# MASTER'S THESIS

**Enablers and Inhibitors for Achieving Agility in Project Portfolio Management**

Simkens, D

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# Enablers and Inhibitors for Achieving Agility in Project Portfolio Management

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Student:         Dries Simkens

Student number:

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Graduation supervisor  dr. Tim Huygh

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# Abstract

If an organization wants to be able to respond to the fast evolving business environment and customer requirements it needs to work on being adaptive or in other words agile. The last few years research has been explaining what an organization should strive for when it sets out to reap the benefits of an agile methodology on a project portfolio level. Different design principles are defined to reach design goals to set up an effective agile project portfolio management system. But there is no complete framework for agile project portfolio management at the time of this research. One of the things that is missing is a lack of evidence concerning antecedents that inhibit or enable the adoption of those design principles. Those antecedents or in other words enablers and inhibitors foster and hamper achieving agility in project portfolio management. This qualitative, explorative research documents evidence of thirteen enablers and seven inhibitors with the help of data gathered in eight different cases across eight different industries. One semi-structured interview was conducted, transcribed and coded per case. This research finds evidence that leads to belief that the body of knowledge needs to be expanded in order to fully grasp what is necessary to achieve agility on a project portfolio level. It provides elements on which an organization can reflect before starting initiatives to organize itself towards agile project portfolio management.

*Keywords: agility, project portfolio management, enablers, inhibitors*

# Summary

Look before you leap. A company should know what it is up against when it sets out to achieve agility on a project portfolio level. The current body of knowledge concerning agile project portfolio management describes aspects of project portfolio management that are impacted when an organization wants to achieve agility on a project portfolio level. Different design principles that a company should deploy in order to reach design goals that are set to adopt an effective agile project portfolio management system are documented as well.

The context that an organization should have in order to succeed in achieving agility in project portfolio management is not yet described. In other words there is no evidence to be found concerning antecedents of those impacted aspects or design principles. These antecedents can serve as a readiness check for an organization that wants to be able to adapt quicker to arising opportunities to stay ahead of competition and thus wants to achieve agility in project portfolio management. How ready an organization is to start adopting design principles is a question left unanswered. The current body of knowledge does not help the organization to effectively implement those principles or changes in aspects of their current project portfolio management efforts. Knowing what the principles are will probably not suffice when an organizations wants to start initiatives that facilitate the change towards agile project portfolio management. The design principles theory needs to be extended. The theory needs to take into account the conditions the organization faces at the moment of adoption. It needs to take the readiness of the organization into account.

In order to find out more about these different conditions and their impact on adoption this research sets out to find beliefs and perceptions coming from people that occupy themselves daily with project portfolio management. That is the reason PMO Managers were asked to participate. This research wants to explore their beliefs and perceptions concerning the design principles and impacted project portfolio aspects. Mainly because those people will receive the challenge to find a solution concerning the way their organization manages project portfolios. The literature defines those beliefs or perceptions as enablers and inhibitors. They either foster or hamper achieving agility in project portfolio management. Enablers are beliefs or perceptions that foster achieving agility when they occur in a positive state and hamper achieving agility when they occur in a negative state. Inhibitors can only occur in one state. An inhibitor is a perception or belief that hampers the adoption of agile project portfolio management. If an organization maximizes enablers and minimizes inhibitors it has set the right conditions or context to adopt design principles or changes in project portfolio management aspects and through that achieve agility in project portfolio management.

Proof of those perceptions and beliefs (i.e., enablers and inhibitors) is be sought for through an explorative, qualitative research. Semi-structured individual interviews were conducted with people that manage project portfolios (i.e., PMO Managers). Nine mini cases were selected. Mini cases because only one interview per case was held. The number of cases is high to improve generalizability of the formulated results.

First of all the current context concerning project portfolio management within the organization was questioned.  Respondents were asked about their project portfolio practices. Some aspects of successful project portfolio management were used to check if the organization already recognizes certain challenges. In the next step the concept of agility was introduced and used to envision a certain to be state of their way of working. The different impacted aspects and design principles where then used to question the PMO Managers on whether or not they thought it was possible to adopt those impacted aspects or design principles and why.

The interviews were transcribed and through coding analysis enablers and inhibitors were detected. If an organization maximizes following enablers (1) use software tooling supporting project portfolio management, (2) use a nuanced business case as foundation of a project in a portfolio, (3) assign a

class and a type to projects in a portfolio, (4) have specific and documented strategic goals, (5) realize that management needs support, (6) dare to let go projects or initiatives on a portfolio at any time, (7) invest time in agreeing and implementing performance indicators, (8) create budgets based on portfolio(s) instead of budgets per project, (9) get employees of daily tasks consciously instead of putting work on top of their daily agenda, (10) mature the PMO department, (11) mature the organization, (12) invest in an innovation cell, (13) work with a quality framework, it focuses on creating the best possible context to achieve agility in project portfolio management.

The company should minimize following inhibitors as well in order to set the best possible context; (1) missing knowledge and interest, (2) doing everything at once, (3) implement too much procedures and policies, (4) Fixed yearly project starting moment and cycle time, (5) only having a departmental portfolio or PMO, (6) not taking into account that a company could be by default in a more regulated structure, (7) different visions and beliefs in the board of directors.

Organizations can consult this evidence to reflect on before they start initiatives meant to achieve agility in project portfolio management.

# 1. Introduction

## 1.1. Background

Evolving technology and IT solutions create a fast changing environment for companies to operate in while customer needs evolve in parallel. The company that is able to adapt the best and the fastest to those changing needs will gain competitive advantage. Companies can achieve that advantage through a well-managed portfolio of projects that create the right value streams for the organization and that align project participants to defined strategic objectives (Chakko, Huygh, & De Haes, 2021; Hoffmann, Müller, & Ahlemann, 2017; Horlach, Schirmer, & Drews, 2019). Agility enables the possibility to adapt a project portfolio in such a way that a company can profit from e.g. changing technologies and changing strategic objectives. Thus, portfolio agility is important for a company if it wants to quickly adapt its project portfolio in order to change its direction to meet and surpass customer needs (Horlach et al., 2019; Kock & Georg Gemünden, 2016b). This research wants to add theoretical and empirical knowledge to the field of achieving agility in project portfolio management.

## 1.2. Field exploration

Project Portfolio Management (PPM) is the concept of managing different projects that are implemented to realize enterprise strategies. It is important to screen, select, prioritize projects and to allocate the right resources to those projects to be able to comply to the defined enterprise strategy (Chakko et al., 2021). When the project portfolio is not managed right, conflicts can arise in the form of unavailability of required resources, project delays or overloaded employees. In other words opportunities will be missed (Hoffmann et al., 2017).

Agile practices are being introduced in different levels of the company. It is no longer viewed only as a way to organize and deliver high quality software projects that easily adopt features based on rapid changing user needs (Chakko et al., 2021; Horlach et al., 2019). Agility is continuous flexibility, responsiveness, setting up a culture of change, mobilizing core capabilities, processes and knowledge, continuously sensing the environment, scanning business requirements. Put differently, agility can be seen as performing continuous proactive and reactive strategic moves (Horlach et al., 2019).

Agility is being instantiated in the project portfolio management level of the company in order to effectively link strategy to execution and eventually to improve the success of a company. Agile project portfolio management is a capability that enables continuous strategic choices and correct prioritization of projects (Chakko et al., 2021; Horlach et al., 2019).

There already is a young theoretical body of knowledge concerning the instantiation of agility in project portfolio management. Design principles were formed to guide a company towards the achievement of design goals that describe why a company should set out to achieve agility and thus to be able to continuously deliver projects, dynamically prioritize projects and focus on short-running projects (Hoffmann et al., 2017). These design principles (e.g., a company should align project portfolio management with adjoining strategic management processes like budget planning, investment requests,…) can help to set up a project portfolio management system that organizations can use to reach their strategic objectives. This agile system will eventually help the company to keep meeting customer needs and realize benefits (Horlach et al., 2019). Eventually it all comes down to benefit realization (Hoffmann et al., 2017).

Enablers play a role in allowing new information systems or services to be introduced into the business model of an organization. They make sure that old ways are changed and processes become reengineered (Hammer & Champy, 2009; Schallmo, Williams, & Boardman, 2020). For example van de Wetering and Versendaal (2021) found that digital dynamic capabilities can be adopted as enablers by companies to help their development of innovation ambidexterity, absorptive capacity and organizational adaptiveness. Or Laanti, Sirkiä, and Kangas (2015) describe budget allocation as an enabler for agility in portfolio management. Next to enablers, that need to be maximized, inhibitors need to be minimized. Both are be researched here to find out what a company should focus on to achieve agility in project portfolio management. Inhibitors are factors that can lead to a failure to introduce information systems or services into the business model of an organization. (Rey-Moreno, Felício, Medina-Molina, & Rufín, 2018). Next to that Luftman, Papp, and Brier (1999) state that inhibitors are not independent and can be found in connection with other inhibitors. Which means that an inhibitor also cannot be solved by one easy to implement solution. An example of a category of inhibitors is the intention of use which is influenced by factors (i.e., inhibitors) such as resistance or inertia (Rey-Moreno et al., 2018).

## 1.3.    Problem and mission statement

Introducing agile project portfolio management based on generic design principles in a company is linked to different challenges. The principles need to be extended or adjusted according to the conditions it faces at the moment of implementation (Hoffmann et al., 2017). The factors that a company needs to change or needs to adopt to create the right contextual conditions to instantiate design principles derived from design goals, has not been subject of research in this field. It is not clear what factors could enable, or in contrast could inhibit the adoption of design principles. Nor is it thoroughly researched if the context of an organization influences certain design principles to become more or rather less important. The question remains what factors within a company can be created or manipulated in order to set the right context for the instantiation of design principles to reach each design goal and eventually achieve agility in project portfolio management. In other words, it is not clear if there are inhibitors that hamper or enablers that foster the achievement of agility in project portfolio management. Kock and Georg Gemünden (2016a) did for example already investigate enablers and inhibitors to decision making quality that eventually influences agility in project portfolio management. But that research only puts focus on one aspect and thus has a limited scope, mainly because it was performed before the design principles were defined.

This research wants to detect possible inhibitors and required enablers to achieve portfolio agility by searching for theoretical evidence in the existing body of knowledge and empirically validating that theoretical evidence. Next to validating enablers and inhibitors found in the body of knowledge this research searches to complement that body of knowledge by adding empirically detected inhibitors and enablers. The selected enablers and inhibitors can be subject to future study that searches to find causal, temporal or conditional relationships between enablers or inhibitors and their possibility to instantiate design principles to reach design goals that are set to achieve agility in project portfolio management.

Following research question was constructed to guide this research: **"How do enabling factors foster and how do inhibiting factors hamper the achievement of agility in project portfolio management?"**

## 1.4. Motivation / Relevance

The findings of this study have theoretical implications by helping to understand how agility in project portfolio management can be achieved. It expands the current knowledge by adding insights concerning the adoption of agile portfolio management in organizations.

The practical relevance is that companies have an indication that can be used to check if they have the enabling factors that foster, or the inhibiting factors that hamper, the ability to adopt design principles to achieve agility in project portfolio management. An organization which did not yet achieve agility in project portfolio management can for example start to initiate projects that focus on changing or adopting the inhibiting or enabling factors in a way that eventually helps the instantiation of design principles. Checking whether or not the organization has the right context (i.e., maximized enablers and minimized inhibitors) can be seen as a readiness check. That readiness check helps the company to assess whether or not it is ready to adopt agility on a project portfolio level.

