

Master's Thesis

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# Defining Project Management Maturity Level when Establishing Project Management Office



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## Defining Project Management Maturity Level when Establishing Project Management Office

The purpose of the present Master's thesis is to study the characteristics of project management maturity models and find the most appropriate model to measure the maturity level in a case company where project management office is just established. The study discovers the current state of project management maturity and gives suggestions for further development. Theoretical review of the study shows that there are several project management maturity models on the market. They are fundamentally similar but vary in size, complexity, and genericity. Almost all of them have a five-level scale defining the stage of maturity. The level one indicates low maturity, whereas the fifth level means ideal project management. Measuring maturity reveals strengths and weaknesses in project management and helps to identify areas for improvement. The desired level of maturity depends on the company's business and needs.

Project management maturity of the case company is measured by conducting a self-assessment designed based on the literature and needs of the commissioned company. For the analysis, the data is gathered by conducting the questionnaire. The result of the survey shows that the maturity level of the case company in April 2023 is 2,04 out of five. The analysis indicates that the company has lowest maturity in project risk management, project quality management, questions concerning instructions or training and utilizing lessons learned. The thesis presents possibly actions to increase project management maturity for level two or three depending on the area. The questionnaire or a similar one is suggested to use again in the future to measure the progress.

Keywords:

project management, maturity levels, PMO

Opinnäytetyö (YAMK) | Tiivistelmä

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## Projektinhallinnan kypsyystason määrittäminen projektitoimistoa perustettaessa

Opinnäytetyön tavoitteena on tutkia projektinhallinnan kypsyysmalleja ja selvittää tarkoituksenmukaisin malli projektinhallinnan kypsyystason mittaamiseen toimeksiantajayrityksessä, jossa projektitoimisto on aloittamassa toimintaansa. Lisäksi selvitetään yrityksen tämänhetkinen kypsyystaso ja annetaan jatkokehitysehdotuksia. Kirjallisuuskatsauksen mukaan markkinoilla on useita projektinhallinnan kypsyysmalleja. Ne ovat perustaltaan samankaltaisia, mutta niiden koko, monimutkaisuus ja geneerisyys vaihtelevat. Lähes kaikissa malleissa kypsyystaso esitetään viisitasoisella asteikolla, jossa ensimmäinen taso tarkoittaa matalaa kypsyyttä ja viides taso esimerkillistä projektinhallintaa. Kypsyiden mittauksen tarkoituksena on tuoda esille projektinhallinnan vahvuudet ja heikkoudet sekä auttaa löytämään kehityskohteet. Tavoiteltava kypsyystaso riippuu kunkin yrityksen liiketoiminnasta ja tarpeista.

Toimeksiantajayrityksen projektinhallinnan kypsyystaso mitataan itsearviointityökalulla, jonka rakenne perustuu projektinhallinnan teoriaan sekä toimeksiantajan tarpeisiin. Kyselyn tulos osoittaa, että toimeksiantajayrityksen projektinhallinnan kypsyystaso viisiportaisella asteikolla huhtikuussa 2023 on 2,04. Analyysin mukaan riskienhallintaan, laadunhallintaan, ohjeisiin sekä koulutukseen sekä oppien keräämiseen (lessons learned) liittyvä kypsyys on matalinta. Opinnäytetyössä esitellään toimenpide-ehtotuksia kypsyystason nostamiseksi kahteen tai kolmeen aihealueeseen riippuen. Kysely suositellaan tehtäväksi samaa tai samankaltaista lomaketta käyttäen myöhemmin uudestaan edistyksen seuraamiseksi.

Asiasanat:

projektinhallinta, kypsyystasot, projektitoimisto

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## List of Abbreviations

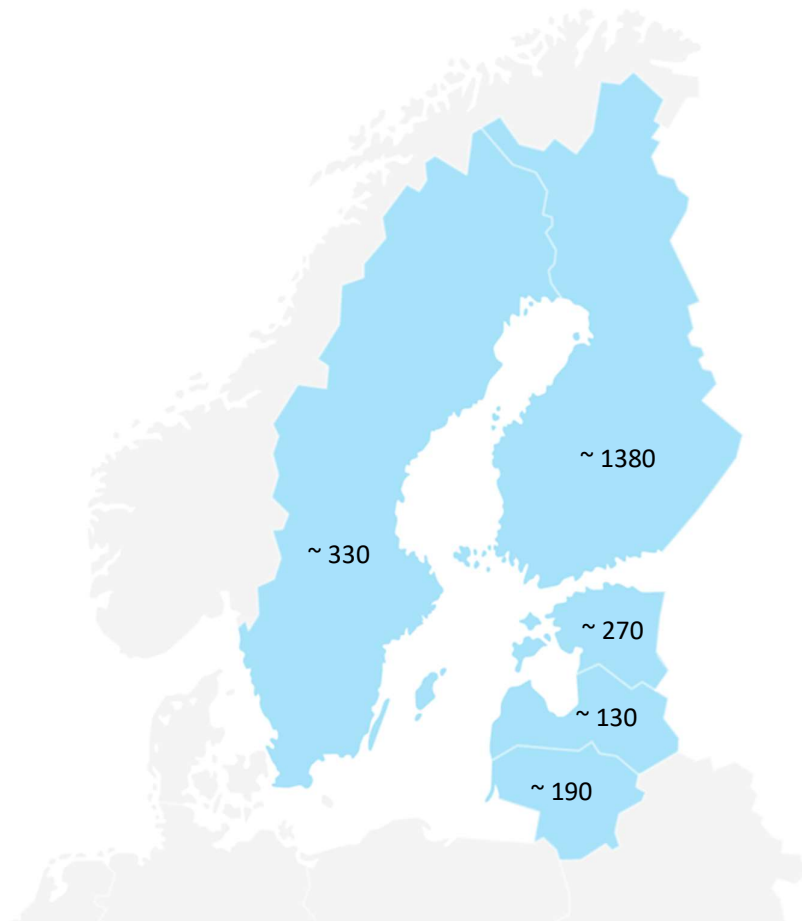
Abbreviation	Explanation of Abbreviation (Source)
CMM	Capability Maturity Model (Crawford 2011, 54).
CMMI	Capability Maturity Model Integration (ISACA 2023).
CPI	Cost Performance Index (Turner 2014, 81).
GMT	General Management Team.
HFD	Human Resources, Finance and Digital Services & Development.
IPMA	International Project Management Association (IPMA 2023).
KPI	Key Performance Indicator.
KPM3	Kerzner Project Management Maturity Model (Kostalova & Tetrevova 2018).
OPM3	Organizational Project Management Maturity Model (Kostalova & Tetrevova 2018).
PMF	Project Maturity Form (Andersen & Jensen 2007).
PMI	Project Management Institute, Inc. (PMI 2023).
PMM	Project Management Maturity.
PMMM	Project Management Maturity Model (Kerzner 2019, xiii).
PMO	Project Management Office (Turner 2014, 490).
P2MM	Prince2 Maturity Model (Prince2 2023).
P3M3	Portfolio, Programme and Project Management Maturity Model (Axelos 2023).
PRINCE	Projects in Controlled Environments (Prince2 2023).
SEI	Software Engineering Institute (Crawford 2011, 47).
SMART	Specific, Measurable, Agreed upon, Realistic and Time-constrained (Crawford 2011, 77).
UAT	User Acceptance Testing.
WBS	Work Breakdown Structure (Turner 2014, 40).



# 1 Introduction

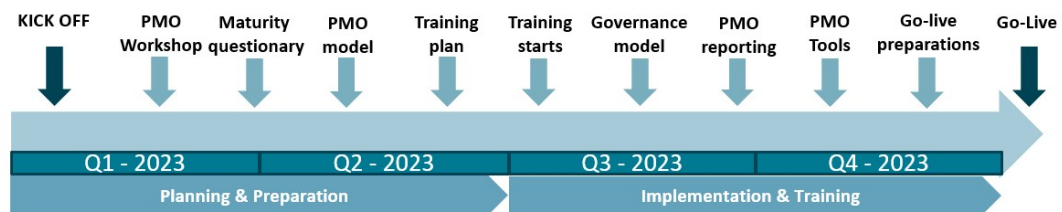
## 1.1 Background of the case company and the thesis

The case company of the thesis is a Finnish car trade group that imports and distributes passenger cars and commercial vehicles and sells new and used vehicles to consumers and corporators. It also offers services and transportation solutions in all its product groups: cars, vans, and trucks. The company has recently started to operate in four countries besides Finland and has dealerships now also in Sweden, Estonia, Latvia, and Lithuania. In 2022, company's turnover was approximately 1410 M€. In January 2023 the company employed over 2000 people. Number of personnel in each market area is shown in the picture 1.



**Picture 1.** Market areas and the personnel of the case company.

After boughten the businesses in Sweden and in the Baltics countries, the amount and size of projects has suddenly enlarged significantly. After corporate acquisitions, the company started to build a Project Management Office (PMO) in the late 2022. Earlier, a PMO had been in place in several formats, but the structure did not exist for about a year until the beginning of 2023. The PMO is committed to present its road map for the company's management by the summer 2023. The launch of the PMO will be in the Autumn 2023, and the PMO initiation project will close out in January 2024. The schedule presented by the PMO is in the picture 2. As an employee in the case company, the author was interested in establishing a new PMO and found it important that the company creates a PMO function that supports the organization and enables the further development of project management if wanted.



**Picture 2.** The schedule of launching the PMO in the case company (PMO, case company).

## 1.2 The purpose of the study

As an organization is developing its business, the core is in its projects. That means, the content of organizations business and the future are in individual projects, which can maximize the business and growth. (Artto 2021.) In business world, achieving for example strategic objectives happens through project management (Kerzner 2019). Project culture does not consider big organizations, only – doing projects is increasing in smaller companies, too. At the same time, projects are even more complicated and significant. (Saastamoinen & Karjalainen 2015.)

PMO and Project Management Maturity (PMM) have a bi-directional connection: On one hand, PMO may improve PMM, and on the other hand more mature organizations can take advantage of PMO effectively. PMO itself is an indication of maturity. Maturity models besides of stating the current level of maturity can offer a plan and steps on how to move to the next level on PMM if desired. (Caliste 2013.) Achieving the desired maturity state might prerequisite a certain status for PMO in the organization (Haukka 2010).

This study concentrates on different project management maturity level analyzing tools and studies which are the most appropriate analyzing methods in the case company. After maturity analysis at least the most critical development needs are most likely known. Maturity analysis enables to have a plan on how to boost project management in the organization.

Recommendations for a PMO are given based on literature, maturity analyses and maturity level goals. A case company building a PMO after the expansion of the business makes a unique situation for the author to observe how it is going to be created and how the maturity

level of the project culture and -management in a company should be measured and considered to have a functional and appropriate PMO. In the long run, the desired state of project management must be defined by the management of the organization – it depends on what is wanted to achieve in the organization. In this thesis the recommendations are given to achieve the next stage of maturity.

Hypothesis of the study is that PMO needs to be created considering the project management maturity level and the desired level of the organization. The goal is to introduce to case company but also other organizations maturity analyzing methods and how the results or maturity analyzes should be considered when building PMO from the ground.

### 1.2.1 Research questions and limitations

The scope of the thesis consists of three research questions:

- What are the alternative tools for defining the maturity of project management in an organization?
- What is the most efficient and sustainable (re-usable) way to measure the project management maturity in the case company, where PMO is just being established?
- How to get action proposals from the measurement in the case company?

#### Limitations

- This thesis concentrates on presenting the suggestions based on the project management maturity assessment only, and it does not consider other factors like strategic goals and resources.

### 1.3 Research structure of the thesis and methodology

The structure of the thesis follows the instructions given in Turku University of Applied Sciences. The background and the purpose of the thesis including research questions are handled in the instruction. The second chapter is dedicated to literature review that contains most of the source references used in the thesis. This chapter explains the theoretical framework keeping the topic of the thesis in mind. It concentrates on theory about project management, project management maturity analyses, maturity assessment tools available and project management offices. The project management knowledge areas based on Project Management Institutes (PMI) framework are thoroughly reviewed as the questionnaire later in the thesis will be based on them. Also, project management maturity levels and their characteristic are explained as they are used in the maturity assessment conducted in the case company.

The survey in this thesis is creating and conducting a project management maturity assessment and it is gone through in the third chapter: First, a relevant questionnaire for the case company is defined, then the answers are collected and analyzed. The contents of the survey is based on theoretical framework of the thesis. Methodology used in the survey is quantitative research. Information is obtained by conducting a questionnaire. Finally, a proposal for actions and suggestions for further developments needed in the case company is presented based on the analysis and literature.

Mainly books and journals are used as references of the thesis. However, specific maturity models and their characteristics is considered important to go through to exemplify the use of models in practice when developing an own maturity model equated to others on the market. Thus, also practical videos and e-articles are referred in chapters 2.2.3. (Maturity levels) and 2.2.5. (Project management maturity analyses processes). Many of the maturity assessment tools are commercial products and therefore, the information available especially produced by organizations representing those barely is objective. Sources are critically studied and referring in carefully considered. Sources comparable to advertisements are ignored. Primarily, material less than 10 years old is used as sources. A lot of new material is found especially among e-sources, which, however, may disappear or become unusable over time. Thus, literature is prioritized over e-sources where possible.

