rules in place. Furthermore, conflicts do not only exist between Business Improvement projects within the Service department, but between the Business improvement projects and daily operations in the functional departments, as well as local improvement projects in the functional departments, leading to complex project dependencies.

What is further emphasized by Hendriks and Kroep (1999) is having a rough-cut-capacity-plan that along with the decision rules guides the short-term-resource-allocation. In the Business Improvement departments case, there is no rough-cut-capacity-plan set on a portfolio level due to the uncertainties around resource needs being too great. It is, however, not only the demand that is unsure, but also the supply since there are no strict routines for how resources will be applied for and no software available for the project managers to simplify the task. The project managers do not know what resources will be available when but relies fully on the decisions of the resource owners. This has led to experimentation among project managers where one of the project managers explains how only applying for resources for short time periods has led to better approval rates in his experience. According to Stettina and Hörtz (2015) it is important to keep initiatives of all portfolios within an organization in sight to counteract low transparency and complications when dealing with dependencies across the portfolios. A way of doing this is to have a public prioritized list of all ongoing activities and a steering group that decide on priorities and resourcing on a regular basis. As is the case for the Business Improvement department, they have a prioritized list that incorporates all portfolios in the department, as well as a steering group. This list does, however, not include projects local to the functional departments and operational tasks that according to one of the project managers often are of higher priority than the Business Improvement projects, creating low transparency between the Business Improvement department and the functional departments and complicates resource planning.

Hendriks and Kroep (1999) also argue that there should be links between the different resource-allocation levels to ensure sharing of information needed for decision making. As mentioned, the information sharing between short- and medium-term-resource-allocation is somewhat weak in the Business Improvement department as the project managers have little information on the resource availability over time. There are however some links in form of project review meetings where information of resource supply and demand, as well as project progress, may be shared. Patanakul (2022) points out how the resource management process should be well
integrated with the PPM process. As stated by the Head of the Business Improvement department, neither resource needs nor availability is regarded when structuring the project portfolio. It is first when project managers are available for making a feasibility study that resource needs are investigated thoroughly and when projects have reached this point they are very rarely stopped. When comparing the Business Improvement PPM process with the model by Hendriks and Kroep (1999) links between the short- and medium-term-resource-allocation can be seen (see Figure 12 below). For instance, checks of project progress during project reviews results in information sharing between project managers, resource owners and portfolio manager. An overlook of the budget and project spendings might result in budget cuts and scope changes for projects which is another link between the two levels. What is missing is however the information on resource availability that can guide the short-term-planning. Abrantes and Figueiredo (2015) propose using an information system that can be used to quickly determine project progress but also to visualize different scenarios, explore resource management decisions, and understand chain effects throughout the portfolio.

According to Engwall and Jerbrant (2003) a lacking resource scheduling in multi-project environments might lead to continuous short-term problem solving and constant redistribution of resources, symptoms of the “resource allocation syndrome”. Cooper (2016) further argues that a dedicated project team would help with these issues. The Business Improvement department however works with teams with high project scatter factors where both project managers and team members work with multiple projects or operational tasks. As been discussed, it can be argued that the department lack a substantial medium-term-resource-allocation as well, but neither project managers nor the portfolio manager mentions that resource allocation would be a large issue for the department. It has been mentioned by multiple stakeholders in the organization that there have been too many Business improvement projects running, the argument is, however, not that there is no capacity for it, but rather that they are not seeing results from the active projects fast enough. Having a higher dedication rate could lead to a decreased project capacity, but as mentioned by Hendriks and Kroep (1999), it increases the devotion and efficiency of the work done within each project.
The fact that resource needs are not regarded during the project prioritization process in the Business improvement department means that projects that could fit the current resource availability, but are of lower priority than other projects, might not be considered when initiating new projects. This potential mismatch between available resources and demand of initiated projects might lead to the portfolio not utilizing the full capability of the organization, meaning a lower efficiency and in the end fewer projects done. The idea of splitting the project initiation into two parts is something that has been discussed at the Service department. The first part is the projects that are of highest importance that are initiated first. The other part is the projects that are of lower importance but also of lower complexity, which can be fitted into the project pipeline when there are available resources. As proposed by one of the upper management team members the second part of project initiation should rely on the judgement of the portfolio manager. According to Abrantes and Figueiredo (2015), allocating resources to lower priority projects in wait of new higher priority projects can, however, be associated with inefficiency due to delays in later resource assignments, a risk that is avoided when only initiating high priority projects.

5.2.3 Project portfolio
The following chapter analyses the portfolio structuring process as well as factors connected to successful strategy implementation through the project portfolio.