# 2. Theoretical framework

## 2.1. Literature review approach

This research focuses on project portfolio management, what it is, why and how an organization should instantiate project portfolio management. Additionally it is necessary to know what agility is and what agility means in terms of project portfolio management. Finally the focus lies on how agility is introduced in the project portfolio management level. This all should give enough theoretical guidance to search towards empirical proof of inhibitors and enablers that respectively hamper of foster the achievement of agility in project portfolio management.

First, Google Scholar was searched for articles with "portfolio management" all in the title. Second, the library of the Open University was consulted by searching for papers that had "project portfolio management" in the title. The third search was in the Open University library while using a search query where "Portfolio Management" or "Project Portfolio" had to be in the title together with "agil*" and "agile" or "agility" that needed to be found in the abstract. The fourth search was on Google Scholar using "project portfolio management" as exact sentence and at least one of following words "agile" or "agility" or "project portfolio" or "portfolio management" in the entire article. The four searches were done with peer reviewed articles as requirement.

In the first two searches that were meant to find the relevant body of knowledge describing project portfolio management 277 papers were found from which 54 seemed relevant after checking the title, the teaser and the availability of the entire research article. For the theoretical background of agility in project portfolio management (i.e., the third and fourth search) 67 papers from which 16 seemed relevant were found after checking the same aspects as the first and second search. Acceptance criteria were constructed to check which of the 70 relevant papers were going to be used in the theoretical background. If the abstract of the paper provided an answer to the what, why or how of project portfolio management or the what, why or how of agility in project portfolio management a motiviation was given describing why that paper should have been used. Eventually those motivations were checked again and in that way formed the basis of the eventual selection. The top 9 motivations were selected while taking into account an even spread over the two themes. 5 Papers belonged to the project porfolio management theme and 4 papers belonged to the agility in project portfolio theme. One paper that was already used in the introduction and given by the Open University was reused and one paper was used through forward snowballing from that one given paper. In total 11 papers were consolidated to describe the theoretical background. The acceptance criteria, the selected researches and the motivation as to why they were selected can be found in appendix a. Forward snowballing was used to create the theoretical background concerning enablers and inhibitors. First a search string "Enablers definition" was used in Google Scholar where I found Henriques, Pereira, Almeida, and Da Silva (2020). After that I performed a search with the string "Inhibitors " combined with at least one of following words in the body of the paper: technology, adoption, implementation in Google Scholar. Laumer and Eckhardt (2012) guided me towards Cenfetelli (2004). Which provided a definition of enablers and inhibitors in the technology adoption context which seemed fit to build this research on seen the context of this research involves the adoption of innovative methods. The definition of Enablers was consolidated with that of Henriques et al. (2020) thanks to the relevant link to the information technology governance context.

During the literature review a search was performed towards peer reviewed research papers on enablers and inhibitors of achieving agility in project portfolio management. This was done on the search engines available to the researcher (i.e., Google Scholar and the Open University Library). Following words were sought for in Google Scholar: enablers, inhibitors, agility, project, portfolio,

management. They all had to be in the full text of the research which gave 151 results. Those results describe enablers and inhibitors in the IT, Enterprise Architecture, Artificial Intelligence, Innovation, Supply Chain, Health disciplines. The same search string was used in the Open University library and gave 42 results. These results were situated mostly in the IT but also in the supply chain, Innovation, Strategy, Organizational Transformation disciplines and described enablers and inhibitors as well. But no relevant to the project portfolio discipline paper was found in these results.
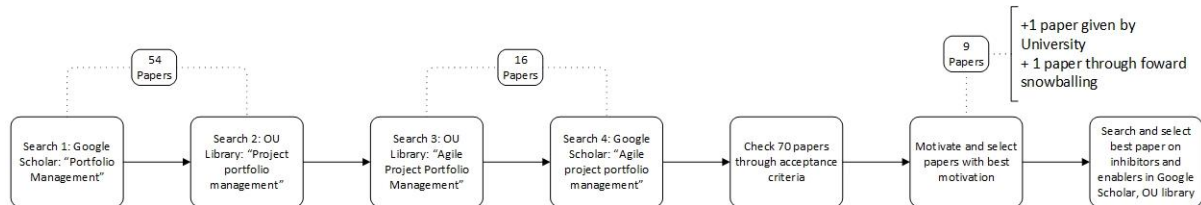


*Figure 1: Approach Theoretical Background*

## 2.2.      Results and conclusions

**Project Portfolio Management**
Project Portfolio Management (PPM) can be seen as one large entity of all the projects in an organization that is managed and sponsored by company managers. The right projects need to be selected, prioritized and evaluated to be able to form one entity that helps the organization to reach strategic goals. Once the projects are selected the limited company resources need to be allocated to the projects (Chakko et al., 2021; Martinsuo, 2013; Meskendahl, 2010; Müller, Martinsuo, & Blomquist, 2008). Gutiérrez and Magnusson (2014); Müller et al. (2008) add that Project Portfolio Management is a dynamic decision making process that eventually constantly updates and revises an active list of projects.

A project portfolio can be seen as a cornerstone needed to implement a formulated strategy to eventually reach long-term success (Chakko et al., 2021; Martinsuo, 2013; Meskendahl, 2010; Müller et al., 2008). A project portfolio prepares the organization for the future by structurally reconfiguring an organization, by opening the possibility to explore new markets, by developing new technologies and processes, by adding skills and competences and by adapting to fast changing environments (Martinsuo, 2013; Meskendahl, 2010; Rank, Unger, & Gemünden, 2015).

There is substantial theoretical and empirical evidence on how an organization can adopt successful project portfolio management practices. Müller et al. (2008) prove that projects need to be selected in line with organizational strategy, uniform reporting activities need to be implemented to exploit information from all projects within the portfolio and there needs to be a shared responsibility for decision making concerning projects in a project portfolio. The research from Martinsuo (2013) complements the latter by adding that decisions concerning projects in a project portfolio are based on negotiation and bargaining by managers about formal and informal issues they face. The research also states that an organization needs to pay attention to inter-project issues, to the context of the projects (i.e., interplay between projects and their parent organization) and to changes in the portfolio to be able to successfully reconfigure an organization. Rank et al. (2015) add that an organization needs to prepare for the future and that it needs to instantiate a high quality management. A high level of proactiveness (i.e., the ability to keep looking forward and searching for opportunities), a low riskiness (i.e., the allocation of resources to uncertain projects with a high chance on failure by management in order to explore the unknown) and a high willingness to cannibalize (i.e., reducing efforts in current profitable activities to be able to put more effort in new

innovations) positively influences that management quality and preparedness for the future. Müller et al. (2008) already confirmed that contextual factors, like the type of governance, influence the success of a project portfolio in reaching the above mentioned goals. Inhibitors of project portfolio management are a lack of awareness in what needs to be done and the inverses of all the aspects that help to implement a successful project portfolio mentioned here (Martinsuo, 2013). All of the previously mentioned aspects are summarized in Table 1. Table 1 provides a summary of aspects that describe successful project portfolio management practices. Every aspect is linked to their respective reference.

| How | Reference |
|---|---|
| Projects need to be in line with organizational strategy | (Müller et al., 2008) |
| Implement uniform reporting activities | (Müller et al., 2008) |
| Shared responsibility for decision making concerning projects | (Müller et al., 2008) |
| Decisions about projects are based on negotiation and bargaining by managers | (Martinsuo, 2013) |
| Pay attention to inter-project issues | (Martinsuo, 2013) |
| Pay attention to the context (i.e., projects and organization) of a project | (Martinsuo, 2013) |
| Pay attention to changes in the portfolio | (Martinsuo, 2013) |
| High level of proactiveness (i.e., look forward and search for opportunities) | (Rank et al., 2015) |
| Low level of riskiness (i.e., resources allocated to explore the unknown) | (Rank et al., 2015) |
| High willingness to cannibalize (i.e., innovation at the cost of profitable activities) | (Rank et al., 2015) |

Table 1 - Characteristics of successful project portfolio management

**Achieving agility in project portfolio management**

This research follows the definition of agility as known in the Information System Domain (ISD) because it already contains some of the project portfolio management aspects mentioned before and describes aspects that an organization as a whole adopts when achieving agility at scale (Chakko et al., 2021; Dikert, Paasivaara, & Lassenius, 2016). More specifically the definition developed by the research of Conboy (2009): *"the continual readiness of an ISD method to rapidly or inherently create change, proactively or reactively embrace change, and learn from change while contributing to perceived customer value (economy, quality, and simplicity), through its collective components and relationships with its environment."* The main difference between agility in ISD and on a project portfolio level is that there are much more dependencies and interactions between portfolio projects and organizational teams, other than development teams, which are inherently not agile (e.g., Human Resources) (Dikert et al., 2016). Agility on a project portfolio level means that the organization proactively senses changes in customer needs, which need to be satisfied as they have the power and ability to define the problems relevant for the organization (Chakko et al., 2021; Horlach et al., 2019).

The transformation from a traditional (i.e., reactive) type of project portfolio management that reacts to changes in strategic directions to a proactive type of project portfolio management does not exclude the traditional goals of project portfolio management described above (e.g., solving inter-project issues, reporting activities, low riskiness,…) (Horlach et al., 2019). Quite the contrary, it adds additional goals like striving for shorter cycles in budget planning, in resource allocation and in delivery cycles to continually adapt and change faster than the competition (Chakko et al., 2021; Horlach et al., 2019) and to improve organizational performance (Dikert et al., 2016). Which is why an organization should achieve agility at a project portfolio level. Agility is important to balance a project portfolio in a healthy way between explorative (i.e., projects with a higher riskiness as they

are more change-driven) and exploitive projects (Gutiérrez & Magnusson, 2014; Horlach et al., 2019). Explorative projects revolve around experimentation with new initiatives while exploitive projects revolve around refining and extending existing competences, technologies and paradigms (March, 1991). To rapidly create change in projects in a portfolio and therefore be able to adapt the value delivery outlook to changing customer needs is also a reason as to why an organization needs to achieve agility at a project portfolio level (Chakko et al., 2021; Horlach et al., 2019).
A traditional organization includes legacy processes that reflect legacy mindsets and culture. All these processes can be seen as opportunities to introduce agile principles at scale (Thomas & Baker, 2008). Introducing agility will often mean that the entire company culture needs to be changed (Dikert et al., 2016).