## 2 Literature review and theoretical framework

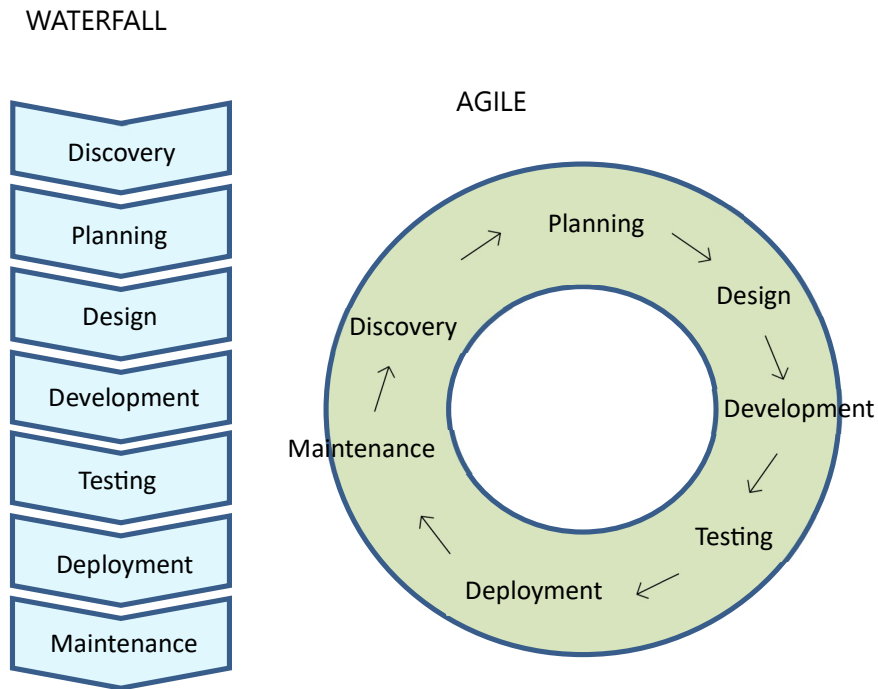
### 2.1 Theory about project management

#### 2.1.1 Key terminology

A *Project* is a temporary organization with resources to work for a beneficial change (Turner 2014, 20). The end result is the reason to start the project. Basically, the project can be consisted of anything, and they can be lead in many ways. (Artto 2021.) A *Program* is a set of related projects, subprograms, and program tasks (Stackpole 2013, 24). Usually, projects and programs are part of *the project portfolio* – a group of projects sharing the common resources and achieving strategic objectives (Turner 2014, 411; Stackpole 2013, 24). A *Project business* is part of company's business, as well as manufacturing business or customer service business. It is linked directly or indirectly to projects. (Artto, Martinsuo, Kujala 2011, 11.)

There have always been projects, but systematic *project management* based on frameworks and standards is an area that is not older than a couple of decades (Ollikainen 2022). The ground of modern project management is in military and energy industry projects of 1950s (Artto 2021). *Project Management Office (PMO)* can be defined in several ways. Generally, it can be described as a place in which certain project management functions and services are centered (Pinto 2012). The size of a PMO can from half a person to dozens of people (Haukka 2020). Different PMO functions and models are handled later in the thesis. *Project manager* is a person who leads the team responsible for reaching project objectives. *Project sponsor*, in turn, is a person or persons supporting the project and taking charge of resourcing (Stackpole 2013, 138). *The steering committee* team is project management team or "core team" that is responsible of supporting the project manager and steers the project in the right direction. *The project team*, in turn, includes people working on the project – not only company's own personnel, but also vendors and subcontractors. (Stackpole 2013, 137.) Basically, according to rules of project competence, the organization's capability must be uniform quality (Suomen Projekti-Instituutti 2010).

Project management methodology is often explained as methods, techniques, procedures, guidelines, and best practices used on projects. Overall, there are two approaches to implement project: The traditional and the agile model, that begun to be more popular in 2000s as projects started to be more complicated and more adaptability was needed especially in software development. (Spundak 2014, 941-942.) The traditional waterfall can be described shortly as a linear work where each project phase is completed when moving forwards, whereas in the agile model project team can work simultaneously on many phases. The difference of these models can be seen in the picture 3. The combination of agile practices and waterfall method is called hybrid (Tolbert & Parente 2020). In fact, based on experiences and recent research from around the world, the hybrid model currently seems to be the most common method of project management (Ollikainen 2022).



**Picture 3.** Waterfall vs agile.

Today, strategic project management is also more and more popular trend focusing the business aspects of projects and supporting the business strategy of organizations, not just concentrating on the traditional goals like time, budget, and performance (Turner 2015, 35).

### 2.1.2 Process groups and knowledge areas

Project management can be categorized by process groups or by knowledge areas. According to PMI (Stackpole 2013, 18-20) there are five project management process groups and ten knowledge areas:

Process groups:

- Initiating
- Planning
- Executing
- Monitoring and controlling
- Closing

Knowledge areas:

- Project integration management
- Project scope management
- Project time management
- Project cost management
- Project quality management
- Project human resource management
- Project communication management
- Project risk management
- Project procurement management
- Project stakeholder management

### **Project integration management**

Project integration management defines how the coordination between project management processes work is binding all the knowledge areas together (Crawford 2011, 53-54). In other words, project managers consider scope, cost, quality, risk, and other knowledge areas relating to each other. None of them cannot be planned alone. (Stackpole 2013, 43). Project integration management also studies if the project work is integrated with ongoing work of the organization (Crawford 2011, 53-54). Project integration management contains producing and continuously updating a project management plan based on all the knowledge areas and environmental factors of the organization. A project management plan may include at least the following outputs presented in Stackpoles (2013, 44-49) book:

- Scope baseline, such as Work Breakdown Structure (WBS)
- Scope management plan
- Schedule baseline
- Schedule management plan
- Cost baseline
- Cost management plan
- Quality management plan
- Human resource management plan
- Communication management plan
- Risk management plan
- Procurement management plan
- Stakeholder management plan
- Change management plan
- Configuration management plan
- Process improvement plan
- Requirements management plan

### **Project scope management**

Scope management defines what is or is not included in the project work (Crawford 2011, 54). The aim is to make sure the project includes just the work to complete the project well. Scope management plan reports how the scope is defined, validated, and managed, and how scope changes are handled for avoiding scope creep. Collecting requirements and creating WBS that splits the project deliverables and work into smaller elements can be seen including in the scope management. Scope creep and losing control of requirements are two main causes for uncontrollable projects. (Stackpole 2013, 50-56.)

### **Project time management**

Time management includes processes that ensure the project is completed on time. Estimation and scheduling of project activities are needed. (Crawford 2011, 54). The project schedule is one of the key documents for project manager to produce. (Stackpole 2013, 74.)

### **Project cost management**

Cost management defines processes ensuring the project is completed with allowed budget. Resource planning, cost estimating, and cost control are needed for successful cost management. (Crawford 2011, 54.) Cost estimates can be based on each WBS component. Cost management plan defines how costs will be estimated, what is the exactness required, and how the budget status will be monitored. (Stackpole 2013, 110.)

### **Project quality management**

Quality management includes processes for making sure the project meets the objectives and fulfills the needs it was supposed to. It requires quality policy and control. (Crawford 2011, 54.) For example, technical work identified in WBS possibly helps deciding quality metrics and defining test cases (Stackpole 2013, 128).

### **Project human resource management**

Human resource management includes processes for using people in the projects effectively (Crawford 2011, 54). Important roles for the project are project sponsor, project manager, steering committee member and project team member (Stackpole 2013, 137). Project human resource management requires identifying, documenting, and describing roles and responsibilities for project team members, sponsors, customers, and other stakeholders (Crawford 2011, 54).



### **Project communication management**

According to Stackpole (2013, 144), most of the project manager's time is spent on communicating. Communication management requires processes to manage project information in time and appropriately by deciding communication needs and creating reporting methods (Crawford 2011, 54). The project management plan and the stakeholder register can be used as an input to communication plan: The project management plan defines the phases of a project while the stakeholder list identifies people and groups interested in or influenced by the project. (Stackpole 2013, 146.)

### **Project risk management**

Risk Management represents processes for systematic identification, analysis, and mitigation to project risks. It requires both quantitative and qualitative risk analyses. (Crawford 2011, 54.) Qualitative risk analysis prioritizes risks by noticing the probability and impact of them, as well as urgency. Quantitative risk analysis means analyzing effect of risks numerically, for example in euros, and is used mainly in big projects. (Stackpole 2013, 162 – 166.)

### **Project procurement management**

Crawford (2011, 54) combines project procurement and vendor management and describes this knowledge area as handling solicitations and contracts. In large projects this may be extremely complex (Stackpole 2013, 177).

### **Project stakeholder management**

Stakeholder management defines all people, groups or organizations impacted by the project. It studies the expectations and consequences of the project and develops relevant ways to engage stakeholders in execution of the project – of which the most common is communication. (Stackpole 2013, 187.)

The content of each knowledge area is described more precisely and by process groups in the table 1. It also shows the 47 project management processes in the matrix.

**Table 1.** Project management process groups and knowledge areas mapped (paraphrasing Stackpole 2013, 21).

Knowledge Areas	Project Management Process Groups				
	Initiating	Planning	Executing	Monitoring and Controlling	Closing
<b>Project Integration Management</b>	- Develop Project Charter	- Developm Project Management Plan	- Direct and Manage Project Work	- Monitor and Control Project Work - Perform Integrated Change Control	- Close Project or Phase
<b>Project Scope Management</b>		- Plan Scope Management - Collect Requirements - Define Scope - Create WBS		- Validate Scope - Control Scope	
<b>Project Time Management</b>		- Plan Schedule Management - Define Activities - Sequence Activities - Estimate Activity Resources - Estimate Activity Durations - Develop Schedule		- Control Schedule	
<b>Project Cost Management</b>		- Plan Cost Management - Estimate Costs - Determine Budget		- Control Costs	
<b>Project Quality Management</b>		- Plan Quality Management	- Perform Quality Assurance	- Control Quality	
<b>Project Human Resource Management</b>		- Plan Human Resource Management	- Acquire Project Team - Develop Project Team - Manage Project Team		
<b>Project Communication Management</b>		- Plan Communications Management	- Manage Communications	- Control Communications	
<b>Project Risk Management</b>		- Plan Risk Management - Identify Risks - Perform Qualitative Risk Analysis - Perform Quantitative Risk Analysis - Plan Risk Responses		- Control Risks	
<b>Project Procurement Management</b>		- Plan Procurement Managemen	- Conduct Procurements	- Control Procurements	- Close Procurements
<b>Project Stakeholder Management</b>	- Identify Stakeholders	- Plan Stakeholders Management	- Manage Stakeholders Engagement	- Control Stakeholder Engagement	

## 2.2 Theory about project management maturity

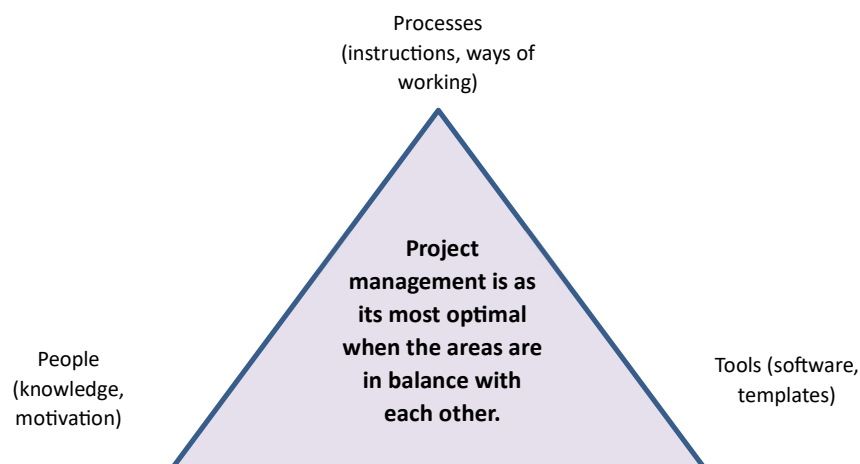
### 2.2.1 Definition of project culture- and project management maturity

United Nations Educational, Scientific and Cultural Organization (UNESCO 2009, 9) defines culture

“as the set of distinctive spiritual, material, intellectual and emotional features of society or a social group, that encompasses, not only art and literature, but lifestyles, ways of living together, value systems, traditions and beliefs”.

For project culture, there is obviously not any established definition. Therefore, project culture can be seen representing an attitude towards projects in the organization and the ways organization is working in their projects. For example, values, attitude, commitment, experiences, knowledge, organization structure, organization management, tools, processes, and instructions are impacting on project culture (Saastamoinen & Karjalainen 2015).

A lecturer Milla Ranta (16.3.2023) at Turku University of Applied Sciences presents the project culture of an organization consisting of management support, operating conditions, project management processes, operating methods, tools, and project management know-how. According to her, projects start to succeed when this whole system is developed. In this Master’s thesis, project culture is presented as consisting of three commonly known areas that are people, processes, and tools. They are shown in the picture 4. People are executing the project management according to the processes, that describes the ways of working. Tools are supporting the agreed compliance and measurement.