5.2.3.1 Portfolio structuring process
As mentioned by PMI (2013) the strategic plan is the basis for the portfolio strategy. It builds on the organizational strategy and can include a prioritization model, portfolio vision and objectives, and other strategic factors (PMI 2013). The Business Improvement department has strategic objectives in form of KPI:s set in accordance to the organizational strategy documented, as well as a structured process for the portfolio structuring documented in multiple steps. The portfolio structuring process has, however, been object to many changes and the process steps are not documented in detail. Furthermore, the transparency of some parts of the process has been questioned by stakeholders in the organization. As proposed by PMI (2013) the strategic plan should include a prioritization model and as explained by Meskendahl (2010) a formal approach, which is preferred, should follow reasonable and clear rules, adhere to explicit and objective criteria, and be led by transparent and known procedures. The documentation of the portfolio structuring process at the Business improvement department includes a description of a scoring model, which is a tool that is said to be used for the prioritization process but does not include a model for how the score, or other assessments, will be used. The findings suggest that the prioritization model used by the Business Improvement department is somewhat dynamic and that there is no detailed model of the process.

What is partly described in documents concerning the PPM process at the Business Improvement department are their approaches to strategic alignment. Cooper et al. (1997) lifts two approaches to strategy alignment in PPM, strategic criteria used in the project selection tools, as well as top-down strategic model and the Business Improvement department uses both methods in their PPM process. When ranking the projects in the portfolio, “strategic fit” is one of the scoring variables given a weight of 30%. Furthermore, the other variables of the projects scoring, ROI and Time to Cash (each given a weight of 35%), are selected in accordance to strategy. As mentioned earlier the Business Improvement department has gone from a strategic bucket method towards more of a strategic check method, as described by Cooper et al. (1997).
What Cooper et al. (1997) explains is, however, that the strategy alignment in these top-down strategy models comes from a predetermined spending split over the different categories, or buckets. Even though there is a spending split over the focus areas in the Business Improvement department, these are not strict percentages but rather ranges between 10-30%. Having these ranges still assures that there is a budget for every focus area, but might not have the steering effect that strict spending buckets would have. According to Cooper et al. (1997) having a top-down approach is the only way to ensure that the portfolio reflects the organizational strategy.

Cooper et al. (1997) also points out that strategic alignment could be used as a screening criterion to make sure that all projects are in line with the organization’s strategy. As proposed by Archer and Gaseznadeh (1999) a screening process should be done before the evaluation and in the Business Improvement department, screening is done by the functional departments who are also responsible for the project proposals. According to Archer and Gaseznadeh (1999) some screening criteria could be marginal requirements of ROI or lacking information to base decisions on. The Business Improvement department has no set criteria for screening but evaluates all projects that the functional department perceive are worth pursuing. Having a large number of projects to handle during the selection process means that pairwise comparison becomes more difficult (Archer & Gaseznadeh 1999), more projects will have to be evaluated and the process takes more time. And as stated by one of the stakeholders, time is an important limiting factor when making the prioritization for the individual portfolios.

Following the screening, Archer and Gaseznadeh (1999) explain that individual evaluation of projects should be done. Evaluation of ongoing projects are preferably done at project gates and re-evaluation is done at the same time as new projects are considered for selection (Archer & Gaseznadeh 1999). As projects are very rarely stopped at the Business Improvement department, and the ongoing projects get the highest priority in the project selection process, a re-evaluation of the project might not affect the prioritization process. Re-evaluating the resource needs for the projects might, however, have an impact on the perceived number of new projects that can be initiated through the portfolio and this evaluation is done through a project review in the beginning of the portfolio structuring process at the Business Improvement department. Following the suggestion by Englund and Graham (1999), the projects should be categorized before the individual project evaluation and as familiar, the projects at the Business Improvement department are categorized into the different focus areas. As pointed out by Englund and Graham (1999) the criteria of the project evaluation can be set different between the categories but should be set before discussing the projects. The Business Improvement projects are all said to be evaluated using the same scoring criteria, being ROI, Time to Cash and Strategic Fit. The Head of the Business Improvement department has, however, given the portfolio owners the task of making an initial prioritization of the individual portfolios (focus areas) that are used to make the final prioritization. Even though the Head of the Business Improvement department has stated that ROI, Time to Cash and Strategic Fit are important measures in the prioritization task, these measures are not mentioned as criteria used by the portfolio owners when making their individual prioritization. It has also been stated that information about the business cases is missing for multiple projects even after the initial prioritization has been done. This implies that there is an incoherence between the criteria used by portfolio owners and the criteria promoted and used by the Head of the Business Improvement department. There is also a difference in methods used for prioritization between the different focus areas. As suggested by Englund and Graham (1999) having different criteria
used in different project categories might be preferred as different strategic objectives could be aspired in different categories. These criteria should, however, be determined before the evaluation process, something that has not been done in the Business Improvement departments case.