An organization can adopt agility at a project portfolio level and reap its benefits by changing existing project an project portfolio practices (Chakko et al., 2021; Horlach et al., 2019). Existing agility frameworks (e.g., Scaled Agile Framework, Disciplined Agile,…) are rather inflexible. The Dikert et al. (2016) systematic literature review defined nine categories of challenges and eleven categories of success factors explaining how agile practices can be scaled in an organization. That research was processed in the Chakko et al. (2021) literature review which is more focused on scaling agility to the project portfolio level than only focusing on agility at scale. It was concluded in their research that there are six aspects that are impacted in project portfolio management while adding agility. (1) Portfolio strategic alignment (e.g., PMO structures facilitate visibility), (2) continuous delivery (e.g., shorter portfolio cycles, continuous prioritization), (3) adaptive nature (e.g., customer value as the basis for evaluation), (4) learning through feedback, (5) financial processes (e.g., continuous forecasts) and (6) performance indicators (e.g., PMO structures to facilitate reporting). Horlach et al. (2019) developed four design goals that an organization needs to adopt in order to achieve agility in project portfolio management. (1) A customer-value based portfolio of projects, (2) a time-efficient portfolio elicitation and management process, (3) an efficient setup of allocation processes of budgets and people and (4) continuous alignment between business and IT in the management of the project portfolio. These 4 goals are also found in the 6 aspects of Chakko et al. (2021). An organization can deploy following design principles to reach these design goals: customer solution driven portfolio management, multi-level cross-functional portfolio governance body, aligned autonomous portfolio decision making, synchronized short portfolio cycle, alignment of portfolio management with adjoining strategic management processes and extension towards innovation management capabilities (Horlach et al., 2019). Another aspect is that it is important for an organization to avoid putting too much focus on formal and rational decision making. Different situations require different approaches to decision making, which means that a manager can use intuition as well as rational thinking. So there should be formally negotiated and accepted rules on approaches to decision making present in an organization. Meanwhile the organization should keep in mind that decision making approaches based on intuition and informalities do not ensure the fulfillment of organizational goals and that it will affect the formal resource allocation process (Gutiérrez & Magnusson, 2014). Management support in general is crucial in achieving agility. The mindset found in an organization and especially in its management is equally important (Dikert et al., 2016; Thomas & Baker, 2008). Keeping in mind that achieving flexibility (i.e., agility following the definition of Conboy (2009)) is not as simple as combining different decision making approaches (Gutiérrez & Magnusson, 2014). All of the previously mentioned design principles and impacted aspects of project portfolio management when agility is added are summarized in table 2 in which their respective references are mentioned as well. Context might be seen as a natural inhibitor for agility. A traditional organization naturally does not adopt agile project management methods. More standardized approaches are adopted seen that organizations in a traditional industry (e.g.,

construction industry) have a background in long term plan-driven project management approaches. Those types of organizations have to deal with another starting point to achieve agility in project portfolio management compared to more IT-based organizations that are in a more change driven industry (Ershadi, Jefferies, Davis, & Mojtahedi, 2021).

But most importantly there is no one size fits all in the literature when it comes to scaling agile practices to the project portfolio level. Existing frameworks have little consistency in their recommendations (Chakko et al., 2021; Dikert et al., 2016).

| How | Reference |
| --- | --- |
| Portfolio strategic alignment | (Chakko et al., 2021; Horlach et al., 2019) |
| Continuous delivery | (Chakko et al., 2021; Horlach et al., 2019) |
| Adaptive nature | (Chakko et al., 2021; Horlach et al., 2019) |
| Learning through feedback | (Chakko et al., 2021; Horlach et al., 2019) |
| Financial processes | (Chakko et al., 2021; Horlach et al., 2019) |
| Performance indicators | (Chakko et al., 2021; Horlach et al., 2019) |
| Customer solution driven portfolio management | (Horlach et al., 2019) |
| Multi-level cross-functional portfolio governance body | (Horlach et al., 2019) |
| Aligned autonomous portfolio decision making | (Horlach et al., 2019) |
| Synchronized short portfolio cycle | (Horlach et al., 2019) |
| Alignment of portfolio management with adjoining strategic management processes | (Horlach et al., 2019) |
| Extension towards innovation management capabilities | (Horlach et al., 2019) |
| Formally negotiated and accepted rules on approaches to decision making | (Gutiérrez & Magnusson, 2014) |
| Management support | (Dikert et al., 2016; Thomas & Baker, 2008) |

*Table 2 - Characteristics of successful agile project portfolio management*

**Inhibitors and enablers**

Agility in project portfolio management can be seen as a way of working that has certain characteristics or attributes about which an employee can have a certain perception or belief that can hamper the adoption of agility in project portfolio management. Those perceptions or beliefs are inhibitors and are part of the culture of an organization. In its turn that culture has an effect on the employee's general attitude, intention and behaviour in respect to the adoption of portfolio agility. They help us to understand as to why an employee rejects the adoption of agility in project portfolio management. Inhibitors solely hamper the adoption of portfolio agility, but their absence do not foster the adoption of agility in project portfolio management. Inhibitors are perceptions about portfolio characteristics (or attributes) that are qualitatively different from the opposite perceptions that foster the adoption of agility (i.e., enablers) (Cenfetelli, 2004). Cenfetelli (2004) also states that one inhibitor can influence other beliefs as to why a way of working (i.e., agile project portfolio management) may not apply. Enablers and inhibitors are independent from each other and can occur simultaneously, they are not simply opposites of each other. Enablers are beliefs or perceptions concerning the attributes or characteristics of portfolio agility that encourage or discourage the adoption of agility. The ability of an enabler to encourage or discourage adoption contingent with its valence (i.e., possibility to behave positively or negatively) is the main difference between inhibitors and enablers. For example, ease of use as an enabler can have a positive or negative effect on adoption, a system that is easy to use will be used while a system that is difficult to be used will not be used. An inhibitor will not have an effect on adoption when absent. The COBIT

framework adds that an enabler can take the form of anything that helps to achieve company objectives. An enabler can help a company to create value by achieving agility in project portfolio management (Henriques et al., 2020).

During the construction of the theoretical background in this research there were no references found towards research that focuses on enablers and inhibitors of achievement of portfolio agility in traditional organizations. Tallon, Queiroz, Coltman, and Sharma (2019) recognize that there are antecedents of agility. They focus on enablers of agility on an organizational level but pay no attention to inhibitors. Their review on the body of literature was performed in the IT field of research with little emphasis on project portfolio management.

It can only be assumed that the characteristics of project portfolio management impacted by agility on the project portfolio level are influenced by enablers or inhibitors. That influence probably took place before those aspects were shaped in the way that agility requires those aspects to shape in an organization that was previously unfamiliar with agility in project portfolio management. This research is out to find empirical proof. Why this is important is explained in the next paragraph.

## 2.3.    Objective of the follow-up research

Existing approaches like Scaled Agile Framework (Scaled Agile, 2018) or Disciplined Agile ("Disciplined Agile," 2022) help organizations to introduce agility on a bigger scale. They take on a generic one size fits all approach (Horlach et al., 2019) which might leave organizations looking at a blurry roadmap towards the instantiation of agility in project portfolio management. Enablers and inhibitors complement above mentioned frameworks and the design goals and design principles (Horlach et al., 2019). This knowledge provides clear handles for the organization so that it is able to clearly create their roadmap towards agility in project portfolio management which will always start from the as-is situation. The aspects from Chakko et al. (2021) the design goals and principles from Horlach et al. (2019) and the insights concerning decision making from Gutiérrez and Magnusson (2014) give guidance to search for enablers and inhibitors to achieving agility in project portfolio management in this research's mini case studies. The aspects discussed in the theoretical background provide the right context and thus form the foundation for the interviews that are a part of the mini case studies. These aspects set the target state (i.e., the to-be situation) of the organization. It is this research's goal to discover potential inhibitors that hamper and enablers that foster the achievement of agility in project portfolio management that describe the as-is state of that organization. Or in other words the context of that organization on the moment it sets out to achieve agility in project portfolio management. The context that an organization should have in order to succeed in achieving that agility is not yet described in the body of knowledge. These antecedents (i.e., enablers and inhibitors) can serve as a readiness check for an organization that wants to be able to adapt quicker to arising opportunities to stay ahead of competition and thus wants to achieve agility in project portfolio management. How ready is an organization to start adopting design principles is thus a question left unanswered. Knowing what the principles are will probably not suffice. The design principles (Horlach et al., 2019) theory needs to be extended. It needs to take the readiness of the organization into account. This will help the organization to create the right roadmap towards that target state (i.e., agile project portfolio management). The latter might only be feasible when dependencies and causal relationships between enablers and inhibitors are established as well. The organization needs to have the right knowledge on its needed antecedents. By empirically discovering potential inhibitors and enablers (i.e., antecedents) knowledge can eventually be provided to the company managers that will be occupied with achieving agility in project portfolio management. The goal is to have the most amount of enabling and the least amount of inhibiting factors as possible.

# 3. Methodology

## 3.1. Conceptual design

The setup for reaching the goal of this research is finding qualitative evidence of enablers and inhibitors that respectively foster or hamper achieving agility in project portfolio management. During the construction of the theoretical background in this research no evidence was found of existing enablers or inhibitors. The performed searches indicated no evidence of research focusing on finding enablers and inhibitors in the agile project portfolio discipline. That qualitative, empirical evidence is sought after in this explorative research. The goal is to explore and explain potential relevant enablers and inhibitors through the use of a multiple mini case study design (Saunders, Lewis, & Thornhill, 2019). Because this research sets out to find empirical proof a case study approach fits, mainly because that approach helps to research a phenomenon and its dynamics in a real-life context. A detailed description including the effect of the detected enablers and inhibitors is provided in the result section. With the main goal to contribute to create a better understanding of the context of agile project portfolio management. It is only by developing a better understanding of the context that practitioners can better understand the road to the achievement of agility in project portfolio management. The goal is to describe rich empirical proof of enablers and inhibitors. To inductively support the development of the lacking knowledge about the achievement of agility in project portfolio management through introducing design principles and reaching design goals (Horlach et al., 2019). Next to that, the case studies and the in depth findings support practitioners in understanding what is happening and how they eventually can focus on the right aspects to achieve agility in project portfolio management. (Saunders et al., 2019).

## 3.2. Technical design

The unit of analysis is agility in project portfolio management on a corporate level. To make sure that the research uses a relevant group of organizations following criteria should be met. (1) the company should have a PMO department and a PMO Manager. (2) There should be a minimum of three business units within the company. (3) The company should have Belgian based headquarters to make the case study feasible seen the constraints in time, network and resources for this research. Data collection is done with the help of semi-structured interviews with the PMO Manager of the case organizations.

The definitions of project portfolio management and agile methods (i.e., based on the definition in the Information Software Development body of knowledge) from the theoretical background is used. And the different characteristics that explain how a company should successfully implement project portfolio management (e.g., uniform reporting activities, projects need to be selected in line with the strategy of the organization) and how a company should achieve agility in project portfolio management (e.g., design goals and principles) is used to search for empirical proof of inhibitors that hamper and enablers that foster the adoption of those characteristics. In this research enablers and inhibitors are perceptions or beliefs from the respondents on characteristics (i.e., table 2) of agility in project portfolio management. The characteristics in table 1 (i.e., Characteristics of successful project portfolio management) and table 2 (i.e., Characteristics of successful agile project portfolio management) serve as guideline for the semi-structured interviews. To look for that evidence during the semi-structured interviews the chosen strategy is that of an indicative multiple mini case study research with a holistic approach. 9 cases in different industries are selected to see if the findings are

applicable across different contexts and cases (Saunders et al., 2019). And to improve the generalizability of the evidence. Holistic because the research aims at respondents that work on a corporate level or have an overarching view on the organization as a whole. These mini case studies are studied overarchingly, thus no embedded parts (e.g., departments, work groups) in the unit of analysis is researched. A cross-case analysis is eventually done to find shared themes. These themes are consolidated explanations of the different cases. They form the foundation of the different enablers and inhibitors.