**Picture 4.** People, processes, and tools make the project culture.

Project management maturity reflects the ability of the organization to spearhead its projects (Andersen & Jenssen 2007). In this thesis the author does not make a difference between project management maturity and project culture maturity.

### 2.2.2 Project management maturity models

Standards for measuring the maturity of processes or steps in a process established in the 90s by Software Engineering Institute (SEI) at Carnegie Mellon University. Nowadays, there are several models in use, but they all have the same theoretical ground. (Wysocki 2014, 536.) However, according to Harold Kertzner (2019, 21), some of them have significant differences between each other. By Kertzner, there are even more than 30 project management maturity models (PMMMs) to choose from, whereas Jana Kostalova & Libena Tetreva (2018) have found as much as 43 models.

Examples or leading PMMM models are ESI International's maturity model, KPM3, CMMI, OPM3 and P3M3 (Turner 2014, 73-78). In addition to those, for example IMPA Delta is mentioned by Valentin Nikolaenko & Anatoly Sidorov (2023). Some of the models among these are presented more precisely as an example in the table 2.

**Table 2.** Examples of project management maturity models (paraphrasing Kostalova & Tetreva 2018 and Portman 2022).

NAME	Acronym	Theoretical base	Author
<b>ESI's Project Management Maturity Model – Project FRAMEWORK</b>	n/a	PMI	ESI International 2016
<b>Kerzner</b>	KPM3	PMI	Kerzner, 2014, 2001
<b>The Software Engineering Institute's Capability Maturity Model for Integration</b>	CMMI	SEI	The Software Engineering Institute, 2002
<b>Organizational Project Management Maturity Model</b>	OPM3	PMI	Project Management Institute, 2001
<b>PRINCE2 Maturity Model</b>	P2MM	PRINCE2	Axelos, 2013
<b>Portfolio Management Maturity Model</b>	P3M3	PRINCE2	Axelos, 2010

<b>IPMA Delta Standard</b>	IPMA Delta	IPMA	International Project Management Association, 2016
<b>Gartner's Program and Portfolio Management Maturity Model</b>	Gartner's PPM Model	n/a	Gartner Inc, 2014

The models differ in terms of their genericity and complexity. For example, CMMI was created especially for software industry, although it is suitable for any area (de Souza & Gomes 2015), whereas Kerzner PMMM is a generic one (Kerzner 2019, 176). OPM3 is also relevant for many industry areas (Project Management Academy). OPM3 and Kerzner PMMM can be seen having medium level complexity and relatively deep theoretical understanding is needed (Domingues & Ribeiro 2022). P2MM and P3M3 are based for PRINCE2 framework (Project Management Academy), whereas OPM3 is referring to PMBOK by PMI (Domingues & Ribeiro 2022). Kerzners maturity model presented in his book (2019, 62) follows the same knowledge areas, except integration management and stakeholder management. Crawford's (2011, 52) maturity model is based on the PMI's knowledge areas, as well.

OPM3 assessment holds over 800 questions (Project Management Academy) whereas the PMI model Project Maturity Form has 36 (Andersen & Jensen 2007). Kerzner's Assessment Tool contains more than 180 questions (Kerzner 2019, 179). According to Andersen & Jensen (2007), OPM3 is a large work especially for smaller companies. For example, IMPA Delta is possible to run within 12 to 30 weeks and its typical cost in Finnish organizations is between 25 000 euros and 60 000 euros (Kaaja 2021.)

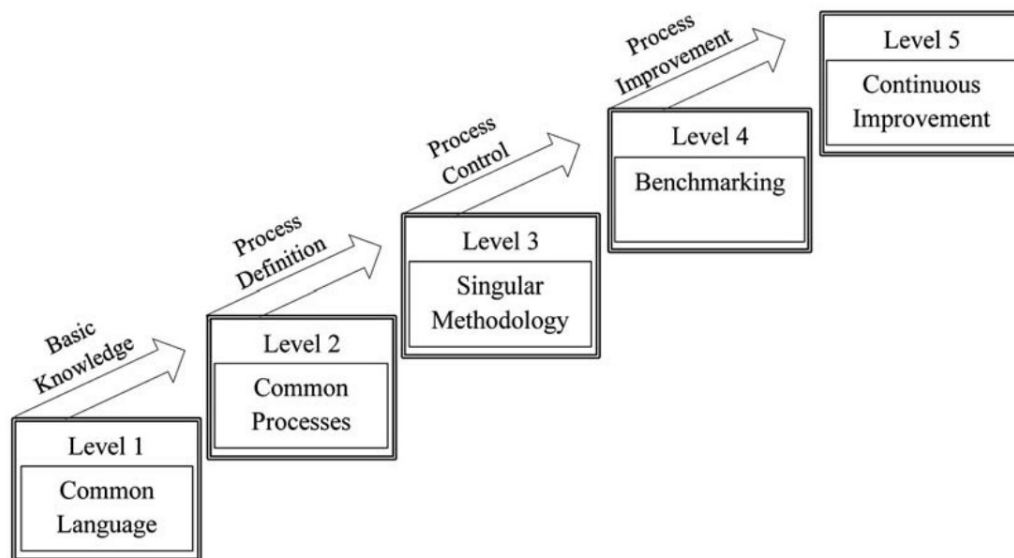
Depending on the maturity model it can be conducted in whole or in part as a self-assessment. For example, OPM3 requires a third party to conduct the assessment (Turner 2014, 79) whereas CMMI can be conducted by the organization itself without a third-party (Project Management Academy). There can be found some free self-assessment templates on the net, and it is also possible to design and create an own questionnaire. According to Crawford (2011, 51), the maturity can sometimes be measured with a simple yes/no checklist by asking questions about existence and obligatoriness of a project management methodology. By Hill (2010), a self-assessment questionnaire can also include questions concerning project managers training and certification. Hill reminds not to measure project management maturity only by numerical like financial metrics – they do not help to understand why certain things has happened.

### 2.2.3 Maturity levels

Mostly, the project management maturity models include five maturity levels like Wysocki (2013, 561-563) lists:

- E: Ad hoc or informal: Everyone is managing projects in their own way
- D: Process is documented
- C: Process is documented, and everyone uses it
- B: Integrated into business processes
- A: Continuous improvement

For example, Harold Kerzner (2019, 40) shows the five levels as steps in the picture 5.



**Picture 5.** Maturity levels by Harold Kerzner (Kerzner 2019, 40).

Although there are differences in describing the maturity levels, they are broadly very similar between the most commonly known project management maturity models. This section presents the main characteristics for every level collected from a few sources.

### **Level 1**

The first level can be described as initial, managed, defined, quantitatively managed, or optimized depending on the maturity model (de Souza & Gomes 2015). The Software Engineering Institute's model describes the first level of maturity as initial level, where results cannot be predicted, as they are depending on individuals and their skills and attempts (Tayntor 2010, 6). The first level in Kerzner's model, in turn, represent basic knowledge instead of being ad hoc or initial (Turner 2014, 74). At this level, the advantages of using a formal portfolio management process are not confessed (Turner 2014, 457). Besides, company does not invest on project management training. It is also typical to put self-interests first before company's best. (Kerzner 2019, 46-47.)

The successful completion of level one might be measured in months or years (Kerzner 2019, 46-47). The first level is a starting point for using new actions (Portman 2022, 3). However, resistance to change is one of the roadblocks when moving to the next level and there may be thinking the project management is not needed at all or it does not apply to the business of the company. The company does not regard project management as a profession. Fear of changes in responsibilities and priorities is one reason for resistance to change. (Kerzner 2019, 46-47.) In his book, Kerzner lists actions needed to move forwards from the level 1:

- Training for increase the understanding the principles of project management. Kerzner recommends the framework introduced in PMBOK (Project Management Book of Knowledge) framework by PMI.
- Having or hiring professional project managers
- Commonly using the project management terminology
- Mapping project management tools

OPM3 forms one exception in project management maturity models having only four stages of maturity. It considers documentation and structured processes are already managed at the first level. (de Souza & Gomes 2015.)

### **Level 2**

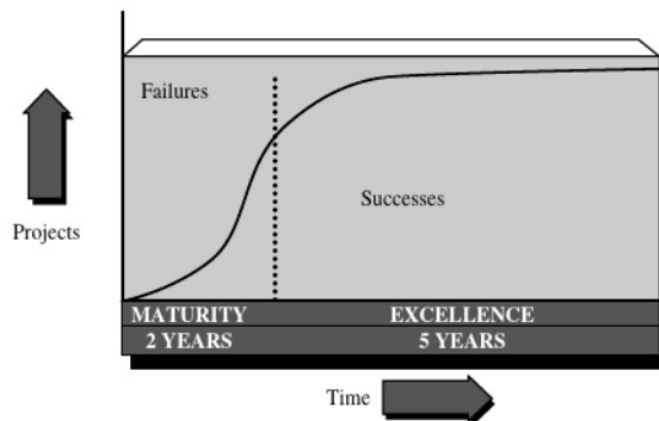
At the second level basic processes already exist, and the organization can repeat the operations (Tayntor 2010, 6). Project management methodologies can also be used in other functions in the company (Turner 2014, 74-75). Tangible benefits like lower cost and shortened schedules due to the use of project management are known (Kerzner 2019, 65). The organization has prioritized project portfolio and the process concerning it has been introduced in the organization (Turner 2014, 457). Project management is being supported by all levels of the organization (Kerzner 2019, 65). The need for governance and risk management is recognized (Turner 2014, 457).

According to Crawford (2011, 51), when project management methodology is existing, maturity level is most likely two. According to Kerzner (2019, 69) it usually takes anything from six months to two years to complete the second level of maturity. Again, after Kerzner (2019, 68-99), resistance to change is the roadblock from completing the level two and reaching the next level. According to him, a company possibly thinks the old methodologies are good enough, and there is a fear new methods will lead to rigid bureaucracy or somehow change the authorities and power relations in the organization. In that case, Kerzner suggest developing a culture supportive for project management and short- and long-term benefits.

### **Level 3**

At the third level there are project management processes integrated through the organization, and they are followed (Tayntor 2010, 6). According to Turner (2014, 457), at this level, portfolio management and organizational strategy are aligned. Organization appreciates a singular project management methodology used in the organization instead of multiple (Turner 2019, 75). According to Kerzner (2019, 84) it may take years to reach the third level, depending on the speed of cultural change and the acceptance of informal project management and singular methodology in the organization.

As Kerzner (2019, 82) says relating to the picture 6, some projects fail despite the successful implementation of project management. However, the number of project successes grows. He thinks a company succeeding 100% of its project does not have enough of them or does not take risks.



**Picture 6.** Level 3 in project management maturity (Kerzner 2019, 82).



#### **Level 4**

According to Kerzner (2019, 97), organization at the fourth level are interested in the leading practices globally for project management benchmarking. Kerzner (2019, 98) states PMO must be established at this point, whereas Kaaja (2021) sees that establishing the PMO usually happens at much earlier levels of maturity – at the second or third level. According to Wagner (2012, 52), the fourth and fifth levels need much of top management attention and high investments and are challenging to reach.

#### **Level 5**

At the fifth level, continuous improvement is emphasized (Turner 2014, 75). According to Kaaja (2021), at this level, projects are in the core of the organizations business.

In summary, project management maturity levels can be presented in the table 3 practically valid for most of the commonly known assessment models.

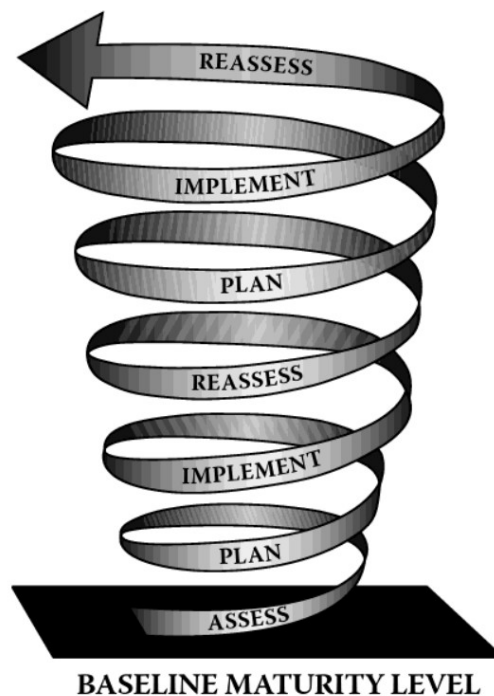
**Table 3.** Levels of project culture indicates the maturity of both project level and organizational level (paraphrasing Kerzner 2019, 65; Tayntor 2010, 6; Turner 2014, 75 and 457; Wysocki 2013, 561-563).

<b>Level</b>	<b>Project perspective and organizational perspective</b>
5: Continuous improvement	Continuous improvement emphasized
4: Benchmarking	Integration into business processes
3: Common processes in use	Project perspective: Processes documented and followed by everyone Organizational perspective: Singular methodology appreciated
2: Common processes	Project perspective: Processes documented, repeatability Organizational perspective: Support for project management
1: Initial processes / basic knowledge	Project perspective: Successes due to personal qualities. Organizational perspective: Formal portfolio management not confessed

#### 2.2.4 Why and how to choose project management maturity model?

All organizations wish to reach maturity and quality in project management (Kerzner 2019, 39). In Crawford's (2011, 50) experience, the lower the project management maturity, the bigger failure rate on projects. Project management maturity models define the level of development of a company by evaluating its current execution (Domingues & Ribeiro 2022). However, in place of current state analysis, the advantages of using maturity models are abilities to setting directions, prioritizing activities, and starting cultural change (Brookes et al 2014).