Furthermore, Levine (2005) suggests that ROI should not be used alone as a prioritization criterion but be accompanied by measures of alignment to strategic plan, balance between project types, effective use of resources, risk, and non-financial benefits. In the Business Improvement department, the measurement of strategic fit is used as a strategy alignment criterion, the measurement is, however, only said to be used as an argument for prioritizing projects that have no clear business case. Effective use of resources is not used as a criteria for prioritization, but is considered to some degree when initiating the already prioritized projects. Risk had historically been considered in the selection process, but has since been removed, partly due to the difficulty in estimating uncertainty. Non-financial benefits are mentioned as influencing the selection process, for instance by making sure that all functional department get improvements done partly as a motivational factor, but the main prioritization criterion is said to be the financial benefit to the organization. As been mentioned, the Business Improvement department balances the portfolio over the focus areas. They do, however, also balance over time consumption, trying to have a portfolio with 80% of the projects with a horizon within two years. Cooper et al. (1999) suggest balancing the portfolio over multiple dimensions, such as, risk versus reward, ease versus attractiveness and by project type. Archer and Gasemzadeh (1999) also points out risk as an important balancing factor since it mediates exposure to failure and ROI. What is pointed out by multiple stakeholders in the organization, and what is in line with the suggestion by Cooper et al. (1997), is the difficulty in providing data that supports the precision needed in the decision models. Consequently, the Business Improvement department has cut down on the variables used for project scoring, but still is not able to provide the data needed to support the present scoring model. This limits the strategic objectives that are favored in the prioritization process and may influence the strategic alignment of the final portfolio.

Following the individual evaluation comes the actual selection of the portfolio, a process that Archer and Gasemzadeh (1999) suggest dividing into two parts. The first part arranges the projects according to their individual value, and the second part rearranges the projects regarding project interactions, resource limitations and other constraints (Archer & Gasemzadeh 1999). Archer and Gasemzadeh (1999) points out that only doing the first part of the project ordering and then picking the highest ranked projects until resources run out does not ensure that an optimal portfolio has been chosen. Spradlin and Kutoleski (1999) suggest evaluating the projects in different configurations so that different strategic portfolios can be evaluated and compared. At the Business Improvement department, the evaluation considers the timing aspect as projects may be delayed, but do not create different strategic portfolios that can be compared to each other. Other project configurations, such as resource options are not considered either due to the uncertainty of resource needs for the projects. As stated by Chien (2002) synergistic portfolio attributes can only be measured when preferences among alternative portfolios are considered. The way the Business Improvement department does its portfolio selection is consistent with the first part of Archer and Gasemzadehs (1999) model, but misses the second part, leading to a less optimized portfolio. As stated by the Head of the Business Improvement department, project interactions, dependencies and other constraints are
investigated during the feasibility studies, this does, however, not mean that groups of projects, or different project configurations, are compared.

Leading in to the final selection there are, however, some consideration of project interactions. In one of the portfolios, for instance, projects were mapped out using a roadmap similar to the one suggested by PMI (2013) and the portfolio owner responsible for the initial prioritization took into consideration some dependencies between projects. As for the other portfolios, no other models than scoring was used to steer the prioritization. The discussions on project priority were mainly concerned with figuring out what projects were most urgent to the organization, leaving out other questions such as resource efficiency, risk, or even financial benefits. In the model by Spradlin and Kutoloski (1999) the structuring process starts by dividing the projects into favored, equivocal, and doomed. Only the equivocal projects are considered during the selection process as the favored projects are guaranteed to run and doomed projects are sure not to run (Spradlin & Kutoloski 1999). In one of the portfolios a similar approach was used as projects were divided into high, medium, and low priority, where high priority projects were considered “had to run”. Since there are vast amounts of projects considered urgent, all high priority projects cannot be initiated in close time, meaning that a differentiation between favored and equivocal projects as proposed by Spradlin and Kutoloski (1999) might be hard to make, or at least is not consistent with the categorization used in the Business improvement portfolio. Prioritizing the medium priority projects might, however, be useful if the projects use less capacity, or other resources, than the high priority projects, as they, according to stakeholders in the PPM process, could be fitted in-between high priority projects when capacity allows for it.