The goal is to select stakeholders within a case with an overarching perspective to project portfolio management throughout the organization (i.e., PMO Managers). To improve the validity of this research, all participants receive a list of subjects and the questions that are asked before their interview. That way they could adequately prepare themselves (Saunders et al., 2019). Before conducting the interviews a test interview was conducted with one of the cases. A PMO Manager was asked to provide feedback on the interview guide, style of the interview. In order to optimize the quality of the answers. Those learnings are used to improve the semi-structured interviews. As the biggest risk of this approach is the lack of depth needed to find relevant evidence. Next to that risk the semi-structured interviews have certain pitfalls concerning reliability. Because the interviews are not completely standardized it is not sure that other researches would arrive at the same evidence and eventually conclusions. Additionally there might be bias issues present. Mainly interviewer bias is a threat because the interviewer is an employee of case company eight and supports the development of the PMO department. The interviewer paid attention as to not impose own beliefs or frame of reference. The interviewer also probed responses to avoid misconception of certain responses and guarantee correct understandability as much as possible. Response bias is another risk to look out for. Mainly because of the interviewees that could provide a more positive representation of reality. Participation bias might be present when interviews of very busy interviewees take too long. Which is why every interview is timeboxed at one hour. That is also something that was tested in the test interview. Cultural differences may not influence the quality of the data seen all interviews were be held with companies with Belgian representation and Flemish speaking interviewees. The latter can be seen as a validity risk. The translation from Flemish transcripts to this research might be done differently by other researches. Choice of words and constructs are important. The issue concerning generalizability might establish. Findings might not be completely applicable to other settings. That is why nine cases are selected. The actions taken to mitigate these issues are described in appendix b (interview protocol).

A funnel structure was followed during the interviews. Interviews first started with a general introduction followed by questions about the interviewees role in the organization. Next, a general exploration of the subject (i.e., project portfolio management) was questioned. After which the questions became more specific. Finally questioning their perspectives and beliefs concerning the design principles and impacted aspects of project portfolio management when adding agile methods. In other words the interviews started off with asking for spontaneous and open feedback. After which it became more prompted by providing stimuli. The conceived definition of project portfolio management was questioned. As well as how project portfolio management is being done and if they recognize the characteristics from table 1. Then the conceived definition of agility was asked for. The definition of the theoretical background was provided and the gap between their perception and the theoretical perception was questioned. Interviewees were asked why it is important to use agility on a project portfolio level and how the company envisions the introduction of agility on that level. At last the interviewees were questioned about the characteristics of agile project portfolio management from table 2. Which characteristics are present and which are not.

Why is that the situation and what problems do they see with those characteristics within their own context. The case study protocol can be found in appendix b.

The non-standardized data was analyzed with the help of coding and reorganizing those codes into analytical categories (i.e., themes). To identify different key themes, develop and test explanations based on apparent thematic patterns and to draw conclusions, thematic analysis was used (Saunders et al., 2019) on the data gathered through semi-structured interviews. A fixed set of codes was used. There are codes representing the enablers and how enablers foster achieving agility in project portfolio management. And codes representing the inhibitors and how inhibitors hamper achieving agility in project portfolio management. A list of codes was kept with a working definition per code to facilitate this approach. After coding, the search for themes started. The coded data was reorganized per theme which helps to refine the themes. After defining the themes, the essence of each theme is documented and relationships between them are established. These themes are then coupled with a label stating that the theme discusses an enabling factor or an inhibiting factor (Saunders et al., 2019).

# 4. Results

After coding the interview transcriptions a number of enablers and inhibitors were found. One interview could not be used to improve validity of the results. That case involved a respondent whom only recently started at the company. The respondent did not have an overarching view on project portfolio practices. The results are consolidated from eight different mini case studies. One of those eight was the initial test interview. The enablers are documented first after which the inhibitors follow. Each enabler is explained with context, how the positive occurrence of the enabler fosters the achievement of agility in project portfolio management and if applicable how the negative occurrence has an impact. Table 3 (p. 23) provides an overview of all enablers and the respective cases that provided impact on that enabler. The inhibitors are described with a context and how it hampers the achievement of agility in project portfolio management. The results are exclusively based on the interpretation of answers given by the interviewees. The impacted principles are referenced as much as possible in each enabler.

## 4.1. Enablers

### 4.1.1. Use software that supports portfolio management

Software that supports project portfolio management practices requires to being supported by the organization. It must have found its place in daily project operations.

The software tool fosters achievement of agility by providing insight in the context of the project for the project manager, helping to reserve resources and visualize the resource planning, starting the project lifecycle, reporting on the different stages and status of the project lifecycle and keeping an overview of different portfolio's. In general a software tool can serve as an accelerator to further professionalize and mature project portfolio management. One of the case organizations uses a software tool to create an architectural view of the application landscape. Each project within that organization needs a validated impact assessment based on that view. All these functionalities support faster and better project portfolio decision making and prioritization. That finally helps the company to accommodate the adaptive nature of agile methods.

Case Company 2 stated that "*a fool with a tool stays a fool*" underlining the importance of the organization that should support the software. Without software tools reporting on portfolios is an intense manual task, it is difficult to provide elaborate reports that form the foundation for decision making on imposing changes within the project portfolio. Manually reporting on projects limits the amount of performance indicators to report on and thus inhibits achieving agility.

### 4.1.2. Use a minor project plan as foundation

Most cases create elaborate project plans containing a detailed description of the goals and need of a new project, fixed deadlines, milestones, requirements, scope and budget. C-level needs to sign off on the project plan (e.g., validated project charter) in order for it to make it to a project portfolio to be executed. Case 4 describes the mindset of the companies that make such elaborate project plans best with following statement "*you make a plan a, you push plan a until the moment you see we will not reach plan a*".

In order to strive towards an adaptive way to practice project portfolio management and thus to grasp opportunities in a fast changing environment four cases advise to limit the project plan. They do this for example by defining a fixed budget and initial timing (i.e., short cycle) and leaving scope as a variable that depends on the outcome of the first iteration of the project. Following arguments

were given by those four cases; an organization advances faster, creates more flexibility and has better timings and results. These things are done when a project delivers a first version after four weeks leading to faster buy-in from the customer. Or if the opposite is true, the project can be stopped in time and the resources are free to start the next relevant customer solution driven project on the portfolio backlog. Case 4 defines a risk concerning this way of working; if you set the acceptance filter for a project too low a company risks to accept projects that should not be projects. That risk will block resources on projects that do not have the right focus.

The elaborate project plans induce wrong choices or projects that are not done properly in order to meet the fixed deadline. Striving to keep meeting fixed deadlines and milestones leads to some things that cannot be redone because there is not enough time. The opposite is also possible, attention can be waning due to too much time between two milestones. The benefits of agility are lost. Employees will keep referring to the original plan discarding relevant changes that could better meet customer expectations.

### 4.1.3.    Assign a class and a type to projects

The class and type of a project summarizes a project in terms of factors like e.g., novelty, complexity, budget. Depending on the appointed class and or type it can be decided how rigorously the company's project management framework can be applied. A company is required to have a specific definition of their different types and classes. Typically there are A, B, C and D projects where A projects are e.g., the most novel, complex and expensive projects where the project management framework needs to be applied in its most rigorous form and where D projects are projects with the lowest complexity and lowest needed budget. Which class or type is appointed to a project depends on the factors an organization uses to score their projects. Each score represents a certain class or type.

It supports the creation of a clearly defined and synchronized project portfolio taking internal capacity into account. There is more freedom in class C and D projects. By cancelling the need for approval in C and D projects in management committees and providing more autonomous ways of decision making an organization can be more flexible. It is the first step for an organization to get acquainted with agile principles on a project portfolio level e.g., aligned and autonomous portfolio decision making and continuous delivery. C and D class projects can be appointed to employees with the ambition to take on more transversal work which will help them meet their personal goals to grow in the organization. This provides projects with a relevant governance according to its class and type. Next to flexibility a cross functional and focused board can be set-up for A and B class projects. That board is an extra unit that monitors the project portfolio strategic alignment. The latter supports a company to strive towards formulated strategic goals.

### 4.1.4.    Have specific and documented strategic goals

Aligning a portfolio to strategy helps to make sure that an organization works with a single agenda. Every project should fit in a strategic bucket. Case 5 uses a questionnaire and a decision matrix to check which strategic goals are supported through potential projects. Case 6 selects a top 10 projects per portfolio which is ranked based on a decision matrix indicating the impacted strategic goals. The top 10 is defined by how a project scores on the decision matrix. Strategic goals need to be known by all stakeholders. They need to be approved by the board of directors. Case 2 has a long term plan divided into stages. They do not manage more than one stage ahead. Every project that is selected helps to achieve the goals defined within the current stage. Finally a strategy helps the company to focus on the right customers.

This enabler fosters achieving agility in project portfolio management through the organization creating the right value with their portfolios and making sure that everyone navigates towards shared goals. Less time is lost on creating value for less important customers and more value is created for the right customers. Project portfolios become a mean to close gaps between the current and desired state of the organization. A decision matrix clearly shows the fit with the organization's agenda. That fit is the foundation on which decisions can be made concerning possible changes that are needed in a project portfolio. Which is how the adaptive nature of agile methods can be accommodated.

One case states that if projects in a portfolio are not clearly linked to specific strategic goals the direction in which the organization heads is based on gut feeling. There is also no way to make decisions concerning whether or not smaller initiatives (e.g., C and D class projects) should be added to a portfolio. Whether or not a project portfolio contributes to customer value perception becomes fuzzy as well. This might lead to resources not being allocated to the right projects. Case 3 says "*You are shooting arrows but you don't know why. At the end you will not reach what you wanted to reach*". This ways makes it unavoidable that money is wasted. Case 2 takes up a long term plan divided in stages approach to be able to learn from previous stages. That helps them to manage the next stage even better. They explain: "*Otherwise it will only be possible to learn what you did wrong yesterday to try to improve what you will do tomorrow*". Implying that an organization will miss the bigger picture and that it should learn from short and long term actions to be able to reach agreed upon goals.

### 4.1.5. Realize that management needs support

This enabler implies that employees whom daily activities are impacted by a project should be involved in decision making. All cases have accepted rules concerning decision making. Stating only management or C-level are allowed to make decisions concerning a project portfolio. Not one had multi-level and cross functional governance bodies. Decisions are made in e.g., the board of directors, management committee, project boards which consists of management. This enabler creates shared responsibility across multiple functions and levels in an organization.

The entire organization should support the change at hand. The idea that change comes from the business itself creates motivation to collaborate on that change. Autonomy to the team would induce faster decision making and thus faster results which provides faster acknowledgement whether or not customer value is being achieved. Employees performing the impacted operational activities have a more correct, detailed and complete view on those activities and provide valuable input for management. Including them in the decision making process by providing more autonomy makes it possible to implement the second design principle, a multi-level cross-functional portfolio governance body (Horlach et al., 2019).

Only relying on management to make decisions creates longer cycles. It also creates the perception that a portfolio is invented by management. Which counteracts the willingness to contribute to change. Case 5 adds that an organization will miss out on flexibility and intrapreneurship when decisions are centralized at the top.

### 4.1.6. Dare to let go

A culture needs to be created where it is a positive thing to stop clinging on to a project. Employees and management should know that it is a good thing to let go of a project if another project better matches the organization's agenda.