Project management maturity models reveals weaknesses and strengths in organizations project management processes (Ferreira & Pereira, 2015). The assessment provides a baseline, and the same tool is recommended to use when reassessing so that the organizational improvement in the project management is easy to evaluate (Hill 2011, 93). Crawford (2011, 73) presents the rotation of assessing, planning, and implementing as a spiral in the picture 7, where iterations are needed less often when organization matures.



**Picture 7.** Assessment, planning, and implementing (Crawford 2011, 73).

Companies can improve project management operations like processes, guidelines, and forms by taking up best practices and by learning. With PMMM, the same result can be achieved, and improvement opportunities can be recognized. Purposes of PMMMs in more detail are:

- to evaluate the execution of the delivery process
- to identify areas of improvement
- to initiate a continuous improvement criterion
- to re-evaluate the performance regularly

After the PMMM possible changes needed in project management process or company's infrastructure are found out. That may mean less or more governance in the organization. Changes is recommended to be executed in small steps for not to risk ongoing business and to avoid resistance to change. (Turner 2014, 21-22.)

When evaluating the numerous assessment models on the market, it is recommended to consider the complexity and terminology of the model, ease and costs of use and time and resources it requires. It is also necessary to consider whether the model is compatible with the industry of the company and project management methodology used in the organization and customizable for example for intercultural purposes. (Kerzner 2019, 175-176.) Partly these same aspects are considered in the table 4 in a matrix that presents a proposal for comparing project management maturity models by Domingues & Ribeiro (2022).

**Table 4.** Matrix for comparing maturity models (paraphrasing Domingues & Ribeiro 2022).

<b>Variable</b>	<b>Description</b>
Understanding	Is the model easy or complex to understand?
Standard	Does the model follow any standard of project management methodology?
Customizable	Can the model be modified to fit the actual need?
Data	How is the data collected?
Evolution plan	Is there an evolution plan?
Benchmarking	Is it possible to benchmark with other companies?
Culture	Does the model define characteristics of culture contributing to maturity?
Structure	How the model has been structured?
Tested	Has the running of the model been studied earlier?

Maturity models define only one certain way of managing, assuming universal processes fit to any organization and disregarding external elements of various environments. They tend to simplify the reality. As being rather static, maturity models easily ignore that ability to change is a prerequisite for competitive advantage. Likewise, they do not notice identifying and prioritizing strategies, which would also lead competitive advantage. (Turner 2014, 62-63.) Another way besides using maturity models to study how mature the organization is to look at individual projects and study how they performed. For that it is needed to know which standards the company has set and how they are using them. If no standards are in use or different projects use different standards, the organization is not mature. (Portman 2022, 1.)

### 2.2.5 Project management maturity analyses process

Regardless of the model chosen in the organization, the evaluation usually is relatively similar eight-step process (Turner 2014, 79-81). This chapter goes through the process according to literature, presenting some practical examples from IPMA Delta and Gartner's model.

Evaluation usually starts with acquiring formal commitment and having a kickoff meeting. It's recommended to communicate the purpose of the maturity evaluation: It is not an audition, but an attempt to improve to have better results in project management. (Turner 2014, 79-81.) The term project management maturity needs to be clarified. The participants must be communicated, as well as the reason they have been chosen. Facing cultural resistance is possible, hence organizations may refuse anything new and unfamiliar (Kerzner 2019, 173-174).

Based on Turners book (2014, 79), in the second phase, company's documentations will be reviewed to understand the current procedures. For example, IPMA Delta reviews project that are either active or ended within six months (Kaaja 2021). The third step is for reviewing a sample of project documents to analyze if the practices are used (Turner 2014, 80).

Fourth, it is time to conduct questionnaires, which includes in many of the maturity models. Different questionnaire can be sent to various group of roles in the organization, like executives, functional managers, PMO, anyone working within projects or even customers and vendors. (Turner 2014, 80.) IPMA Delta analyze process includes a self-assessment part, where a maximum one-hour-questionnaire is sent to two to four representatives of each project of the sampling (Kaaja 2021). Markku Niinivaara (2015) has clarified L&T's maturity analyze process: They chose to use Gartner's model and addressed it is 70 questions to owners and managers of large programs and projects.

Interviews are crucial part of most maturity models, too. The fifth step of analyses process is doing interviews in open atmosphere. (Turner 2014, 80.) As an example, an IPMA Delta interview may take anything from 30 to 90 minutes (Kaaja 2021).

At the sixth phase, the results are analyzed. Now, it is possible to discover the maturity level or the number of best practices, depending on the maturity model used. At the step seven, again based on the model, the results of assessments and improvements are described in one document or in separate documents. Lastly, it is supposed to agree on metrics and reassessment. Organization may be interested in reaching the next level of maturity or

sustaining the existing maturity level. However, the progress can be monitored with metrics such as number of projects completed on time or improvements of Cost Performance Index (CPI). (Turner 2014, 81.) Maturity assessment presented in Hills (2011, 60) book has two deliverables: Project management assessment report and project management improvement plan. The length of the assessment process depends on the current maturity level of the organization: At the fifth level, more issues need to be considered, examined, and developed compared to first level (Kaaja 2021).

## 2.3 Project management office (PMO)

### 2.3.1 Purpose of PMO

PMOs have been existing from the mid-1950s but increasingly from 1980s with internationalization (Turner 2014, 499). There is no “right PMO”. Like Turner (2014, 492) states, the “right PMO” is the one that is the most suitable for the organization in general. PMO can be considered as a complex concept and researcher have not managed to thrive a unified and commonly accepted definition for it (Artto, Dietrich, Kujala 2010).

After Turner (2019, 498) the most important PMO functions are as follows:

- Reporting project status to top management
- Monitoring and controlling project work
- Setting of project information system
- Developing and supporting a project scoreboard

Monitoring includes in almost all PMOs, while PMOs that has decision-making authority are more involved in controlling (Turner 2019, 498).

Hill (2011, 55) sees three primary roles for PMO:

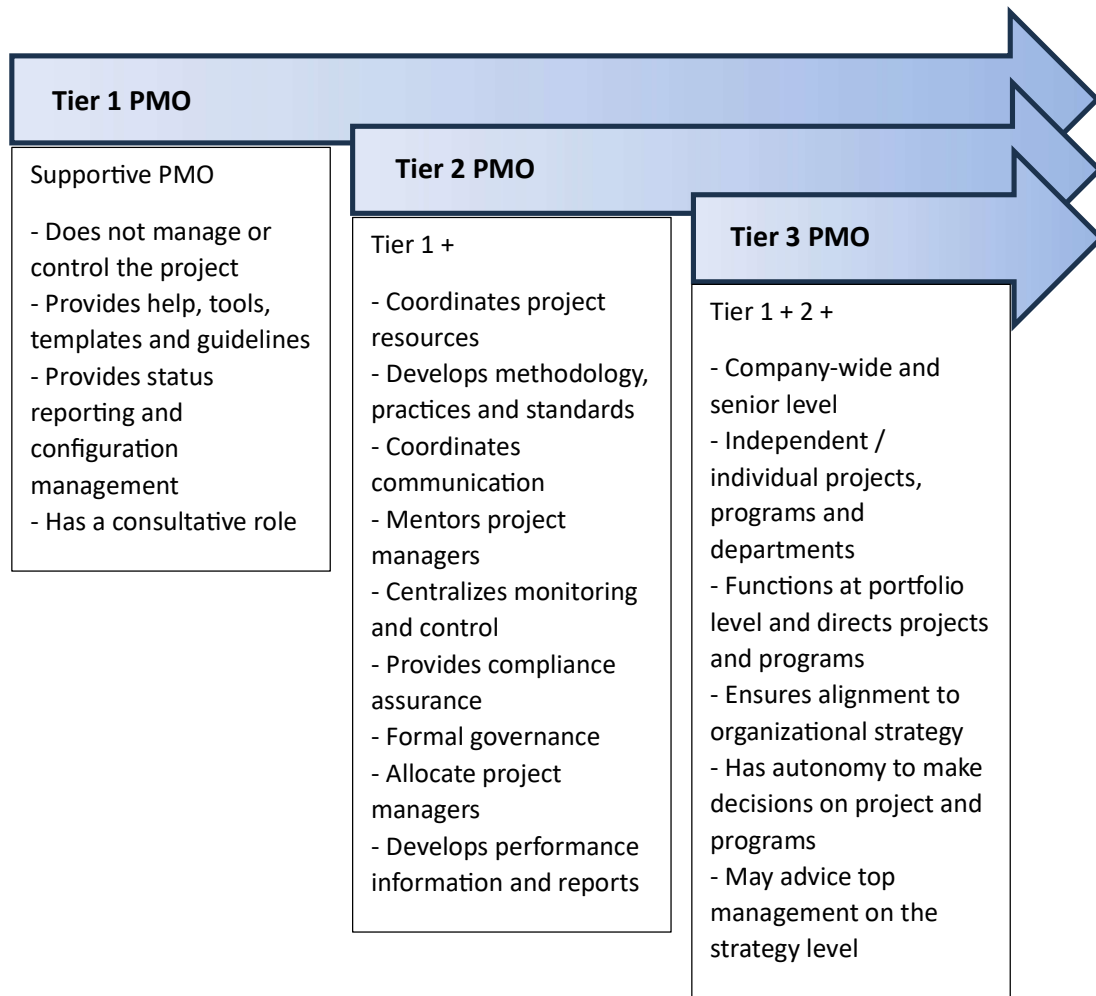
- Oversight: Knowing and understanding the project management situation to help decision making
- Controlling by following standards and preferred ways of working, by taking corrective actions when facing problems and by ensuring that business objectives are reached.
- Supporting and helping project managers

All in all, Hill (2010, 58) presents up to 20 PMO functions in his matrix that is shown in the table 5.

**Table 5.** PMO functions (Hill 2010, 58).

<i>Practice Management</i>	<i>Infrastructure Management</i>	<i>Resource Integration</i>	<i>Technical Support</i>	<i>Business Alignment</i>
<b>PROJECT MANAGEMENT METHODOLOGY</b> <ul style="list-style-type: none"> <li>- Establish basis for project management methodology</li> <li>- Develop methodology solution</li> <li>- Conduct methodology implementation</li> <li>- Manage methodology maturity</li> </ul>	<b>PROJECT GOVERNANCE</b> <ul style="list-style-type: none"> <li>- Prepare and maintain PMO charter</li> <li>- Develop project management policies</li> <li>- Develop project classification guidance</li> <li>- Establish project manager authority</li> <li>- Establish executive control board</li> <li>- Align business and technical committees</li> </ul>	<b>RESOURCE MANAGEMENT</b> <ul style="list-style-type: none"> <li>- Acquire project resources</li> <li>- Assign project resources</li> <li>- Deploy project resources</li> <li>- Manage resource performance</li> <li>- Close project resource assignments</li> </ul>	<b>MENTORING</b> <ul style="list-style-type: none"> <li>- Establish project management mentoring program</li> <li>- Engage project management mentors</li> <li>- Conduct project management mentoring</li> <li>- Evaluate mentoring program</li> </ul>	<b>PORTFOLIO MANAGEMENT</b> <ul style="list-style-type: none"> <li>- Set up project portfolio management</li> <li>- Perform project selection</li> <li>- Integrate project in the portfolio</li> <li>- Conduct project and portfolio reviews</li> <li>- Manage portfolio attrition</li> </ul>
<b>PROJECT TOOLS</b> <ul style="list-style-type: none"> <li>- Select project management tools</li> <li>- Implement project management tools</li> <li>- Evaluate tool performance</li> </ul>	<b>ASSESSMENT</b> <ul style="list-style-type: none"> <li>- Conduct competency assessment</li> <li>- Conduct capability assessment</li> <li>- Conduct maturity assessment</li> </ul>	<b>TRAINING AND EDUCATION</b> <ul style="list-style-type: none"> <li>- Establish training program</li> <li>- Manage training program</li> <li>- Evaluate training program</li> </ul>	<b>PLANNING SUPPORT</b> <ul style="list-style-type: none"> <li>- Establish project planning capability</li> <li>- Facilitate project planning workshop</li> <li>- Administer project planning</li> </ul>	<b>CUSTOMER RELATIONSHIP MANAGEMENT</b> <ul style="list-style-type: none"> <li>- Manage customer relationships</li> <li>- Manage customer contracts</li> <li>- Manage customer satisfaction</li> </ul>
<b>STANDARDS AND METRICS</b> <ul style="list-style-type: none"> <li>- Implement project management standards</li> <li>- Determine project metrics requirements</li> <li>- Introduce and use project metrics</li> </ul>	<b>ORGANIZATION AND STRUCTURE</b> <ul style="list-style-type: none"> <li>- Set up the PMO structure</li> <li>- Establish project structure</li> <li>- Develop stakeholder participation</li> </ul>	<b>CAREER DEVELOPMENT</b> <ul style="list-style-type: none"> <li>- Develop project management career paths</li> <li>- Support project management career planning</li> <li>- Establish professional certification</li> </ul>	<b>PROJECT AUDITING</b> <ul style="list-style-type: none"> <li>- Set up project auditing capability</li> <li>- Conduct project auditing</li> <li>- Manage project auditing results</li> </ul>	<b>VENDOR RELATIONSHIP MANAGEMENT</b> <ul style="list-style-type: none"> <li>- Manage vendor/contractor relationships</li> <li>- Manage vendor/contractor acquisition</li> <li>- Manage vendor/contractor performance</li> </ul>
<b>PROJECT KNOWLEDGE MANAGEMENT</b> <ul style="list-style-type: none"> <li>- Establish knowledge management framework</li> <li>- Introduce knowledge management system</li> <li>- Implement knowledge management system</li> </ul>	<b>FACILITIES AND EQUIPMENT</b> <ul style="list-style-type: none"> <li>- Establish project team requirements</li> <li>- Manage project facilities</li> <li>- Manage project equipment</li> </ul>	<b>TEAM DEVELOPMENT</b> <ul style="list-style-type: none"> <li>- Facilitate cohesive team formation</li> <li>- Facilitate virtual team management</li> <li>- Enable project team development</li> <li>- Monitor project team performance</li> </ul>	<b>PROJECT RECOVERY</b> <ul style="list-style-type: none"> <li>- Develop recovery assessment process</li> <li>- Plan and conduct project recovery</li> <li>- Capture recovery lessons learned</li> </ul>	<b>BUSINESS PERFORMANCE MANAGEMENT</b> <ul style="list-style-type: none"> <li>- Develop integrated business solutions</li> <li>- Manage business collaboration</li> <li>- Manage PMO business fulfillment</li> </ul>

The role of the PMO evolves over time as the maturity level of the organization increases (Aziz 2014). Aziz presents the evolutionary as three tiers in the picture 8.