After the prioritization of the individual portfolios, the portfolios are merged into one prioritized list by the Head of the Business Improvement department. The final prioritization is based on the lists made by the portfolio owners and balances the projects over the focus areas as well as the time horizons. Wheelwright and Clark (1992) suggest categorizing the projects by process change versus product change, assigning the projects to the different categories and then choose a mix that is mirroring the strategy of the organization. The Business Improvement department uses the focus areas as categories to then balance the portfolio over. The balance between the focus areas is not strict, but there to assure a budget for the different focus areas.

5.2.3.2 Successfully implementing strategy

Diedrich and Lehtonen (2005) describe successful managing of strategic intention in an organization as the ability to manage the compliance to intended strategies. One of the measures for successful compliance to intended strategies is how well the project portfolio implements the strategy of the organization. How well the PPM process implements the strategy can be investigated by looking at the strategic effectiveness. According to Patanakul (2015), the capability to form a portfolio aligned with strategy is one attribute of strategic effectiveness in PPM. Other attributes are, however, the capability of forming a portfolio adaptable to internal and external change, as well as creating the portfolio with consideration of the expected value of the portfolio.

Patanakul (2015) raises three measures on a portfolio level to assess the capability to form a portfolio aligned with strategy: the project’s alignment to strategy, if prioritization among projects is done by expected business performance, and if resources are allocated to reflect the strategic direction of the company. As has been established by the analysis in previous
subchapters the Business Improvement department has processes in place to handle all three of the measures. To assure projects alignment to strategy, selection criteria are chosen in line with strategic objectives as well as having strategic focus areas that assures a distribution of projects in line with strategy. The SPM process is also designed to prioritize projects regarding their expected contribution to business performance, again through scoring, but also through discussions with experts within the company. Finally, the focus areas are used to distribute resources according to organizational strategy and the Business Improvement portfolio is ordered so that resources are given to the projects of highest priority first, projects prioritized with consideration of strategic objectives. Martinsuo and Geraldi (2020) do, however, point out that when considering alignment to strategy one must consider the existence of multiple strategies within the organization. For instance, there can be different strategies for different portfolios or different departments (Martinsuo & Geraldi 2020). As can be seen in the Service branch of EnergyComp the different functional departments have different ideas of what projects are important to the organization, implying different objectives and different strategies. Still the Business Improvement portfolio must consider projects relevant to all these departments. To deal with this task the SPM process uses portfolio owners responsible for discussing the prioritization with stakeholders from all functions. What Martinsuo and Geraldi (2020) propose is that the different strategies of project categories should be regarded when developing criteria and measurements for the projects, so that different portfolios can be compared credibly even though they adhere to different strategies. The Business Improvement department have not specified individual strategies for the different portfolios and do not use different criteria for the portfolios, but has given free hands to the portfolio owners to prioritize the portfolios the way they see fit.

The second attribute to strategic effectiveness raised by Patanakul (2015) is the capability to form a portfolio adaptable to internal and external changes. This can be assessed through whether business cycle changes and changes to organizational capability are taken into consideration when forming and managing the portfolio, if the portfolio contains a mix of projects with the potential of addressing risk and uncertainties, and if the project mix reflects the desired risk profile of the organization (Patanakul 2015). Regarding changes in business cycle and organizational capacity when forming the portfolio, the Business Improvement department follows the budget set higher up in the organization, which is partly set with regards to capacity. Furthermore, the prioritized list of portfolio projects, does it so that what projects get implemented and when can easily be managed in accordance to changes within the organization. When managing the portfolio, projects are seldom stopped, and changes are instead managed by scope changes, restricting the features of the product. As discussed under the projects chapter (chapter 5.2.1), a more efficient way of managing changes would be to use a scope-in approach as described by Petit (2012). Patanakul (2015) argue that having a portfolio that contains a mix of projects with the potential of addressing risk and uncertainties as well as reflects the desired risk profile of the organization can be attained though portfolio balancing. As been mentioned the Business Improvement department balances the portfolio over focus areas and time, they do, however, not balance over other factors such as risk or uncertainty. As stated, the assessment of the projects did include risk historically, but do not anymore due to the difficulty in measuring risk. Furthermore, the risk profile has not been specified by upper management and is not part of any strategic objectives for the Business Improvement department, making the portfolios reflection of the organizations risk profile hard to assess. Teller and Kock (2013), instead suggest that risk management be done in a formal manner,
helping stakeholders identify and understand risk so that risk can be better managed in the PPM process. Sweetman and Conboy (2018) further suggest that the portfolio is adapted to external changes through a diversity matching the complexity of the environment. Wheelwright and Clark (1992) handle this type of diversity through the project categorization that a project mix is selected from in line with organizational strategy. This type of categorization is not present in the balancing process of the Business Improvement portfolio and no other methods were identified by the authors that assures a diversified portfolio with regards to environment.