An organization avoids blocking itself when it dares to let go projects that are outdated. Resources become available when an irrelevant project is stopped. Those resources can be assigned to projects that are aligned with strategy or that contribute to the value perception of the customer. Case 1 concludes with "go with the flow". Do not try and force a project. Grasp new opportunities and adapt to the fast changing environment.

Holding on to projects with a lack of support creates negativity. It slows down the organization. Case 5 puts it like this "*if projects are being kept alive, put on hold, the attention will be automatically divided over all active projects, it goes without saying that cycle times become longer"*. This counteracts continuous delivery (Chakko et al., 2021; Horlach et al., 2019).

### 4.1.7. Invest time in performance indicators

Two cases explained that performance indicators were not used because of the simple reason time was not yet invested. Case 7 uses 6 KPI's on which they report consistently on a monthly basis. The indicators represent the organization's strategy and is used overarchingly for project and operational purposes. Every project that is selected needs to prove that it contributes to improve at least one of the KPI's. Case 1 made the side note that you run the risk to lump together certain things (e.g., saving time on invoicing while the difference between complex and simple invoices are not taken into account). Or that it stays to noncommittal if the KPI is not defined properly and lacks the right management support. Which underlines the need to invest time.

The risk that a company comes to the conclusion that a portfolio not delivers what was envisioned is detected early when a monthly report covers KPI status. Case 7 explains that projects are being guided by the KPIs. They can evaluate the effectiveness of their projects separately and eventually of their project portfolio. They say "*If after three months the envisioned KPI improvements are not reached we stop a project and start one that contributes better to the most important KPIs"*. Performance indicators (i.e., KPIs) are useful to align portfolio management with adjoining strategic management processes (Horlach et al., 2019).

When projects are based on output projections and vast business cases a company runs the risk to only have two measure points. One on the beginning and one at the end of the project to evaluate if the projections were reached. The organization potentially misses the opportunity to adapt itself if more pressing opportunities arise during the lifecycle of a less relevant project.

### 4.1.8. Create budgets based on portfolio(s)

"*A budget process is one of the foundations of an organization. It explains why it has a certain way of occurring for years. Most organizations are driven to make a profit, underlining the importance of the financial aspect"* states Case 6. "*Decisions concerning projects automatically follow existing financial processes"* adds Case 8. Multiple reasons are given by the cases to explain why it is difficult to change financial processes in a way that they become more adaptive, shorter and flexible. A decision making unit is mostly looking for predictability, there is a need to know on what money is being spent. None of the eight cases creates budgets based on a portfolio in order to become more adaptive. In all cases the budget was based on elaborate business cases per project. The sum of the budgets of all projects together results in available budget for a fixed period of time. This enabler states that budgets need to be constructed on a portfolio level. A new initiative can use some of that budget for a first iteration cycle. After which it can deliver proof of value much faster. It will be possible to allocate a larger budget to an initiative that has proven itself.

Following reasons were cited by the cases. They explain why changing the way budgets are constructed fosters the achievement of agility in project portfolio management. The possibility emerges to start projects with strategic relevancy that arise during the year. Those projects would not have been calculated in the traditional way of constructing a project portfolio budget. Projects that have a better fit to the organization's agenda can start at any given point in time. Which makes the organization more flexible to grasp the right opportunities. An organization can add more innovative projects or projects that improve the value perception of the customer compared to the initial projects on a portfolio (Horlach et al., 2019).

If left unchanged it is only possible to change projects on a portfolio at the time the financial cycles periodically start (i.e., once or twice a year). This means that resources remain blocked working on projects that have lost relevancy. The cadence of financial processes counteracts the need for short and adaptive planning cycles needed for a company to act on fast arising opportunities (Chakko et al., 2021; Horlach et al., 2019).

### 4.1.9. Get employees of daily tasks consciously

Case 7 needs to rely on employees whom time is 100% allocated to operations. "*They prioritize their customers because result is shown immediately while in a project result emerges only after 6 or 7 months*". Making sure that working on projects becomes a fixed part of their job description fosters the achievement of agility in project portfolio management. Their time should be divided between working for projects and operational work by an agreed upon ratio. While putting project work on top off their tasks hampers achieving agility in project portfolio management. Case 3 states "*Everything stands or falls with operational forces helping out in projects*".

If an organization adds spending time on projects to the job description of an employee it can create a sense of ownership and responsibility to finish project work as well as operational work. In the long run this will have a positive impact on profitability. By being able to count on dedicated team members the organization creates the possibility to adopt tighter timings. Which eventually makes it possible to continuously deliver results in a project portfolio (Chakko et al., 2021; Horlach et al., 2019). Case 4 states that when working on projects is part of their daily job, the organization can fall back on operational people that want to grow. Smaller projects can be appointed to ambitious operational employees which supports change.

Allocating tasks for projects to an employee that already puts 100% of his or her time in operational tasks inhibits continuous delivery. Cycle times become longer. Case 7 says that it understands the following point of view of their employees; "*Why putting time into a project when I have about a 100 unread emails*". Case 1 adds that if a project gets difficult an employee always falls back on daily routines if not dedicated on the project. That counteracts the delivery of a project and creates a bigger risk to lose investments. Sometimes organizations provide a form of remuneration when an employee delivers a project on top off daily business. This creates negative dynamics. Employees keep pushing the project to be delivered for personal gain. In that case, the risk arises that projects are not delivered to create value for the customer (Horlach et al., 2019).

### 4.1.10. Mature the PMO department

Case 5 says that it is possible that a PMO department is not mature enough because their focus lies on creating specific aspects of a project culture. They add that in order for an organization to change a project working mindset is required. Case 5 provides following example: "*the fact that an employee needs to report to a project manager instead of a direct manager is already quite a change*". Implying that change requires time. Case 6 complements that statement by adding that the

goal of a corporate PMO should be to indoctrinate project management basics into the organization. Case 7 concludes that a mature project culture and thus a mature PMO department is the foundation of an organization that is able to effectively induce change. The maturity of the PMO department can depend on the maturity of the organization itself. Sometimes an organization is not ready to implement a PMO department. Or sometimes a PMO department was just recently founded. Make sure that the person that is working to indoctrinate project basics has knowledge of frameworks like e.g., Scaled Agile or Disciplined Agile.

Project management basics and an indoctrinated project culture will lead to more successful governance of projects and eventually to more projects with a successful ending. The organization adopts a way to work more structured. This culture enables the possibility to agree upon on certain ways of decision making. Ways that foster achieving agility in project portfolio management. Mainly by enabling more autonomy to teams which will catalyze the rate on which projects will be delivered. Faster delivery provides more learning opportunities which in its turn further indoctrinates project basics and eventually more successful projects.

When an organization is not able to learn from previous endeavors the risk emerges that it keeps over estimating itself. The latter always leads to projects that take up more time than expected. That hampers achieving agility in project portfolio management. An immature project culture does not provide a clear direction for the organization. Although it provides an opportunity to set up some best practices in the beginning, the background of the PMO Manager setting up the culture is leading in whether or not agile practices are adopted. If the PMO Manager has a background in classic waterfall approaches it will not be likely that a PMO department matures in the direction of agile practices. An immature project culture leads to a culture where employees want to push through changes for personal gain. The latter is not a structured way to reach common strategic goals (Horlach et al., 2019).

### 4.1.11.    Mature the organization

Case 4 explained that an indicator of a mature organization is the lack of silos. There should be an uniform organizational structure with clear business lines or verticals. The organization is an integrated whole with a clear corporate structure holding everything together. Case 8 says that organizational maturity can be low because the organization grew too fast and has to deal with growing pains. In that case the organization still thinks very operational. Shared services might be seen as a new concept lacking support by operational teams. Case 7 adds that this might lead to a tension field between business unit interests and corporate interests. *"Nobody wants to let corporate interest prevail over their own interest. An explanation might be that the business unit shareholders are responsible for financial obligations"*. A shift in mindset needs to be made.

With a corporate structure that covers different business lines or verticals it becomes feasible to set up an uniform and flexible way of working over the boundaries of those business lines. The business lines will be ready to adopt an overarching and integrated project operations. A more mature organization might have strategic management processes in place. That supports the possibility to start aligning portfolios with strategy from the different business lines.

Case 4 says that if business lines have too much autonomy and act as silos it is possible that proposals concerning project operations (i.e., project culture) will not be accepted. There will be a lack of clarity which translates to difficulties in delivering projects and eventually portfolio goals. An organization can be seen as different funnels e.g., sales, marketing, products. If those funnels operate sub-optimal an organization will always have difficulties with launching and delivering

projects that contribute value to the customer. Case 8 complements that with stating that thinking in silos leads to a lack of shared requirements. Which leads to unclarity when launching a project that focuses on reaching goals for multiple business lines at once. The risk arises that the business lines will not support the project because it is not seen as a project for them. The latter counteracts the principle to strive for customer solution driven portfolio management and short synchronized portfolio cycles (Chakko et al., 2021; Horlach et al., 2019).

### 4.1.12.    Invest in an innovation cell

Case 5 and 6 describe their innovation cell as a separate organization operating on an own budget and speed. It fills the project portfolio with innovative projects that enables the organization to keep up with the rapidly changing environment. The employees of that cell have tentacles throughout the entire organization. They continuously search for the next big thing.

This fosters achieving agility by researching the needs of the customer and evolving technology. Ideally by meeting the first by creating organizational capabilities in the latter. If the research is deemed successful a project can be added to a portfolio. In that way a company adopts the adaptive nature of agile project portfolio management (Chakko et al., 2021; Horlach et al., 2019). Case 6 describes it as a way for an organization to invest in its future. By investing in an innovation cell that focuses on workability without fixed corporate conditions that traditionally focus on classic project portfolio practices instead of agile project portfolio management. In that way the innovation cell remains smaller, adaptive and flexible.

If a company has not got an innovation cell it might be less fast in adapting to a quickly changing environment.

### 4.1.13.    Work with a quality framework

A quality framework establishes how all projects will be qualitatively managed. In order to structure defined and agreed deliverables a project needs to run through a fixed set of quality gates. A quality assurance body is adopted to support the framework. If an organization assigns a class and type to projects (i.e., enabler 3) the framework is only used to guide bigger, more complex a and b class projects. The quality framework should take agile project portfolio practices into account e.g., a minor business case is an example of an agreed upon quality gate. Case 6 defined project dependencies as a quality gate. A gate that is in particular interesting when the intention of an organization is to invest in more centralized IT systems crossing the boundaries of business lines. It depicts the impact of a project on the architectural landscape of an organization. A vision statement is another example of a quality gate adopted in Case 6. That deliverable states the customer and the internal expectations. It serves as a validation to prove that the customer recognizes the receipt of a benefit when the project is delivered.

The quality framework fosters the achievement of agility in project portfolio management by making it possible to check whether or not the portfolio is customer driven (Horlach et al., 2019). Whether or not it contributes and aligns to strategic goals and the adjoining strategic management processes (Horlach et al., 2019). An organization can avoid investing in something where local business lines (i.e., internal customer) or external customers will not receive a benefit from. It supports an organization in clarifying for all business lines why a certain shared IT system is beneficial and thus should be adopted. In the worst case a company ends up with a failed project that brings forth valuable lessons and insights (i.e., another example of a possible quality gate) which can be used to optimize the portfolio(s).