**Picture 8.** Differences between the three tiers of PMO (paraphrasing Aziz 2014).

There are several types of PMO structures acting in different ways and accomplishing strategy and different tasks in many ways (PMI 2013, 2). PMO is often identified as a change agent who can either keep the desired maturity level or drive the organization to the next level of maturity. Therefore, measuring project management maturity only once is not enough – maturity visioning is needed, too. (Turner 2014, 494.) As the assessment result is described and the improvement activities to reach the next level or to keep the current one is known, PMO can look after the prioritization and deployment of those (Kerzner 2018, 182). Creating a PMO means allowing the handover of maturing of project management to the PMO (Turner 2014, 486). From the aspect of boosting organizations project management maturity, Crawford (2011, 73-74) gives the following means of PMO:

- Supporting projects by for example producing administrative work in project scheduling, reporting, and running project management software
- Consulting, mentoring and training
- Providing processes, standards, and common project management methodologies
- Providing project management by having own professional project managers
- Providing project management software
- Portfolio management and strategic calibration

Project Management Institute (2023b) introduces five things important especially in future PMO:

- Having an input in organizational strategy and being the glue between execution and strategy
- Providing view and control across the organization and its silos
- Involving in ensuring the project and leadership skills for the teams
- Looking at team morale and feelings at all levels
- Managing and guiding new ways of working

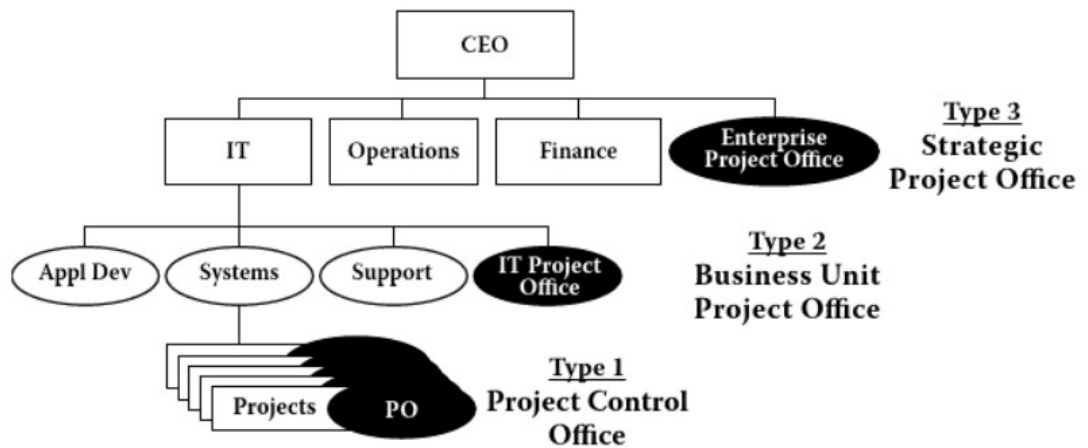
PMOs are not usually found in agile development organizations that deliver for example software design using methods such as Agile and SCRUM (Turner 2014, 488).

### 2.3.2 PMO Models

Monteiro et al (2016) have found even 47 PMO models in total - 25 of which being unique - proposed in literature. Their structures, roles, functions, and descriptions of PMO may differ a lot, depending on the source. (Monteiro et al 2016.). According to findings by Artto, Dietrich & Kujala (2010), companies with high maturity of project management, has PMOs that are integrated with organizational structures. Because of the large amount of different PMO model variations, in this chapter only few are presented as an overview.

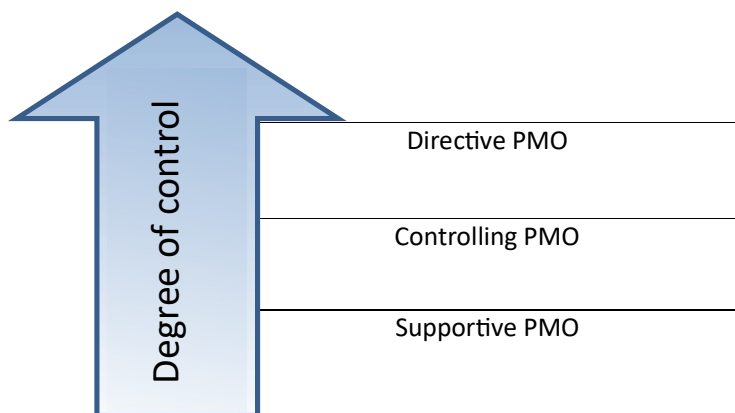
Kerzner (2013, 1100) presents three PMO models: Functional PMO is used in one functional sector of a company and is responsible especially on resource management and it is not necessarily managing projects. The Customer Group PMO concentrates on customer management and -communications and have permanent project manager assigned. However, organization like these appears to be temporary. The Strategic PMO focuses on the whole organization and strategic issues instead on functional matters. J.K. Crawford (2011, 18; 31-32) proposes three different models of PMO, as well. They are Project Control Office for managing very complex single projects, Business Unit PMO for managing large amount of project in many sizes, and strategic PMO with multiple projects in many different business units. Crawfords models are presented in the picture 9.





**Picture 9.** Three types of PMO (Crawford 2011, 18).

Three types of PMO's presented by PMO in PMBOK 6 are supportive PMO, controlling PMO and directive PMO. Supportive PMO is a consultative function providing templates, best practices, training, and lessons learned from other projects. Controlling PMO provides support and requires using certain templates and tools. Directive PMO controls and manages the projects. (PMI 2017, 162.) The degree of control varies depending on the structure of the PMO as shown in the picture 10.



**Picture 10.** Degree of control in various PMO structures according to PMBOK 6 (paraphrasing PMI 2017, 162).

In a bit more detailed level, PMI (2013b, 6) presents five PMO frameworks:

- Organizational unit PMO / Business Unit PMO / Divisional PMO / Departmental PMO, that provides project-related support
- Project-Specific PMO, that provides project-related services to support a certain project or program
- Project Support/Services/Controls Office or PMO, that provides processes to support management of projects, programs or portfolios.
- Enterprise /Organization-wide / Strategic / Corporate / Portfolio / Global PMO, that is responsible for aligning projects and programs to organizations strategy and ensures strategy alignment and realization of benefits
- Center of Excellence / Center of Competency, that as a central point of contact for project managers supports project work by providing standards and tools for project managers.

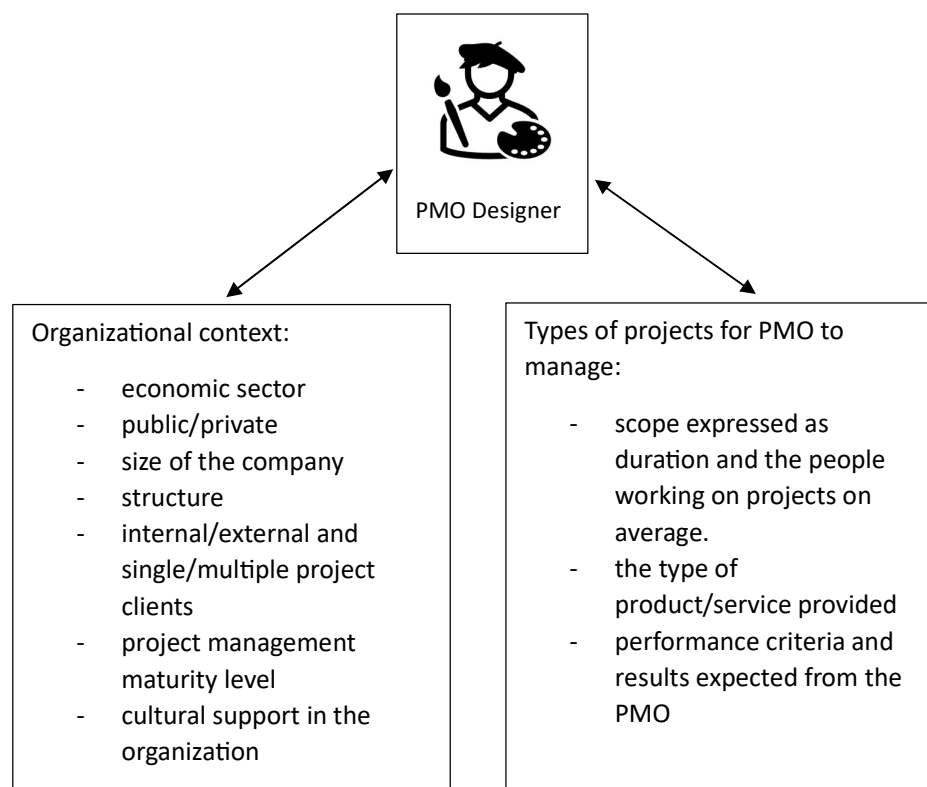
Based on the five PMO models by PMI, there is research (PMI 2013b, 8) at hand reflecting nine subject matter experts thoughts: The group of experts were asked to describe the project management maturity of their organizations. Here, project management maturity is meaning the state of performance of portfolio, program, and project management, as well as improvement by standardizing, measuring, and controlling. The picture 11 shows maturity levels together with the five PMO frameworks for comparison and to point out the differences across the five PMO Frameworks presented in the same document. According to the research, organizations with project support PMO has the lowest maturity of project management. On the other hand, the most common model of PMO in the organizations of high level of maturity is project specific PMO.

Criteria	PMO Framework Type					
	Study Average	Org Unit PMO	Project Specific	Project Support	EPMO	CoE
Project Management Maturity:						
High:	14%	11%	24%	10%	15%	16%
Med:	50%	54%	49%	49%	48%	43%
Low:	36%	35%	27%	42%	37%	41%

**Picture 11.** PMO Frameworks and different maturity rates (paraphrasing PMI 2013b, 8).

### 2.3.3 Initiation of PMO

When establishing PMO it is important to understand both the past experiences with PMO and the current circumstances of the company (Turner 2014, 492). Turner (2014, 492-494) presents two components in the PMO context that are also shown in the picture 12: An organizational context and types of projects in the PMO mandate. The organizational context foresees the internal environment along with the economic context. Types of projects within PMOs mandate provide understanding of PMOs internal context.



**Picture 12.** PMO Designer's role in modeling PMO for performance (paraphrasing Turner 2019, 492-494).

Another item to take into consideration is long-term transformation. The PMO often is considered as the change agent to keep a good maturity level or to thrive it. When designing a PMO, it is not enough to measure the maturity in project management once, but it also needs to be estimated in the future. (Turner 2019, 494).

According to Turner (2019, 495-496) the description of the PMO consists of two elements: Structural characteristics and functions it executes. A name of PMO, time to implement the function, location in the organization and decision-making authority are examples of structural characteristics, as well as amount and capacity of the PMO staff. Roles and functions, in turn, are among other things monitoring project performance, ensuring learning, and developing standards. Different roles and responsibilities of the PMO are reviewed more precisely in the chapter 2.3.1.

When building a PMO answers for the next questions are needed according to Crawford (2011, 75):

- Do we have all the PMO prerequisites on place, such as executive support, funding or resources, acceptance by project managers and business managers and committed project management culture
- Do we meet the business needs?
- How we plan to integrate organizational strategy with projects and programs.