The third attribute to strategic effectiveness is the expected business performance of the portfolio (Patanakul 2015). As stated in the last chapter on portfolio structuring, the Business Improvement department uses a scoring method to assess the expected value contribution from every individual project. Furthermore, focus areas are in place to assure a distribution of projects that is of strategic value to the organization, as well as balancing the portfolio with regards to time, and portfolio owners are in place to lead discussions on project values. As pointed out by Archer and Gasemzadeh (1999) additional value could, however, be gained through portfolio optimization, where a combination of lower prioritized projects could gain a larger value than a combination of higher priority projects. As stated by the Head of the Business Improvement department such assessments are not done due to high uncertainties in resource needs and capacity. Kock and Gemünden (2019) further points out the importance of considering the projects’ contribution to future initiatives, so called longitudinal interdependencies. This type of value could be included through the Business Improvement departments scoring variable called “strategi fit”, but as mentioned this variable is seldom used and it is hard to determine its value. Longitudinal interdependencies are, however, considered during discussions held by the portfolio owners with stakeholders to the individual portfolios. This may imply that there are values important to the portfolio owners that are not included in the project scoring, such as the longitudinal interdependencies.
Chapter 6

Conclusion & Implications

The following chapter includes a conclusion of the analysis presented in previous chapter, as well as implications, recommendations, and limitations.

6.1 Conclusion

This study concludes that strategy implementation in an internal development department can be regarded through three areas: project level, resource allocation, and portfolio level. PPM includes actions that affects the strategy implementation within all three of these areas. Conclusions on every area are presented below, as well as a summery presented in Table 3 in chapter 6.1.4. The first column of the table summarizes the answer of the first research question, what PPM actions are taken to implement strategy within an internal development department? While the second column summarizes the answer to the second research question, what conditions make implementing strategy through PPM difficult within and internal development department? The last column explains how the conditions effect the PPM actions.

6.1.1 Project level

On a project-level, strategic objectives are used to guide the criteria for successful project management. Gathering the information needed to measure different criteria is, however, difficult and the measurements used to measure project success do not cover all the strategic objectives. Using these measurements can therefore not be used alone to assure strategic alignment. Project models can also be shaped to mediate adherence to strategic goals of the organization, such as models including prompts for early releases. Furthermore, other routines and standards within the internal development department influences strategy implementation, such as routines for measurements and product implementation guidelines for projects. Working with improvement projects over multiple functional departments makes these processes difficult as responsibilities are shared over organizational boarders.

6.1.2 Resource allocation

As the internal development department works with projects over multiple functions it must rely on resource decisions made by the resource owners in those departments. This makes it so that all initiatives that competes with the internal development projects are not gathered in one prioritized list. Consequently, there is low transparency and a shortage on resource supply information within the internal development department. Furthermore, the very nature of the internal development projects makes it so that uncertainties of resource demand is great before the feasibility study has been carried out. Working over functional boarders and having a low degree of information on both supply and demand of resources results in multiple complications for the strategy implementation. For instance, decision rules are not set on a portfolio level, making it so that resource priorities are not dealt with top-down, according to organizational strategy, but instead bottom-up, according to resource owners’ judgement, the human resources themselves, and project management procedures. Another consequence is that resource information is not used as a factor in the portfolio selection process, leading to inefficiencies and difficulties in grouping the highest value projects. Furthermore, it becomes expensive to stop projects when sufficient information has been gathered, resulting in lower
levels of strategic control through portfolio management after project re-evaluation. The internal improvement department is, however, able to use resource allocation as a strategic control mechanism to some degree through budgeting. By using project categories, or multiple portfolios, the budget can be set to assure that initiatives adhering to organizational strategy are implemented. This type of budgeting requires creation of relevant categories as well as assigning the projects to the decided categories, a process that is not without complications as the projects can be very different from each other and bring value to either individual or multiple functional departments. Not setting a strict value on the budget splits between the project categories reduces the strategic influence this control mechanism has on the final portfolio. Having a dynamic portfolio where projects are initiated individually does, however, give the organization the possibility of quickly adapting the portfolio to both internal and external change.