When there is no framework on which project portfolio decisions can be based, decisions are made from the gut. This will lead to uncertainty concerning money that is invested in something that does not completely meet the organizational needs. It will hamper achieving agility in project portfolio management because the organization will not have customer solution driven portfolio management (Horlach et al., 2019). Nor will it have aligned and autonomous portfolio decision making (Horlach et al., 2019) because decisions will be made by top management. Case 4 says "*it is a complete disaster when expectations of the customer (i.e., internal or external) are not clear*". E.g., Divergent things are built by the developer because their view is not in line with the view of other stakeholders.

## 4.2. Inhibitors

### 4.2.1. Missing knowledge and interest

C-Level do not tend to take up responsibility to find an in depth solution for creating a project culture. They will indicate what they think is needed for the organization. How it will be translated into a solution is not their responsibility. Case 5 adds that agility is used as a buzzword. Without realizing that the definition of agility is a misconception. They conclude that an entire mindset shift is needed instead of just introducing a new method. External employees (e.g., consultants) have a certain impact as well. They tend to fall back on their theoretical basis and lose sight on the dynamics of a company and the fact that every company is a puzzle on its own. Missing the history and context leads to not seeing and risking to not include certain things. One of the cases complements the latter by adding that a change in board of directors might lead to unclear expectations. This is defined as an inhibitor because none of the cases indicated how the positive occurrence (i.e., having knowledge and interest) fosters achieving agility in project portfolio management. This inhibitor is closely related to the enabler "Mature the PMO department". But the focus here lies on the wrong conception of agile methods in the higher layers of an organization and external employees lacking crucial knowledge.

A PMO Manager will likely be hired to find a solution to what C-level defined what they think they need. If that PMO Manager has no background in agile methods he or she is going to focus and fall back on known methods. Case 4 states that a business that from origin is less familiar with agile methods (e.g., manufacturing) will likely have a PMO department that tries its best to achieve agility but will have difficulties meeting its customer expectations. Mainly due to a lack of guidance and support. The misconception of the definition of agile methods is that it is merely a story of creating quick results. The correct conception is that it is about working consequently and proceeding step by step in a reasoned manner. It is concluded among the cases that a lack of knowledge among the c-suite or board of directors leads them to not freeing up time from operational people for project tasks. Consequently, they cannot be assigned to new initiatives. As a result, there will be no room for investment in agile training. This hampers achieving the adaptive nature of agility (Chakko et al., 2021; Horlach et al., 2019). Another perspective (i.e., part of the inhibitor) given by the interviewees is that working with external people counteracts the possibility to learn from past experiences. Knowledge risks to get lost when an external employee leaves the organization. They also have a lack of knowledge on the organization. Without taking the dynamics of an organization into account a portfolio will likely not support strategy and the DNA of the organization.

### 4.2.2. Doing everything at once

An organization that starts every project or initiative at once lacks the capability to prioritize. One case mentioned that the loudest person decides what projects are started. Or that the business case was not taken too seriously and that it was not entirely clear what benefit the organization could expect.

By starting everything at once and doing everything together the organization risks creating a downwards spiral. Employees might start sabotaging certain projects. Wrong dynamics might emerge. Everyone is busy doing too much different things at the same time. Projects drag on, the risk arises that employees lose focus. Mainly because an employee automatically starts dividing time over different projects and it takes longer before something gets finished. This hampers achieving continuous delivery (Chakko et al., 2021; Horlach et al., 2019). This also is applicable for the scope of a project. If an organization wants to include all envisioned possibilities of a technology in the scope of an innovative project right away and it cannot make choices, it hampers achieving an incremental way of working. Without prioritization an organization will not achieve continuous delivery. This requires a mindset shift.

### 4.2.3. Too much procedures and policies

Procedures and policies tend to induce longer processes and counteracts the accommodation of shorter and more adaptive processes (Horlach et al., 2019) when striving towards agility in project portfolio management.

An organization that holds on to a certain way of working might suffocate itself in certain steps and in that way create unnecessary extra costs.

### 4.2.4. Fixed yearly project starting moment and cycle time

Case 3 explained that they had difficulties with delivering projects in the past. Mainly because projects always started in January and ended in December that same year. No matter the characteristics of the project.

It hampers achieving agility in project portfolio management by counteracting continuous delivery, adaptive planning cycles and other design principles (Chakko et al., 2021; Horlach et al., 2019). A new manager that starts in the middle of the year will not be able to initiate projects. Projects that bring more benefits to customers cannot be taken in the project portfolio. From the start of the project a Rolls Royce is envisioned which induces long cycle times.

### 4.2.5. Departmental portfolio or PMO

One case explained that there is a lack of corporate PMO that directs and supports all efforts within different departmental portfolios or PMOs. This induces silos throughout the organization.

It makes it hard to prioritize projects and to allocate dedicated employees to a project. Or to monitor dependencies between projects. A corporate PMO that works overarchingly is mostly focused on strategic themes. They create guidelines for the departmental portfolios. When that structure is not present it becomes hard to carry out an organizational strategy. That counteracts the needed adaptivity to achieve agility in project portfolio management (Chakko et al., 2021; Horlach et al., 2019).

### 4.2.6.     Default in a more regulated structure

An organization of public law has a culture that is being led by openness of governance and public access to information. An advantage is that such a company has less constraints budgetwise. A disadvantage is that this induces doing everything at once (i.e., inhibitor 2). Those types of companies need to be able to explain everything towards their surrounding world. Physical production companies is another type of companies that have a more regulated structure from origin.

An organization of public law has to deal with projects that are imposed. It is hard to work with performance indicators (Chakko et al., 2021; Horlach et al., 2019) when projects of social and or qualitative benefits are imposed. Or policy-related projects that require a lot of regional, national or international lobby work. Those types of projects are mostly hard to quantify with indicators. The need to explain everything induces the need to establish centralized decision rights in management committees. Thus the culture of an organization of public law hampers establishing a multi-level and cross functional portfolio governance body. Which in its turn makes it difficult to strive towards continuous delivery (Chakko et al., 2021; Horlach et al., 2019).  Physical production companies cannot allocate project tasks to their operators due to gaps in the organization's capabilities. They have less possibilities to create a shared responsibility (Müller et al., 2008). This extends to the entire organization and hampers accommodating the adaptive nature of agile project portfolio management (Chakko et al., 2021; Horlach et al., 2019).

### 4.2.7.     Different visions and beliefs in the board of directors

Two cases reported that a board of directors contains people with an operational focus. They tend to pay attention to the business today. On the other end of the spectrum it contains people with a long term vision. They tend to only pay attention to what they will be doing in five years.

Those differences create a field of tension within the board rooms. During board meetings everyone's opinion is taken into account and they try to meet in the middle.  As a result, they are careful and conservative in their approach to project selection for a portfolio and want to know what they are spending their money on. Agile methods, in which the scope is initially less clear, will therefore be less likely to be supported by consensus.

# 5. Discussion

The results show that there are in fact certain perceptions or beliefs concerning the characteristics of agile project portfolio management (table 2 p. 8). These perceptions or beliefs are enablers that foster or inhibitors that hamper achieving agility in project portfolio management and can be seen as antecedents of agile project portfolio principles. The results document enablers that an organization should try and maximize and inhibitors that should be minimized. By striving for a maximum of enablers and a minimum of inhibitors the readiness of the organization is improved to instantiate design principles to reach design goals and eventually achieve an effective agile project portfolio management system. With the latter in place an organization can arm itself to make sure it can provide a solution to the fast changing customer needs as quick as possible. The company should focus on maximizing the enablers in table 3.

| Number | Enabler | Case Company N° |
|--------|---------|-----------------|
| 1 | Use software that supports portfolio management | 1,2,3,6,8 |
| 2 | Use a minor business case as foundation | 1,4,5,7 |
| 3 | Assign a class and a type to projects | 4,5,6 |
| 4 | Have specific and documented strategic goals | 1,2,3,4,5,6,7,8 |
| 5 | Realize that management needs support | 1,2,3,4,5,7 |
| 6 | Dare to let go | 1,5,8 |
| 7 | Invest time in performance indicators | 1,6,7 |
| 8 | Create budgets based on portfolio(s) | 1,3,5,6,8 |
| 9 | Get employees of daily tasks consciously | 1,2,3,7 |
| 10 | Mature the PMO department | 1,2,3,4,5,6,7,8 |
| 11 | Mature the organization | 4,6,7,8 |
| 12 | Invest in an innovation cell | 4,5,6 |
| 13 | Work with a quality framework | 2,4,6,7,8 |

Table 3 - Overview detected enablers

The company should minimize following inhibitors in table 4

| Number | Inhibitor | Case Company N° |
|--------|-----------|-----------------|
| 1 | Missing knowledge and interest | 1,4,5,6,8 |
| 2 | Doing everything at once | 1,2,5,8 |
| 3 | Too much procedures and policies | 1 |
| 4 | Fixed yearly project starting moment and cycle time | 3 |
| 5 | Departmental portfolio or PMO | 4 |
| 6 | Default in a more regulated structure | 4,5 |
| 7 | Different visions and beliefs in the board of directors | 7,8 |

Table 4 - Overview detected inhibitors

The column "case company n°" in table 3 and 4 represents the cases that mentioned the inhibitor or enabler in its negative or positive occurrence. Every case mentioned the fourth enabler which states that an organization should have specific and documented strategic goals and the tenth enabler which states that an organization needs a mature PMO department in order to achieve agile project portfolio management. The need for an organization to realize that management needs support in decision making was also mentioned by six cases. This is an indication that enabler 4, 5 and 10 have the biggest impact on the readiness of an organization for agile project portfolio management. Most inhibitors were only mentioned by one case. This might be explained because of the specific environment or sector in which the case operates. Nonetheless it seems that missing knowledge and interest concerning the subject (i.e., inhibitor 1) and doing everything at once (i.e., inhibitor 2) are

the two most important inhibitors of agile project portfolio management. Minimizing those two improves the readiness of the organization. The results provide an indication of proof that certain links exist between enablers and, or inhibitors. Missing knowledge and interest is linked (i.e., inhibitor 1) is linked to the maturity of the PMO department (i.e., enabler 10). This means that if there is not enough knowledge or no interest in agility on a project portfolio level it might not be possible to mature the PMO department in such a way that it helps to improve the readiness of an organization to achieve agility in project portfolio management. By minimizing inhibitor 1, enabler 10 will be automatically maximized.

During the analysis of the interviews it became clear that none of the eight cases had fully achieved agile project portfolio management. Mainly because of the answers provided on the last questions (see appendix B) of the semi structured interviews and seen that every case has enablers in its negative occurrence or inhibitors. Some of the cases had adopted some characteristics. All of them had based their project operations on classic waterfall frameworks e.g., Prince 2, PMI. None of the case companies mentioned using frameworks like Scaled Agile of Disciplined Agile. Also not one case mentioned that there are specific plans to start reorganization towards agile project portfolio management. Most of them saw potential in certain characteristics. The opposite was mentioned as well, some interviewees explained that they see no future adoption of certain characteristics. This depended case per case as every organization included in this research is a puzzle on its own. The lack of experience in agile project portfolio management within the case studies raises the question whether or not all enablers and inhibitors are mentioned during the hour long interviews. Progressive insight might have led the interviewees to different point of views, perceptions or beliefs and thus more or other enablers and inhibitors.