To be mentioned, that Haukka (2010) lists even more questions needing answers:

- What's the business case (benefit for the organization)?
- What is aimed the project management maturity level of the organization?
- How the need of it will be marketing in the organization?
- Who the costs will be funded?
- How many people we need, how much it costs?
- What skills PMO personnel will need?
- What is the place in the organization?
- What tasks are on its responsibility?
- What duties are possible to handle with current functionalities?
- What is the realistic timetable for the actions needed?

Crawford (2011, 86-90) believes it is not possible to successfully deploy PMO without molding the organization into project management way of working. In his book he presents ten keys to effectively deploy the project management culture:

1. Keep it simple.
2. Communicate.
3. Share the expectations and targets.
4. Focus on advantage.
5. Help project managers.
6. Try to understand the problems in the company from various point of views.
7. Conduct pilot test
8. Establish gradual goals.
9. Involve the right people in the beginning.
10. Plan.

According to Crawford (2011, xlii), fully establishing a PMO may take two to five years. Establishing a PMO is a project itself and it needs goals (clear idea of the end), milestones (how to get there) and objectives (SMART guideline) (Crawford 2011, 77).

Hill (2010, 56) presents PMO competency continuum as a five-level picture: At the first stage an organization has one or two projects and one project manager. At the second stage a basic PMO exists whereas being at the third stage means having a standard PMO with full-time staff. Stage four is advanced PMO and stage five represents a centre of excellence. There are methods for analyzing PMO maturity, likewise project management maturity is studied in this thesis. It is important to notice that PMO maturity and Project Management maturity are very different things and must be analyzed separately (Pinto 2012).

## 3 Survey

### 3.1 Choosing the model

The challenge of using maturity models in the case company was to adapt them to suit the maturity and resources of the organization. The company did not want to invest in maturity assessment, and besides, there were barely few weeks' time to conduct the assessment from planning to analyze phase. The case company ended up with a self-assessment, the goal of which is to be as simple and efficient as possible and reusable later when further refined.

First, a simplified maturity model table was created. The table is based on 10 project management knowledge areas shown in the chapter 2.1.2. as rows and each of the five maturity levels as columns. This simplified maturity table, based on which the case company's maturity assessment will later be designed, is presented in the table 6.

**Table 6.** Project management knowledge areas and maturity levels.

	Level 1	Level 2	Level 3	Level 4	Level 5
Project Integration Management					
Project Scope Management					
Project Time Management					
Project Cost Management					
Project Quality Management					
Project Human Resource Management					
Project Communication Management					
Project Risk Management					
Project Procurement Management					
Project Stakeholder Management					

Three optional tools for measuring the project management maturity were presented for the case company. The first one was a free self-assessment tool of 95 questions built in Excel by a foreign consultant company. All the questions were not relevant for the case company, or the terminology of them was not familiar to the planned target population. For the second option, it was decided to leave out some of the questions from the 95-questions survey. Finally, the questionnaire was shortened to 34 questions in cooperation with the PMO. Answering the survey was not wanted to take more than 10 minutes of time to get as much response as possible. PMO validated the surveys and even that questionnaire was thought to be too complex and time consuming to fill in. Finally, the third option was settled. It was a self-designed and simplified questionnaire of 25 questions based on a sample questionnaire created by the author as a part of the Master's thesis. The characteristics of the maturity model chosen are presented in the table 7 based on variables combined from Kerzners (2019, 175-176) and Domingues & Ribeiros (2022) material.

**Table 7.** The characteristics of the chosen project management maturity model.

<b>Variable</b>	<b>PMMM used in the thesis</b>
Costs of use	free
Resources	no outsourced resources needed
Time	Answering the survey takes no more than 10 minutes. Conducting the survey and analyzing the results take two to four weeks.
Terminology and understanding	modified and simplified for the organization
Standard	no
Customizable	yes
Compatibility with the industry	yes
Data	questionnaire
Evolution plan	provides strengths and weaknesses, that can be analyzed
Benchmarking	no
Culture	can be modified for intercultural purposes
Structure	PMBOK knowledge areas
Tested	no

### 3.2 Defining the questions

25 simple questions based on PMI knowledge areas appearing in different process groups were defined. The questionnaire includes three or four questions from each project management knowledge area except procurement management and stakeholder management. Procurement management was left out to keep the questionnaire as short as possible. Besides, the discussion in the case company has not been around project procurement management, lately. However, it can be added to the questionnaire next time if desired. Stakeholder management was ignored, as it was mainly considered under communication management. Project integration management, in turn, was included in the questionnaire, even though it is not in Kerzner's model and besides, the content is largely considered under the other knowledge areas in separate plans produced in them. However, it was thought measuring projects closing activities that was wanted to be included in the assessment fitted best under this knowledge area. The questions seem to be suitable both traditional, agile and hybrid projects, and they can be used to define the maturity level reflecting commonly known maturity levels and their characteristics. The questions for the chosen knowledge areas are shown in the table 8.

**Table 8** Questions for the chosen knowledge areas of project management.

<b>KNOWLEDGE AREA (needed for reporting the results)</b>	<b>QUESTION</b>
<b>PROJECT INTEGRATION MANAGEMENT</b>	Do we use gates (initiation, execution, deployment, review) to review and control project work, according to internal instructions of our organizations?
	Do we use lessons learned when defining further development for project management practices in our organization?
	Do we plan the project handover and have a maintenance/support plan in our organization?
<b>PROJECT SCOPE MANAGEMENT</b>	Do we make scope management plans (= what includes and what excludes & how scope changes are handled) in our organization?
	Do we have scope management instructions in place or trainings on-going?
	Do we collect requirements in our organization?
	Do we create work breakdown structures (WBS) in our organization?
<b>PROJECT TIME MANAGEMENT</b>	Do we make time management plans and project schedules with estimate activity durations in our organization?
	Do we have time management instructions in place or trainings on-going?
	Do we have a process for controlling the schedule in our organization?

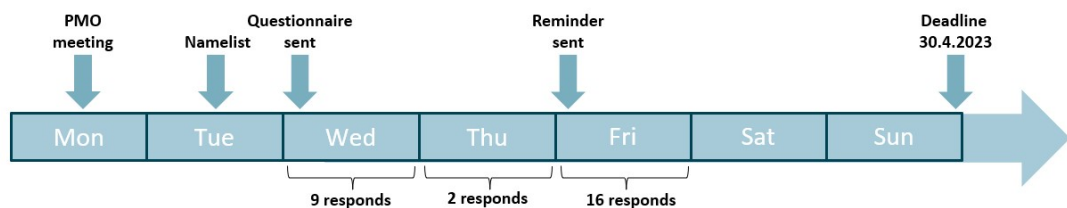


<b>PROJECT COST MANAGEMENT</b>	Do we make cost management plans including defining how budget status is monitored in our organization?
	Do we have cost management instructions in place or trainings on-going?
	Do we have a project budgets determined in our organization?
<b>PROJECT QUALITY MANAGEMENT</b>	Do we make quality management plans including quality metrics and testing plan in our organization?
	Do we have quality management instructions in place or trainings on-going?
	Do we define test cases in our organization?
<b>PROJECT HUMAN RESOURCE MANAGEMENT</b>	Do we make human resource management plans in our organization?
	Do we have human resource management instructions in place or trainings on-going?
	Do the project sponsor, project manager, steering committee member and project team member know their roles and responsibilities?
<b>PROJECT COMMUNICATION MANAGEMENT</b>	Do we make communication plans including communication needs and creating reporting methods in our organization?
	Do we have communication management instructions in place or trainings on-going?
	Do we identify stakeholders in our organization?
<b>PROJECT RISK MANAGEMENT</b>	Do we make risk management plans in our organization?
	Do we have risk management instructions in place or trainings on-going?
	Do we perform qualitative risk analysis in our organization?

### 3.3 Working methods and data collection

Head of PMO presented an idea of measuring project manager maturity for the case company as a part of initiating the PMO function in March 2023. An actual kick-off meeting for the maturity assessment was not held due to a small-scale nature of the becoming assessment and the tight schedule due to many overlapping changes in the organization. As a summary, three alternative tools for measuring project management maturity were presented for PMO on 12<sup>th</sup> April. The PMO ended up to a self-designed tool in their inner meeting on Monday 24<sup>th</sup> April and provided the name list of recipients on the following day. The questionnaire was recommended to send to relatively low number of recipients as it would not have required such simplification: for top management, PMO and people who have worked as project managers during the last 12 months, only (in total 10 to 15 people). The PMO, however, wanted to have much bigger target group, and recipients from every market area, for raising awareness of project management in the organization and to have better understanding of how project management is seen in the company.

The project maturity assessment in the case company was accomplished in Microsoft Forms survey questionnaire consisting of introspective questions from eight project management knowledge areas. The Forms questionnaire was first validated by PMO (three persons) and after small adjustments sent to the target population of 65 people working as top management, project managers or project team members or leading the development work in the case company. The questionnaire was published in the morning on 26<sup>th</sup> April 2023 and responds were asked by 30<sup>st</sup> April. The covering letter and the final questionnaire conducted in Microsoft Forms and sent to the recipients are shown in appendix 1. The survey population (i.e. the coverage of the survey) by the deadline was 27 people. The picture 13 presents the actions taken during the week 17 in April of 2023 to get the responds. Most of the responds were received after the reminder was sent.



**Picture 13.** The launch of the questionnaire in the week 17 of 2023.

## 4 Results and data analysis

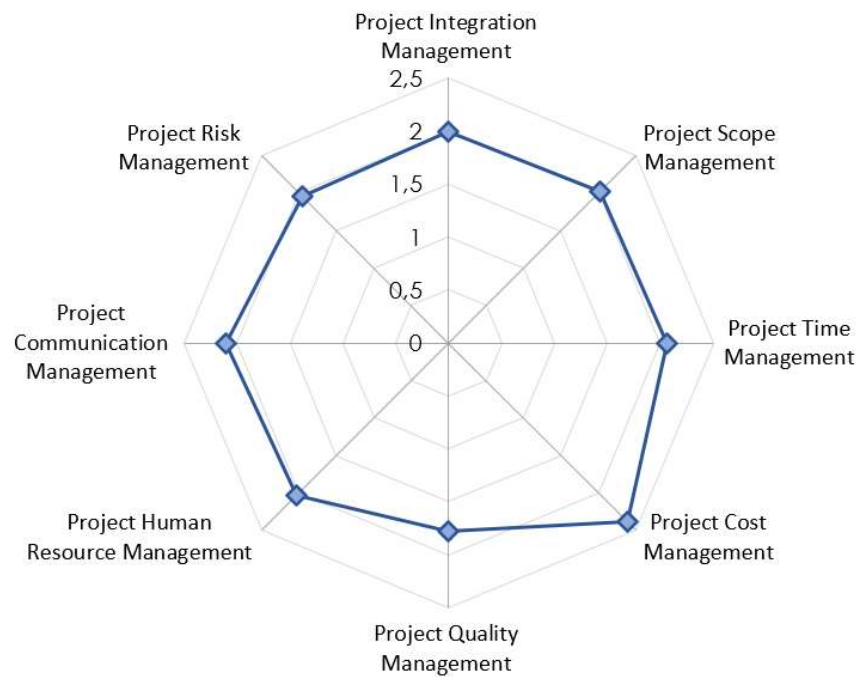
### 4.1 Statistics

The project management maturity questionnaire consisted of 25 questions based on eight PMI knowledge areas. Respondents were asked to rate the project management maturity of the organization for each question in a five-level scale commonly used in project management maturity surveys: One indicates low maturity, whereas five means exemplary project management. The data received from the questionnaire by the time limit was exported to a separate Excel workbook for collation and chart for the analyses. The original data was delivered for the PMO of the case company on 1<sup>st</sup> of May and it is not included in the Master's thesis. This chapter summarizes the result of project management maturity assessment in the case company. Average, mode, deviation of the answers and number of responds (n) for each question are presented in the appendix 2. The summary grouped by project management knowledge area ordered by average from bottom up is in the table 9. Project management maturity level of the case company has been calculated using the average values and is 2,04 out of 5.

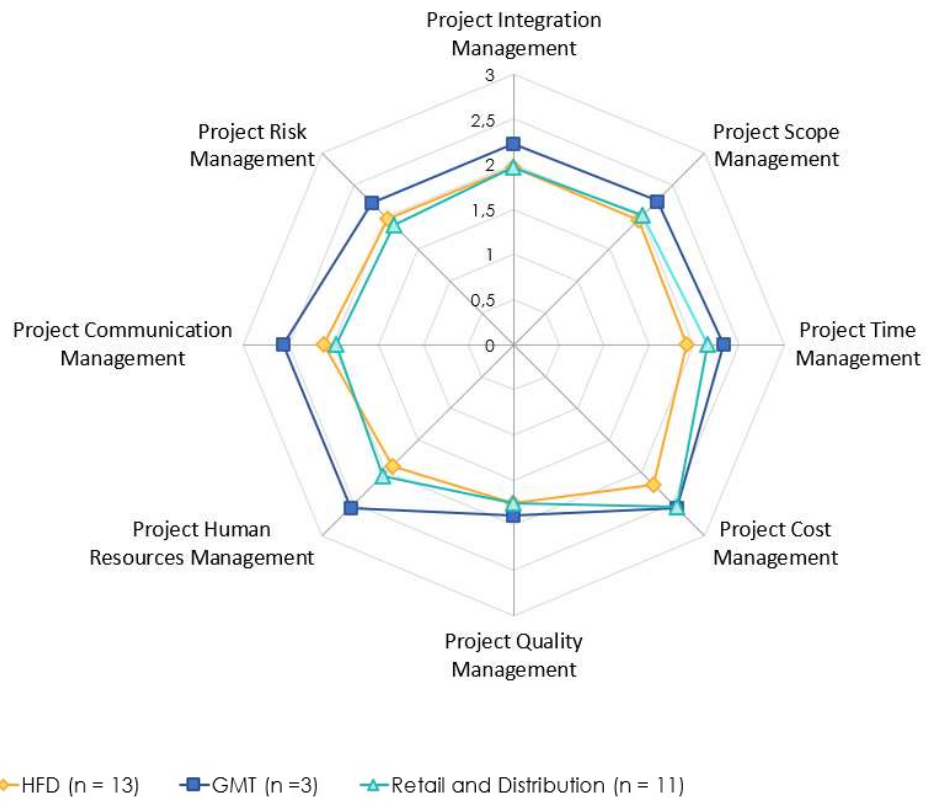
**Table 9.** Summary table of responds.