6.1.3 Portfolio level
Selection criteria are used to assure strategic alignment through the portfolio structuring process. Setting up scoring factors that mirrors the strategic objectives of the organization is, however, difficult due to the uncertain nature of the internal development projects. Furthermore, it is difficult to estimate the value of the criteria that has been chosen. A consequence can be that other methods for project prioritization than the documented ones are used, leading to a dynamic prioritization process and a less detailed and formal strategic plan. This, in turn, results in a disconnect between the actual prioritization criteria and the strategic objectives of the organization, leading to a lower effectiveness of the selection criteria in assuring strategic alignment.

The expected value of the portfolio is not only a result of projects individual value but is also affected by synergies and dependencies. Using a portfolio roadmap, some of the dependencies between projects can be highlighted. Difficulties in measuring values of synergies and dependencies makes discussions with experts an important method for estimating the combined value of multiple projects and gives the experts high impact on the prioritization process. To make sure that the strategic objectives of the organization guide the decisions, a portfolio owner is used to assess expert estimates and opinions and to make the individual portfolio prioritization. Another method used to assure alignment with strategy is portfolio balancing, for instance, by balancing the number of projects with a short versus long time horizon. A focus on short-term value and favoring “urgent” projects at lower levels of the organization effects the prioritization but can be handled through balancing.

As many of the internal development projects are done to improve functional department processes, the functional departments become the natural starting point for project ideation. Having the functional departments being responsible for screening as well can result in too many projects being approved for the evaluation process, affecting the quality of the portfolio structuring due to time constraints.

6.1.4 Summery
Table 3 below summarizes the PPM actions that influences strategy implementation in the internal development department, categorized over the strategy implementation areas. Conditions that influence the actions, as well as effects, are listed for the actions where there have been any such findings.
<table>
<thead>
<tr>
<th>Strategy Implementation Area</th>
<th>PPM Action</th>
<th>Conditions</th>
<th>Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Level</strong></td>
<td>Project success criteria aligned with strategy</td>
<td>Gathering relevant information is difficult</td>
<td>Criteria do not cover all the strategic objectives</td>
</tr>
<tr>
<td></td>
<td>PM routines</td>
<td>Shared responsibility over functional boarders</td>
<td>Shaping the routines becomes difficult</td>
</tr>
<tr>
<td></td>
<td>Shaping project models</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Resource Allocation</strong></td>
<td>Resource priorities</td>
<td>Low transparency over functional boarders</td>
<td>Decision rules cannot be set on a portfolio level, meaning bottom-up priority decisions.</td>
</tr>
<tr>
<td></td>
<td>Project selection</td>
<td>difficulties attaining sufficient resource information</td>
<td>Grouping highest valued projects together is hard</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dynamic project initiation</td>
<td>Quick response to change</td>
</tr>
<tr>
<td></td>
<td>Portfolio adjustment</td>
<td>Expensive to stop projects when sufficient information on project value has been gathered.</td>
<td>Adjusting the portfolio to better align with strategy becomes expensive.</td>
</tr>
<tr>
<td></td>
<td>Multiple portfolio budgeting</td>
<td>Different projects.</td>
<td>Hard to create relevant categories for budgeting and structuring</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Effects individual or multiple functions.</td>
<td></td>
</tr>
<tr>
<td><strong>Portfolio Level</strong></td>
<td>Project scoring</td>
<td>Uncertain nature of internal development projects.</td>
<td>Scoring variables do not fully mirror strategic objectives</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Difficulties in measuring synergies and dependencies.</td>
<td>Dynamic prioritization process.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Less detailed strategic plan.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Must rely on expert judgement for evaluating project</td>
</tr>
</tbody>
</table>
### 6.2 Managerial implications

When using scoring criteria for project prioritization, information availability should be considered in the forming of these criteria. If scoring criteria are set to mirror the objectives of the organizational strategy but there is not enough information to cover all objectives, or there is no way of measuring the objectives, there is a risk that the information available will favor some strategic objectives over others. Furthermore, stakeholders in the organization might have different strategies and value projects differently, which might interfere with the strategic objectives of the organization. A formal approach to project scoring should be used to assure that projects are evaluated according to the organizational strategy. If projects adhering to different portfolios, or categories, serves different strategies, criteria should be set to mirror those strategies. Since it can be difficult to cover all strategic objectives in the scoring criteria, other methods may be implemented to achieve strategic alignment. Two other approaches mentioned in this study are portfolio budgeting and balancing. Budgeting assures that resources are used for initiatives that are strategically important to the organization, while balancing assures that the mix of project meets strategic requirements that cannot be reached through individual projects, such as the level of risk.

Furthermore, having resource owners in the functional departments can make it difficult to prioritize active projects on a portfolio level, and in turn according to organizational strategy. Having a shared list of priorities between functional departments and the internal development portfolio increases the transparency and may create the right conditions to use decision rules aligned with organizational strategy.