The aspects that are impacted by introducing agility in project portfolio management described by Chakko et al. (2021) and the design principles from Horlach et al. (2019) formed a good guideline for the interviews. They were used to provide the right context to question the interviewees about a hypothetical to-be agile project portfolio management state. The results can be seen as an extension of the design principles of Horlach et al. (2019). Interviewees were asked if the through agility impacted aspects of portfolio management or design principles could be found in the organization. None of the 8 cases mentioned having adopted the third design principle of Horlach et al. (2019) "aligned autonomous portfolio decision making". Interviewees were also asked about their view on the definition of agile methodology before the definition used in the theoretical background was provided. The definition of the interviewees and the given definition had a big overlap. That proves knowledge on the matter and improves validity of the results. The focus during the interviews was not only on IT portfolios e.g., manufacturing portfolios, strategic portfolios, corporate portfolios were used as a point of view as well. The latter leads to the conclusion that the results are relevant for project portfolio management in general and not specifically for the IT project portfolio domain.

# 6. Conclusion, limitations and recommendations

There is a lack of evidence of enablers and inhibitors in the theoretical body of knowledge in the context of agile project portfolio management. Which is why this research sets out to answer following question "How do enabling factors foster and how do inhibiting factors hamper the achievement of agility in project portfolio management?" Enablers and inhibitors are described in the results section with context consolidating the explanations of the different case companies. Thirteen enablers were described with how they foster achieving agility in project portfolio management when they appear in a positive state (i.e., a positive perception or belief of the interviewee in one of the characteristics of agility) and how they hamper achieving agility when they appear in a negative state (i.e., negative perception or belief in one of the characteristics of agility). Seven inhibitors were documented with how they hamper achieving agile project portfolio management.

Apart from interpreting the importance of enablers and inhibitors the first limitation is that it is not feasible to prioritize the documented enablers and inhibitors. There is no order of importance that can be detected in these results. Another limitation is that only one link between enablers and, or inhibitors was found. With the side note that the causal link between the inhibitor and enabler was not questioned nor researched. It is not possible to elaborate on the links between enablers and inhibitors mainly because it is a hypothesis in need of quantitative proof.

Finding an order of importance can be a subject of a quantitative follow-up research. These results can be the foundation of future research that sets out to confirm the theoretical antecedents (i.e., enablers and inhibitors) documented in this research. Causal, temporal and conditional relations among inhibitors, enablers, design principles and impacted aspects of project portfolio management while adding agility can confirm these findings. This research can also serve as guidance in the context of research towards a maturity model of agile project portfolio management. Or this research can be the foundation of an assessment tool that enables the capability to assess an organization's readiness for agile project portfolio management.

Business leaders, innovators and managers can use this information to look before they leap. Before starting initiatives to navigate towards agile project portfolio management, management can start by reflecting on these enablers and inhibitors. Insights of that reflection can help them to create a roadmap with better focus points to create the right mindset and culture that strives towards a fast changing and highly adaptive internal environment ready for the future.

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# 8. Appendix

## 8.1. Appendix A – List of selected references for the theoretical background and acceptance criteria

### 8.1.1. Acceptance criteria:

**1) The paper should answers at least two of the following questions concerning Project Portfolio Management**

What is Project Portfolio Management?
Why and how should an organization incorporate Project Portfolio Management?
Are there factors that enable or inhibit the incorporation of Project Prortfolio Management?

**2) The paper should answers at least two of the following questions concerning Achieving agility in portfolio management**

What does agility mean in the light of Project Portfolio Management?
Why and how do we introduce agility on a higher scale?
Are there factors that enable or inhibit the achievement of agility in Project Portfolio Management?

**3) Number of citations**

The last criteria prescribes that the papers with the most amount of citations according to Google Scholar will be chosen. With that I take popularity as an indicator of relevancy for my theoretical background. In case of doubt, the paper with the most citations will be selected.

### 8.1.2. Selected researches

| Search | Source | N° Citations | Research | Motivation for selection |
|---|---|---|---|---|
| Project Portfolio Management | Google Scholar | 566 | Meskendahl, S. (2010). The influence of business strategy on project portfolio management and its success—A conceptual framework. International journal of project management, 28(8), 807-817. | I want to explain why it is important to implement project portfolio management by suggesting that it helps to implement the formulated business strategy. I also want to use the study to define the term Portfolio Management. |
| Project Portfolio Management | Google Scholar | 333 | Martinsuo, M. (2013). Project portfolio management in practice and in context. International journal of project management, 31(6), 794-803. | "that researchers should increasingly understand the negotiated and context-specific nature of project portfolio management". I'll use this article to build my understanding of the definition of Project Portfolio Management and its dynamic |

| | | | | context. We need to view Portfolio Management as structural reconfiguration. They also hint to further research the dynamics in project portfolio which has been done by the researches a chose to explain agility in terms of project portfolio management. |
|---|---|---|---|---|
| Project Portfolio Management | OU Library | 307 | Müller, R., Martinsuo, M., & Blomquist, T. (2008). Project portfolio control and portfolio management performance in different contexts. Project management journal, 39(3), 28-42. | They also research the dynamic context of project portfolio management. "H5: The relationship between portfolio control and portfolio management performance is moderated by contextual factors." & "The literature review shows a knowledge gap in portfolio control techniques and how they relate to portfolio management performance in different contexts." They confirm the lack of knowledge of enablers and inhibitors specific to a certain context that lead to project portfolio management success. They created a research model where they show the enabling and inhibiting factors (see H5) |
| Project Portfolio Management | OU Library | 82 | Gutiérrez, E., & Magnusson, M. (2014). Dealing with legitimacy: A key challenge for Project Portfolio Management decision makers. International journal of project management, 32(1), 30-39. | Is this the first study that looked towards agility? Interesting take on decision making as an enabler of PPM Success. Also interesting to state that this study in 2014 already started to higlight the necessity to be flexible. Als intersting to use this study to support why a company should implement thorough PPM practices |
| Project Portfolio Management | OU Library | 44 | Rank, J., Unger, B. N., & Gemünden, H. G. (2015). Preparedness for the future in project portfolio management: The roles of proactiveness, riskiness and willingness to cannibalize. International journal of project | Their point of view starting from preparedness for the future can add to this study. Achieving agility in PPM is also a way to prepare for the future. This study can also give arguments as why preparing for the future is important. I can build from there to introduce agility as the next step. |

| Agile Portfolio Management | OU Library | 215 | Stettina, C. J., & Hörz, J. (2015). Agile portfolio management: An empirical perspective on the practice in use. International journal of project management, 33(1), 140-152. | I can use the empirical data from this study to describe the characteristics of agility in portfolio management. They also might discuss relevant aspects of portfolio management which can be used to map emirically found enablers and inhibitors. |
| --- | --- | --- | --- | --- |
| | | | management, 33(8), 1730-1743. | |
| Agile Portfolio Management | Google Scholar | 966 | Conboy, K. (2009). Agility from first principles: Reconstructing the concept of agility in information systems development. Information systems research, 20(3), 329-354. | A popular paper that gives a good definition of agility. |
| Agile Portfolio Management | Google Scholar | 621 | Dikert, K., Paasivaara, M., & Lassenius, C. (2016). Challenges and success factors for large-scale agile transformations: A systematic literature review. Journal of Systems and Software, 119, 87-108. | The systematic literature reveal 9 categories of challenges and 11 categories of success factors of the adoption of agility on scale. Perfect aspects to map enablers and inhibitors on. This article focus is not on PPM. But can be used to define agility on scale. |
| Agile Portfolio Management | Google Scholar | 1 | Ershadi, M., Jefferies, M., Davis, P., & Mojtahedi, M. (2021). Project management offices in the construction industry: a literature review and qualitative synthesis of success variables. Construction Management and Economics, 1-20. | They researched contextual variables of the construction industry that might influence the success of PMO. I'll use this paper to refer to the importance of context to argument why i'll research the construction industy. |

| Given by the univeristy | Univeristy | 0 | Chakko, J. P., Huygh, T., & De Haes, S. (2021). Achieving Agility in IT Project Portfolios. | This literature review, reviews all papers that describe what agility in project portfolio management is. It also explains what project portfolio management is. Thus it meets two acceptance criterias. It is not yet much cited but that might just be devoted to its recentness. |
|---|---|---|---|---|
| Forward snowballing from the given paper | Univeristy | 8 | Horlach, B., Schirmer, I., & Drews, P. (2019). Agile portfolio management: design goals and principles. | This paper researches design goals and principles to achieve agility in project portfolio management and is thus hyper relevant to my research. It meets two out of three acceptance criterias. This is also a recent paper which might explain the few citations in other papers. |

## 8.2.    Appendix b – Interview protocol

A set of themes (i.e., the characteristics in table 1 and table 2) was used to be able to compare the views of the different interviewees which helps this research to reveal an underpinning reality. It is important to use these themes in the semi-structured interviews as they are the previously defined principles that help an organization to achieve agility in project portfolio management. The data collection starts deductively that tests existing characteristics of (agile) project portfolio management in the context of this research.

The interviews were one-to-one with a combination of face to face interviews and internet mediated interviews. With the goal to have as much as face to face interviews as possible to gain data that is as rich as possible and to encourage open discussion. The latter is important as the interview mostly searches towards personal perspectives on certain characteristics.  This exploratory research uses a semi-structured approach. This gives the opportunity to probe a response to be able to better understand the meanings that interviewees ascribe. This adds depth to the gathered data. To improve generalizability multiple mini cases were examined. The findings are related to the existing theory explained in the theoretical background to demonstrate broader significance. Characteristics described in table 1 and table 2 are used in the questions which makes the relation to the existing theory feasible. The interviewer and interviewee biases are limited as far as possible by selecting appropriate interview locations and providing the list of themes before the interview. Desk research on the case companies is performed to improve contextual knowledge in preparation of the interviews to gain creditability from the interviewees (Saunders et al., 2019).

These are the cases being researched following the unit of analysis criteria:

| Company N° | Sector | Short introduction |
|---|---|---|
| Case 1 | Machine rental | Is a company that is one of the leading providers of working platforms and forklifts for the rental market. Our fleet exists out of more than 4.500 machines in over 700 sizes and applications. They have over 160 locations globally. Approximate 800 million euros in turnover. |
| Case 2 | Food | This company is a leader of fresh, frozen and prepared fruit and vegetables, flowers and plants. With approximate 9000 employees abd 4,4 billion euros in turnover active in more than 20 countries. |
| Case 3 | Real Estate Development | This company develops homes and apartments. Have 75 years of experience. With approximate 300 employees and a turnover of 450 million euros. active in Belgium, the Grand Duchy of Luxembourg and Poland. |
| Case 4 | 3D printing / additive manufacturing | A company with 25 years of experience in 3D printing, software solutions and 3D printing services. They serve a number of industries including healthcare, automotive, aerospace, art and design, and consumer goods. With approximate 230 million euros in turnover and 2400 employees. |

| Case 5 | Public Company | One of the largest ports in Europe. They employ directly and indirectly 164 000 people and create €20 billion in added value. |
|---|---|---|
| Case 6 | Expert Services | Is a leading expert organization guaranteeing the safety of human interaction with technology. With approximate 3.5 billion euros in revenues and 47 770 employees. Active in 60 countries. |
| Case 7 | Insurance broker | An insurance broker in Belgium. With an expertise in industrial services. With a turnover of approximate 15 million of euros and approximate 100 employees. |
| Case 8 | Construction | A Belgium based, family owned construction company specialized in earthmoving, vertical transport, heavy transport, logistic services. Globally active with approximate 350 million euros in turnover and 1500 employees. |

Per Case company a PMO Manager was interviewed.