Knowledge Area	Average	Mode	Deviation	n
<b>Project Quality Management</b>	1,78	1	0,81	26
<b>Project Risk Management</b>	1,96	2	0,87	27
<b>Project Integration Management</b>	2	2	0,68	27
<b>Project Scope Management</b>	2,02	2	0,86	27
<b>Project Human Resource Management</b>	2,04	1	0,90	27
<b>Project Time Management</b>	2,06	2	0,92	27
<b>Project Communication Management</b>	2,10	2	0,93	27
<b>Project Cost Management</b>	2,39	2	1,07	24
<b>Project Management Maturity level</b>	2,04			

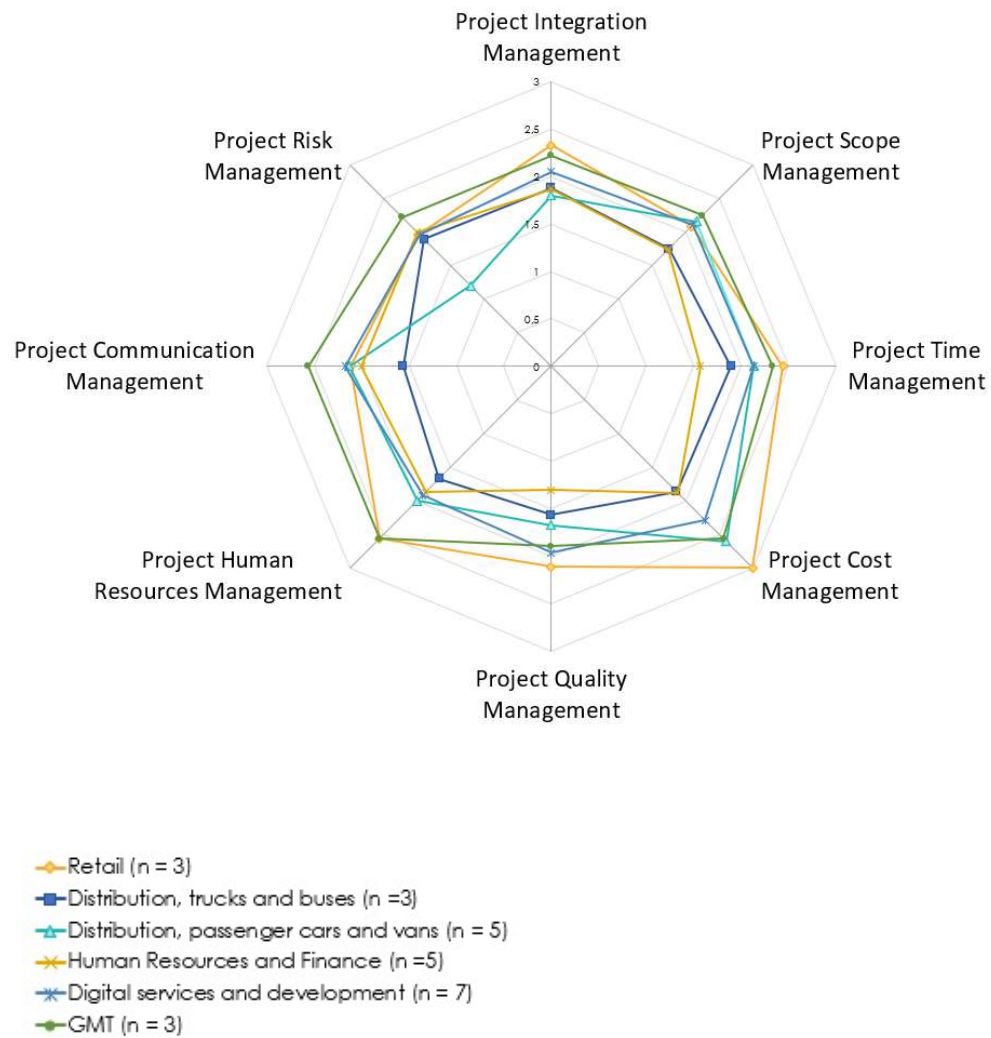
The averages from each knowledge area are also presented as a radar chart in the figure 1. The figure 2 shows the average responds in different organizational locations that are HFD (Human Resources, Finance and Digital Services and Development), GMT (General Management Team) and the business units that are retail and distribution. The figure 3 represents the same result on more detailed level, where retail and two distributions are shown separately, as well as digital services and development. Still, human resources and finance department has been grouped as one, with only one respondent from human resources unit.



**Figure 1** Summary of project management maturity results.



**Figure 2.** Project management maturity results grouped by organizational locations.



**Figure 3.** Project management maturity grouped by HR and finance, digital services and development, business units and GMT.

Looking at the results from the perspective of individual questions there are 11 questions hitting the scores less than two. Despite the question concerning lesson learned, they all have the mode score of one meaning the value “1” appears most often in the data values. These 11 questions are listed in the table 10 from bottom up.

**Table 10.** Questions scoring less than two.

<b>Knowledge area</b>	<b>Question</b>	<b>Average</b>
<b>Project Quality Management</b>	Do we have quality management instructions in place or trainings on-going?	1,44
<b>Project Time Management</b>	Do we have time management instructions in place or trainings on-going?	1,52
<b>Project Scope Management</b>	Do we have scope management instructions in place or trainings on-going?	1,58
<b>Project Communication Management</b>	Do we have communication management instructions in place or trainings on-going?	1,58
<b>Project Integration Management</b>	Do we use lessons learned when defining further development for project management practices in our organization?	1,77
<b>Project Quality Management</b>	Do we make quality management plans including quality metrics and testing plan in our organization?	1,77
<b>Project Human Resource Management</b>	Do we have human resource management instructions in place or trainings on-going?	1,78
<b>Project Risk Management</b>	Do we have risk management instructions in place or trainings on-going?	1,81
<b>Project Cost Management</b>	Do we have cost management instructions in place or trainings on-going?	1,84
<b>Project Scope Management</b>	Do we create work breakdown structures (WBS) in our organization?	1,86
<b>Project Quality Management</b>	Do we perform qualitative risk analysis in our organization?	1,88

## 4.2 Summary of findings

### Overall score

The table 9 presents the responds received from conducting the project management maturity questionnaire grouped by eight project management knowledge areas used in the survey: Project quality management, project risk management, project integration management, project scope management, project human resource management, project time management, project communication management and project cost management. Based on that, it is possible to form an overview of the respondents' average opinion: All the average scores given by the respondents for each knowledge area are below 2,5. The averages from all areas were used to find an overall score of project management maturity, which in the case company in April 2023 is 2,04 out of 5. The result indicates that organization can repeat the project management processes, but they are not followed by everyone.

#### 4.2.1 Lowest scores

Quality management and project risk management has an average scoring less than two out of 5 with the scores of 1,78 and 1,96. The answer 1 were most commonly given score in quality management and human resource management. In this survey, the answer one means the subject described in the question does not exist in the company. For the company's perspective, the score one indicates initial project management processes or only basic level of knowledge.

When analyzing individual questions in the table 10, it is seen that the four lowest scores are related to instructions: quality management instructions, time management instructions, scope management instructions and communication management instructions. The 11 lowest scoring questions having a maturity level less than two shown in the table 10 represent all (eight) different knowledge areas meaning there may be development needs in all the knowledge areas included in the survey.

Given the fact that quality management, risk management and integration management (especially lessons learned) had the lowest scoring average, and many people gave the score 1 for human resource management and questions concerning instructions, it can be concluded that those are the areas that needs to be first developed in the case company.

#### 4.2.2 Highest scores

Based on the table 9, project cost management has the highest score (2,39) of all knowledge areas in the survey. However, it also has the highest deviation of score (1,07), which means the answers disperse most in relation to the mean. Respondents for retail (n = 3) see cost management issues relatively mature (3), whereas distribution, trucks, and buses (n = 3) and human resources and finance (n = 5) gave average scores of 1,86 and 1,88 for that knowledge



area. It is assumed the respondents have been involved in different projects, and there have been differences in managing costs in them.

Project communication management having the second highest maturity level have a deviation over 0,90, too, with GMT (n = 3) scoring that 2,56 and on the other side distribution, trucks and buses 1,56. Project time management has the third highest maturity level, and it is also the third knowledge area with the deviation over 0,90. Retail and GMT again have given the highest scores, whereas distribution, trucks and buses have given the lowest one.

According to Portman (2022, 2) people might score their ability higher that it really is, and unnaturally high scores may require further investigation. In this survey, that kind of abnormal results do not exist.

#### 4.2.3 Organizational location

As seen in the figure 2, the average responds differ depending on the organizational locations, nevertheless they seem not to have significant impact on scores. The biggest gap on that level is in the human resource management area between HFD and GMT. Overall, in high level, GMT seems to have given the most positive responds. In more detailed organizational level, as seen in the figure 3, retail tends to have the most optimistic perception of project management maturity level in the case company. Actually, retail has given the highest score for in total five knowledge areas that are integration management, time management, cost management, quality management and human resource management. The rest three knowledge areas, that are scope management, communication management and risk management have received highest scores from GMT.

Again, when comparing scores by knowledge areas and detailed organizational levels as presented in the figure 3, the lowest scores can be seen given by human resources and finance (scope management and time management), by distribution, trucks and buses (cost management, human resources management and communication management) and by distribution, passenger cars and vans (integration management and risk management) whose score (1,2) for risk management in fact is the lowest given in the survey. The biggest deviation between organizational locations concerns cost management and is between retail (3) and distribution, trucks and buses (1,86).

A comparison by country was not made in this report, due to low number of responds outside Finland (Sweden n = 2, Estonia n = 2, Latvia n = 0, Lithuania n = 0). Overall, less than half of the recipients answered the survey. However, the amount (n = 27) was more than the target group originally suggested by the author. Therefore, number of answers can be considered sufficient. Nevertheless, the roles of the individual responders were not asked and documented. In the future, especially if sending a maturity questionnaire for a large amount on people working in several positions, the role would be relevant to know when analyzing results. In the survey done during April 2023, there can be team leads, project managers and project team members representing one certain organizational location. Only GMT is a homogenous group consisting of management. Adding role dimension to the questionnaire is mentioned in further developments list in the chapter 4.2.3.

## 5 Conclusions and suggestions for PMO

### 5.1 Current state analyses

#### 5.1.1 Overview of the maturity level accomplished in the case company

The project management maturity level of the case company in April 2023 is 2,04 out of 5. In general, this kind of score indicates that basic processes are existing (Tayntor 2010, 6), project management is being supported by all levels of the organization (Kerzner 2019, 65) and the need for governance is known (Turner 2014, 457). These can also be seen in the case company, that is now investing in PMO. The case company does not have a prioritized portfolio, even though Turner (2014, 457) considers it characteristic for an organization at the second level of maturity. Nevertheless, the result is relatively predictable: Like Crawford (2011, 51) says, two is a typical maturity level when project management methodology exists, and Kaaja (2021) also sees the second level typical for organizations just establishing the PMO function.

The organization at this level of maturity might suffer from resistance to change. According to Kerzner (2019, 68-99), at the level 2 it is typical to think the old methodologies are good enough, and there is a fear new methods will lead to rigid processes or changes in the authorities and power relations in the organization. For some organizations not running many projects, two might be the sufficient level of project management maturity.

#### 5.1.2 Strengths

Project cost management and communication management have the highest scores in the organization. The missing instructions were identified in these areas, but otherwise these are the strongest areas in the organization – especially monitoring and determining budgets and identifying stakeholders. Making time management plans was recognized, too.

According to the survey, GMT and retail see the project management maturity level higher than distribution, human resources, and finance, while the score of digital services and development is very near to overall average. Positive records given by GMT can possibly be explained by the fact that when representing the top management of the company GMT often only sees the end result of the project, while especially finance department is involved in problem solving in projects - not all the challenges of resourcing and other project work are not probably visible to top management. Different experiences between the business units (distribution and retail) need to be considered in further development actions. The differences might be explained by the background or roles of individual respondents. Also experiences of different types of project in retail and in distribution is possible.