Finally, having information on resource supply and demand is important for both the selection stage and the adjustment stage of portfolio structuring. When selecting projects, their value contribution depends on dependencies and synergies that can only be defined in relation to the group of projects that is the portfolio. When grouping projects together, resource supply and demand is a deciding factor. Adjusting the portfolio is done based on the re-evaluation of the projects, using new information. If the cost of project information (for instance through a feasibility study) is high, the price of adjusting the portfolio will be high as well. Establishing a system that allows for reliable resource information early in the PPM process will therefore be valuable throughout the portfolio structuring process.

### 6.3 Recommendations

The following list of recommendations are aimed towards the case organization and are suggestions on how the PPM process can be improved. Even though the recommendations are specified towards EnergyComp, other organizations may implement the same changes in their PPM process.
• Use formal approach to prioritization. As mentioned, Meskendahl (2010) defines a formal approach as using reasonable and clear rules, adhere to explicit and objective criteria, and be led by transparent and known procedures. The rules for portfolio prioritization should be clear and followed by all stakeholders in the process.

• Use scoring factors that are most important to the organization and that can be measured. Figure out what is valuable to the organization and to different stakeholders. If stakeholders value projects using different measures than the ones decided, scoring criteria might be missing.

• Adjust scoring factors to the strategy of the portfolio. Different portfolios or project categories might have different strategies and the criteria for scoring should be adjusted thereafter.

• Use formal screening criteria to reduce the number of projects early in the structuring process. A large number of project candidates increases the workload of the structuring process and makes tasks such as pairwise comparison harder. Decreasing the number of projects through screening may therefore increase the quality of the portfolio structuring outcome.

• Measure project success using multiple factors with strategic value. Shenhar et al. (2001) suggest some additional measures being project efficiency, impact on customer, business success, and preparing for the future.

• Include actions connected to strategic goals in the project models. For instance, there is a possibility to extend the project models to include a first product release plan that can have an impact on the strategic objective of faster release times.

• Expand the use of project categories. As have been mentioned, categorizing projects according to complexity could help the project selection process. A possibility is to use two portfolios with different complexity levels and to initiate the low complexity projects based on resource capacity. With different categories projects could be evaluated using different evaluation criteria that are more relevant to the specified categories. When using up all of the capacity running lower priority projects, there is however a risk of task switching inefficiencies that has to be taken into consideration as well.

• Balance the portfolio over more categories. A suggestion is to use an aggregate project plan, as described in the model by Wheelwright and Clark (1992) in chapter 2.3.1.2, to map out the project types and make a strategy associated with a project mix. As shown in the model by Spradlin and Kutoloski (1999), described in chapter 2.3.1.1, different project mixes in the strategy table can be evaluated and compared to each other in the evaluation process as well. Some balancing factors to use could be risk versus reward and ease versus attractiveness as well.

• Evaluate project dependencies and interactions as they affect the value brought to the organization. A suggestion is to compare groups of projects against each other to figure out dependencies and synergetic values. Again, a method such as the one described by Spradlin and Kutoloski (1999) in chapter 2.3.1.1 could be used in this regard.

• Run less projects, but with a higher resource dedications rates to improve efficiency and faster time to cash.

• Make the resource allocation process more transparent. By having a system for sharing information on priorities between different initiatives over functional
boarders, priorities can be set higher up in the organization according to organizational strategy using decision rules.

- Look into the possibility of using a scope-in approach as suggested by Petit (2012) (see chapter 2.2.1).
- Look into how project information relevant to the prioritization process can be obtained earlier in the process. Adjustments to the portfolio are expensive due to the price on information, lowering that price will open up more possibilities for portfolio adjustments.

6.4 Limitations and future studies
This study has been done using information gathered for a single case company and is therefore influenced by the characteristics of, and specific situation at, EnergyComp. Even though the outcome of the study is limited to this regard, implications may still be applicable for similar organizations. What may limit the application of the findings is a lacking understanding of what differentiates the PPM process at an internal development department from other contexts, such as NPD or R&D departments. Future studies could be done to explore and establish the factors that differentiates the conditions for PPM in internal development departments from other organizational contexts. As this study was done using a single case organization, the results cannot be claimed to represent a generic case. In this regard, the author suggests a future study on PPM in internal development departments using data from internal development departments in multiple organizations. Finally, the author found data suggesting that lacking data for evaluating project scores may lead to an informal selection process. It would therefore be interesting to see a study done on the effects of not having sufficient data for project evaluation.
References


Appendix 1

Interview guide in Swedish

Strategiformulering och uppföljning:

- Är handlingsplanen för hur strategin ska uppnås tydlig?
- Hur bestäms resursfördelningen? På vilket sätt kopplas den till strategin? Förändras utbud/efterfrågan på resurser ofta?
- Hur implementeras strategi i organisationen? Ge gärna exempel – hur försäkras att implementering sker enligt önskemål?
- Hur förmedlas strategin till organisationen?
- Hur mäts strategiförändring/resultat av strategi?
- Vad har fungerat bra i strategiprocessen?
- Vad har fungerat mindre bra?