The interview was in Dutch. The interview was recorded and afterwards transcribed. The interviewee received the questions at least two working days before the interview takes place. If the interviewee has difficulties with envisioning some of the constructs, the interviewer used the definitions of the characteristic of (agile) project portfolio management (e.g., the definition of the design principles, 6 impacted portfolio areas IPA) to explain and help the interviewee in the right direction.

**Rol in de organisatie:**
In het begin zal er gevraagd worden naar de rol van de persoon binnen de organisatie. Voornamelijk om te kunnen inschatten of die persoon vanuit het gewenst perspectief redeneert.
"Om te starten, zou ik graag polsen naar jouw rol binnen de organisatie… wat is jouw functie, hoe lang doe je dit al en wat vind je belangrijk en in welke zin kom je in contact met projectwerking"

- Wat is jouw functie binnen de organisatie?
- Hoe lang ben je in de rol?
- Wat vind je belangrijk bij het oefenen van je functie? Wat streef je na?
- In hoeverre kom je met projecten in contact?
- Zo ja, op welke manier? Wat is jouw verantwoordelijkheid op dit vlak?
- Kan je een voorbeeld geven van het type projecten?
- Hoe wordt er bepaald welke projecten er mogen uitgevoerd worden?

**Link met project portfolio management :**
De respondent zal gevraagd worden achter zijn rol in het kader van project portfolio management. Er zal ook gezocht worden naar karakteristieken van succesvol project portfolio management en of die al dan niet aanwezig zijn. Dit kan al moeilijkheden aantonen in het huidige project portfolio management.

"Vervolgens zou ik nu graag wat dieper ingaan op project portfolio management…"

- Wat is volgens jou de definitie van project portfolio management?

> **Definitie:** Een grote entiteit van alle projecten in een organisatie die gemanaged en gesponsord wordt door managers van een bedrijf. De juiste projecten moeten geselecteerd worden om een entiteit te vormen dat het bedrijf helpt om zijn strategische doelstellingen te behalen. Het gaat om een dynamisch beslissingsmaking process dat continu en actieve lijst aan projecten update of herziet.

- Hoe zie je het doel van project portfolio management?
- Hoe wordt dit georganiseerd of vorm gegeven binnen je bedrijf?
- Hoe worden veranderingen in het portfolio opgevangen? Hoe gaan jullie daarmee om?
- Hoe kan je dit naar jouw organisatie vertalen?

"Er zijn enkele aspecten aangaande portfolio management in de literatuur die ik met jou wil bespreken. Vooral om te leren hoe die in de praktijk voorkomen. Hiermee wil ik nagaan in hoeverre die aspecten al dan niet aanwezig zijn binnen jullie bedrijf."

- Hoe komt het project portfolio binnen jouw bedrijf tot stand? Is die in lijn met de strategie? Via een gedeelde verantwoordelijkheid of C-Level?
    - *Probe:* In hoeverre liggen project portfolio en strategie van het bedrijf in lijn?
    - *Probe:* In hoeverre zijn er uniforme rapportering activiteiten aanwezig?
    - *Probe:* In welke maten is er een gedeelde verantwoordelijkheid voor het maken van beslissingen omtrent projecten?
    - *Probe:* In hoeverre wordt er omgegaan met inter-project issues of risico's?
    - *Probe:* In welke maten wordt de context van een project in rekening gebracht?
    - Probe: In hoeverre gaat het bedrijf om met proactiviteit binnen een lopend portfolio?

> **Definitie:** De mogelijkheid om vooruit te blijven kijken en te zoeken naar opportuniteiten

    - *Probe:* In welke mate gaat het bedrijf om met riskiness?

> **Definitie:** Het toewijzen van resources aan onzekere projecten die een hoge kans hebben op mislukken met als doel om het ongekende te ontdekken

    - *Probe:* In welke mate is er sprake van bereidheid tot kannibalisatie*?*

> **Definitie:** Het verminderen van efforts in huidige winstgevende activiteiten om meer effort te kunnen steken in nieuwe innovaties.

- Welke uitdagingen zijn er volgens u nog inzake project portfolio management in jouw bedrijf?

    **agility**

Nadat we met de respondent hebben gepraat over het algemene concept van project portfolio management, vragen we nu achter zijn of haar visie omtrent agility en uiteindelijk agility in het licht van project portfolio management. Dit is een cruciale stap om te achterhalen wat de respondent zijn of haar perspectieven zijn omtrent de karakteristieken van agile methodes.

"Nu we het over project portfolio hebben gehad. Wil ik agile als methode aanhalen. Eerst denk ik dat het belangrijk is om te polsen achter jouw opvatting van agile methodes."

- Wat betekent agility voor jou? Welke definitie zou jij er aan geven?

> **Definitie:** de continue paraatheid van een ISD (information system domain) methode om snel en inherent verandering te creëren, proactief of reactief verandering te omarmen, en bijleren door verandering terwijl er wordt bijgedragen aan de opgevatte waarde voor de klant (economisch,

kwaliteit, of eenvoudigheid) doormiddel van al zijn collectieve componenten en relaties met zijn omgeving.

- Hoe komt deze definitie over? Hoe zie je het zelf?*
- Waar zit de meerwaarde volgens u juist door iets op een agile manier te laten verlopen?

### Agility in het kader van project portfolio management

Na het bespreken van de definitie van agility zal de respondent bevraagd worden omtrent zijn of haar perspectieven of overtuigingen rond agile project portfolio management. Deze perspectieven en overtuigingen zullen nadien gecategoriseerd worden als "enabler" of "inhibitor". Voordat deze vragen gesteld worden zal aangegeven worden dat de persoon moet redeneren vanuit zijn of haar perspectieven en overtuigingen. Er zal gevraagd worden om de kaartjes (i.e., aspecten en principes) van op het Teams board en sleep ze naar de juiste bucket (i.e., "welke 4 zijn het meest aanwezig" of "welke 4 zijn het minst aanwezig"). Bij fysieke meetings worden er afgedrukte kaartjes gebruikt die hetzelfde doel hebben. Hierdoor bespreken we de 4 meest herkenbare aspecten en principes en trachten we met meer diepgang over de perspectieven en overtuigingen te spreken.

"We hebben het nu al gehad over project portfolio management en kort al even over agile methods. Nu wil ik vragen wat jouw overtuigingen en perspectieven zijn omtrent enkele aspecten van agility en in hoeverre die in de werkelijkheid voorkomen."

- Wat is jouw overtuiging of jouw perspectief van de volgende aspecten en principes van agile project portfolio management?
    - Project portfolio moet gealigneerd zijn met de strategie en de bijhorende strategisch management processen.
    - Continuous delivery van projecten

**Definitie:** Agile teams hebben voortdurende portfolioprioritering en -selectie nodig. Daarmee onderhouden ze een constante cadans van concrete resultaten die geleverd worden door middel van backlogs voor elke cyclus. Alsook om betere ondersteuning te bieden voor inter-team coördinatie van afhankelijkheden tussen projecten. Dit continue portfolioproces, ook beschreven als "feeding the machine", onderhoudt het overkoepelende opleveringsschema van projecten en de releaseplannen. Portfolio processen hebben nood aan stroomlijning en vereenvoudiging om planning cyclussen te synchroniseren doorheen technische iteraties en business om de agile teams te helpen met het verkrijgen van de juiste backlog informatie die net op tijd geleverd dient te worden voor de aankomende oplever cyclussen. Daarnaast wordt vermeden dat werkitems opbouwen die snel overbodig kunnen worden.

    - Accommoderen van adaptieve en zelf organiserende natuur van agile methodieken

**Definitie:** In agile business cases wordt er net genoeg informatie geleverd op basis van welke er een keuze gemaakt wordt om te investeren of niet. In business cases binnen klassieke portfolio processen wordt er veel dieper gegaan. Er moet dus een meer lean business case process opgezet worden om de adaptieve en zelf organiserende natuur van agile methodes te handhaven.

    - Leren van feedback afkomstig van ervaringen binnen projecten
    - Aanpassen van financiële processen om meer in lijn te zijn met kortere en adaptieve planningscyclussen die agile methodes kenmerken.

**Definitie:** Portfolio mechanismen moeten de brug zien te leggen tussen kortere en adaptievere planning cyclussen nodig voor agile development met bredere horizonten en tussen stabiele plannen opgemaakt door de business. De traditionele manier om projecten op waarde schatten (e.g., measures zoals earned value analysis of net present value) ondersteunen de manieren op agile projecten op waarde te schatten (e.g., Net Promoter Score, product demo feedbacks) niet

voldoende. Het evoluerende proces om business cases op te maken reflecteert ook de nood om budgetten vrij te krijgen op een hoger niveau dan project per project.

- o Gebruiken van performance indicatoren die de impact van projecten aangeeft
- o Evalueren of een lopend project portfolio al dan niet klant gedreven is
- o Een multi-level en cross-functioneel portfolio governance body

**Definitie:** Er is een voortdurende betrokkenheid van stakeholders uit business en IT van meerdere bedrijfsniveaus bij het gehele portfoliomanagementproces.

- o Gealigneerde en autonome beslissingen aangaande portfolio

**Definitie:** Overdracht van beslissingsrecht, specificatie van oplossingen en toewijzing van resources naar uitvoerende organisatorische eenheden die gealigneerd zijn met de algemene strategische visie. Het management team komt alleen maar tussen bij conflicten. De eenheden moeten wel de visie en het plan volgen opgemaakt in het portfolio.

- o Innovatie management capabaliteiten integreren in het portfolio

**Definitie:** Het portfolio moet uitgebreid worden met innovatie management capabiliteiten. Teams die dicht bij de klant staan en de feedback van de klant gebruiken als input om te beslissen om door te gaan met innovatie of niet worden een bron van innovatie. Er moet een uitgebreide uitwisseling van informatie bestaan tussen de verschillende teams en het portfolio. Vermijden dat innovatieve ideeën niet in het portfolio worden opgenomen omdat het simpelweg teveel risico inhoudt. Er moet ruimte gemaakt worden om te onderzoeken. Specialisten moeten hiervoor aangenomen worden en deel uitmaken van nieuwe of bestaande teams. Er moet een combinatie ontstaan tussen exploiterende en explorerende portfolio aanvragen. Dit moet opgenomen worden in beslissingsneming en management.

- o Formeel onderhandelde en geaccepteerde regels omtrent manieren van beslissingen nemen
- o Management support

## 8.3.    Appendix c – List of codes

Only four codes were used:

For the enablers:

    1) ENA.

DEFINITION: Enabler as described in the theoretical background.

    2) HENA.

DEFINITION: How does the enabler enables achieving agility.

For the inhibitors:

    1) INH

DEFINITION: Inhibitor as described in the theoretical background.

    2) HINH.

DEFINITION: How the inhibitor inhibits achieving agility.