Organisation:

- Hur är organisationen strukturerad för att behandla projekten?
- Hur påverkar organisationsstrukturen projektportföljens effektivitet?
- Finns det aspekter av organisationens struktur som försvårar arbetet med projekt och projektportfölj?
- Vilka är delaktiga i Gate-möten och vilka fattar beslut om Go/Kill? – vad får sådana beslut för konsekvenser för portföljen? – hur påverkar dessa beslut resursfördelningar?

PPM process:

- Vad är stegen i PPM-processen i detalj? (Ideation/proposals, screening, evaluation, re-evaluation, selection, adjustment)
- Finns det delar av processen som har förändrats och isåfall hur? (Har ni hunnit se några effekter av förändringarna?)
- Finns det delar av processen som inte har fungerat? Finns det delar som har fungerat mycket bra?
- Hur sköts resurskonflikter i portföljplaneringsstadiet (innan portföljen är fastställd)?
- Hur sköts resurskonflikter in action? Hur ser prioriteringen ut mellan projekt i organisationen?
- Finns det en modell för projektprioritering, hur bestäms denna, och av vem/vilka?
- Hur kategoriseras projekt i portföljen? (varför denna kategorisering?)
- Finns det en balans mellan olika typer av projekt i portföljen? (storlek/tid/risk/produkttyp)
- Sker en medveten balansering mellan projekttyper? Vilka faktorer tas då hänsyn till?
Hur hanteras risk i PPM-processen och hur mäts den? – vilka är de största riskfaktorerna i projekten?

Hur mäts värden på portföljen? Hur värderas de enskilda projekten? Omvärderas portföljen regelbundet?

Finns det några hårda krav för att projektet ska väljas ut?

Hur ofta omvärderas projekten i portföljen? Hur ofta görs bedömningar om projekten förtfarande passar portföljen?

Hur hanteras ändrade resurskrav/ändrat scope för ett projekt? Vad finns det för buffertar?

Kan du se en koppling mellan strategi och de projekt som finns i portföljen? – hur vet du att portföljen är i linje med organisationens strategi?

Hur bestäms mängden projekt i portföljen?

Hur bedöms interaktioner mellan olika projekt och när i processen behandlas dessa? (resurskonflikter/synergier/ordningskrav)

Hur delas information gällande interaktioner mellan projekt i organisationen?

Hur informeras de olika intressenterna om resursallokeringsbeslut?

Hur sker resursplanering på lång, medel och kort sikt? Hur länkas dessa samman och hur används feedback för att förbättra processen?

Hur ser förståelsen för urvalskrav ut bland de som tar fram projektförslag? (finns det några incitament för att utforma idéförslag på ett bra sätt och att ta fram förslag)

Projekt-nivå:

Hur mäts framgång i enskilda projekt?

Hur särskiljs framgång?

Hur uppfattas organisationens strategi? Kan du se kopplingar till hur projekt prioriteras, genomförs och följs upp?

Kan projekt missa de ursprungliga målen och fortfarande vara framgångsrika?

Hur kan en förändring i scope i ett projekt se ut? (vanliga orsaker, vad förändras: slutprodukt, leverabler osv)

Hur påverkar förändringar i scope på framgång för projektet?

Vad är de främsta faktorerna som avgör om ett projekt kommer vara framgångsrikt eller inte?

Vilka projektmodeller används och fungerar de bra? Vad skulle kunna förändras och varför?

Hur fungerar resurser insamling? Hur ofta sker omfördelningar av resurser och varför?

Hur hög dedikeringsgrad har de enskilda resurserna i projekten? Hur påverkar det arbetet? Hur påverkar det planeringen av arbetet?

Vilka resurser är mest eftertraktade?

Hur hanteras förändringar i resurskrav/scope? Till vem rapporteras förväntade förändringar?

Vilka faktorer kan leda till förändringar i projektplanen?

Hur sköts resurskonflikter in action? Hur ser prioriteringen ut mellan projekt i organisationen?

Hur informeras de olika intressenterna om resursallokeringsbeslut?