### 5.1.3 Weaknesses

There is relatively lot to develop in the organization's project management processes as all the knowledge areas reached lower than level 2,5 of project management maturity and the company obviously wants to reach higher levels of maturity. All the individual questions but determining project budgets and identifying stakeholders were closer to the level two than three. The case company has achieved least maturity in quality management and risk management, in making instructions and utilizing lessons learned. Like characteristic for the companies at the second level of maturity, the project management methods are necessarily not in use. According to the survey, distribution units and human resources and finance thinks the company is at the level one of project management maturity, where typically project management methods do not exist at all.

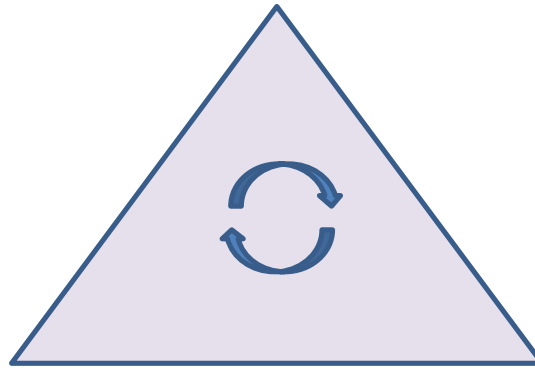
### 5.2 Suggestions for establishing a supportive PMO

Like presented in the picture paraphrasing Turner (2019, 492-494) in the chapter 2.3.3., project management maturity level is one of the organizational contexts considered when designing PMO. As the current state of maturity needs to be considered, the new PMO of the case company could start as supportive PMO, like presented by Aziz (2014), with low degree of control. Turner (2014, 21-22) recommends changes to be executed in small steps not to risk ongoing business and to avoid resistance on change. PMO may need to change to a directive PMO as time passes. Disadvantages of staying as supportive function is lack of control which makes delivering change challenging (Aziz 2014).

At the maturity level of two, Kerzner (2019, 68-99) suggest developing a culture that supports project management in short- and long-term. In general, Turner (2014, 486) believes organization need to adopt the project management way of working to have a successful PMO. Therefore, it is suggested for PMO to ensure utilizing the characteristics of supportive PMO presented by Aziz (2014), Nurminen (2020) and PMI (2017, 162) divided by the aspects of project culture as shown in the picture 14. Often, says Kivimäki (2015), only people, processes or tools are being developed, which leads to risk of focusing to solve only some of the problems. Also, Kivimäki (2015) and Saros (2011) are emphasizing the importance of the balance between the areas. Actions are suggested to keep simple, and they must be well communicated. These were mentioned among other keys to deploy project management culture effectively by Crawford. (2011, 86-90.)

**Processes:**

- Providing guidelines
- Providing best practices
- Providing status reporting
- No managing or controlling projects
- No authority to request the use of certain methods
- Providing lessons learned from other projects

**People:**

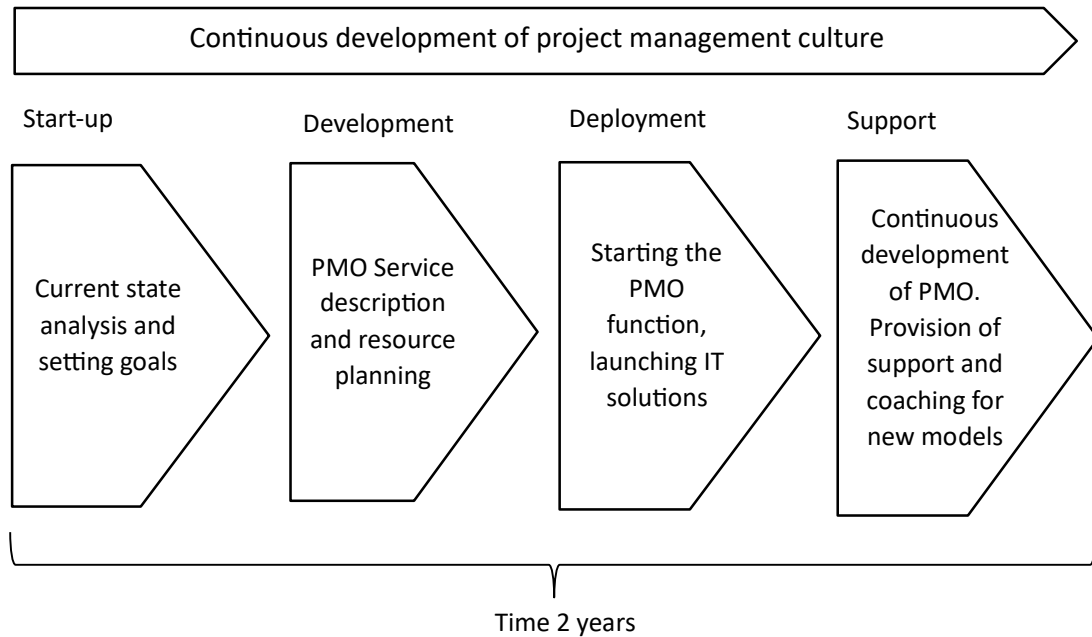
- providing assistance, support and training
- advisory role

**Tools:**

- providing tools and templates

**Picture 14.** Suggestion for developing project culture in the case company.

The picture 15 exemplifies the phases of establishing PMO in two years' time while project management culture is continuously developed.



**Picture 15.** Project management culture evolves as PMO is being established (paraphrasing Haukka 2020 and Nurminen 2020).

### 5.3 Suggestions for increasing maturity

Not only the current state but also the aimed state of maturity effect on initiating PMO. The development in project culture tends to need own kind PMO activities (Haukka 2020.) This part of the thesis is concentrating on how to get action proposals from the project management maturity survey. It is suggested to the case company to choose few action points to implement into practice. As projects are not the core business of the case company, the goal is not to reach the level four or five or maturity. Instead, there are suggestions for actions to move to the next level of maturity, which is two or three depending on the area. Important when defining action points is to have practices that are not too complex to follow.

#### 5.3.1 Improving quality management and risk management

Quality management and risk management were the only knowledge areas scoring less than two in the maturity analysis. Some suggested actions to reach the second level of maturity are listed in this chapter.

- Train the principles and methodologies of quality management and risk management and provide templates for them, to help organization to achieve the level 2 of maturity. Use experienced successful project managers or external consultants (Turner 2014, 84).

- Establish support for new projects or those who are in need. You can find the projects needing your support by monitoring on-going projects. (Turner 2014, 84.)
- Have project planning or project control workshops (Turner 2014, 84).
- Develop a quality management plan for the organization, including quality metrics and testing plan for user acceptance testing (UAT).
- Establish a process for qualitative risk analysis for the organization.
- Consider adding WBS into training material or provide a template. This was not including in prioritized knowledge areas but were among the lowest scored questions. WBS splits the project deliverables and work into smaller elements and can be seen including in the scope management (Stackpole 2013, 50-56), but WBS can help for defining quality metrics and test cases, as well (Stackpole 2013, 128).

### 5.3.2 Improving lessons learned

Lessons learned is considered as a part of project integration management, that was lowest scoring knowledge are after quality management and risk management. In addition to that, the question concerning lesson learned had the fifth lowest maturity grade after question regarding instructions. Following actions are proposed to move to the level two.

- Develop a process for utilizing lessons learned when defining further development for project management practices in our organization.
- For example, consider establishing a lessons learned file shared for project managers.
- Consider developing an educational program to show the company's commitment to project management. An education would be useful for all team members, not just for project managers (Kerzner 2019, 258). According to him (2019, 254) most successful educational programs are the ones based on lessons learned of previous projects.

### 5.3.3 Further developments for achieving the third level

This chapter lists proposed actions for increasing human resource management and questions regarding instruction, as well as further development recommendations. Some advice for measuring the maturity in the future is given, as well. According to Kerzner (2019, 84) it may take years to reach the third level, depending on the speed of cultural change and the acceptance of informal project management and singular methodology in the organization.

- Develop a human resources management plan for the organization, especially distribution and HFD in mind. This was not related to prioritized knowledge areas but were among the lowest scored questions.
- Develop a training curriculum (Turner 2014, 85). Note, that instructions or training for scope management, time management, cost management, human resource management and communication management are missing, too, according to many in the maturity assessment of 2023.
- Start to have project managers certifications (Turner 2014, 85).

- Develop detailed reports and metrics (Turner 2014, 85).
- Monitor if plans have been done according to instruction in most cases.
- Execute reviews and audits (Turner 2014, 86).
- Keep developing the project culture supportive for project management and short- and long-term benefits: Benchmark (do not copy) best practices in leadership and management against other companies. Ensure the organization supports the values of project management such as teamwork, trust, and effective communication. Reward the whole project teams when succeeding. Share the responsibility for the success of the project for line managers, in addition to project managers. (Kerzner 2019, 257.)
- Develop a project management process, that helps to reach the desired benefits repeatedly (Kerzner 2019, 69). Tailoring processes is continuous work (Turner 2014, 85).
- Conduct a reassessment in 1 – 1,5 years. The number of recipients can be lower than in the first questionnaire. That would make the assessment process easier and faster and allows to use longer questionnaire and enables even meetings or individual reminders. However, if the number of respondents is desired to keep high in the future, it is suggested to ask the role in the questionnaire besides the organizational location. Procurement management -area can be added, and questions can be modified. It is recommended to use project management knowledge areas in the future, as well, to keep the models comparable with each other's and relatively well with other small-scale maturity models, too. One free project management assessment tool can be found at <https://crystal.consulting/free-resources>. According to an e-mail from Sean Whitaker (2023), it is intended for organizations of a low project management maturity.

#### 5.4 Reliability and validity of the thesis

The measurement of project management maturity was made only for the needs of the case company and to analyze the maturity of that company, considering their current overall situation. Although it was done based on the five generally known maturity level, the maturity level in the case company is not necessarily comparable to the maturity level achieved by other companies using other (maybe commercial) models, where probably more things have been considered and more time, money and professional facilitators have been used. Despite of that, the maturity level assessment defined for the case company most likely is comparable in the case organization in the following years, even if it might be expanded.

Validity of the survey was good, as it was managed to create a questionnaire that reflected the case company's own understanding of project management areas and maturity levels, and the facts presented in the literature review of this Master's thesis. Reliability of the thesis was tolerable noticing that some aspect might have missed due to small number of questions and because any interviews were not done. Incorrect answers due to misunderstanding of unfamiliar terms were prevented by giving the option to skip questions in the questionnaire. Thus, none of the actual questions were mandatory.

The case company wanted to measure its project management maturity to understand the current state, identify the development needs and to possibly start measuring the progress. One purpose of conducting the assessment was also to spread the awareness of areas including project management in the case company. The questionnaire was a bit longer (25 questions) than was originally planned by the author, to include as many project management knowledge areas and other aspects of project management as possible.

The result of the thesis was predictable but gives credibility and trust to the development work. None of the project management knowledge areas or individual questions stood out clearly from the survey. Thus, the areas selected as development issues had relatively small differences from the others but were chosen to ensure the prioritized development list to be realistic and not too long. The emphasis of importance of single questions would have been helpful in distinguish the needs. Also, requesting the role of each representative would have helped to analyze the results. In addition to those, a longer time given for answering the survey would have been preferred to get more responds.

The survey was sent to a relatively large group (65 persons), and answering the survey was not mandatory. It is not known, who did not answer – perhaps them who's attitude towards project management is negative, or people who do not have any strong opinions towards the topic or needs to develop project management. A smaller set of respondents would have possibly been more manageable and personal reminders would have been possible to send.



## 6 Discussion

A project is a temporary organization with resources to work for a beneficial change (Turner 2014, 20). In business world, achieving for example strategic objectives happens through project management (Kerzner 2019). People, processes, and tools construct the project culture. Project Management Office (PMO) is explained to be a place in which certain project management functions and services are centered (Pinto 2012). A case company starting to initiate PMO in early 2023 offered an interesting opportunity to study how to measure project management maturity in the organization in such phase and how the results effect on initiating PMO.

### 6.1 Options and tools for defining project management maturity

Project management maturity (PMM) reflects the ability of the organization to run its projects (Andersen & Jensen 2007). Project management maturity models besides of stating the current level of maturity can offer a plan and steps on how to move to the next level on PMM if desired (Caliste 2013). Project management maturity models reveals weaknesses and strengths in the project management of the organization (Ferreira & Pereira, 2015). Like stated by Turner (2014, 21-22), they evaluate the execution of processes, identify areas for improvement and define the criterion for continuous improvement.

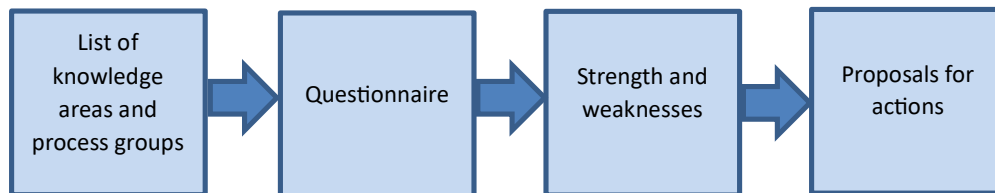
There are over 40 project management maturity models identified in the literature (Kostalova & Tetreva 2018). They are based on the same theoretical ground (Wysocki 2013, 561-563) but still some of them has notable differences between each other (Kerzner 2019, 21). The models differ in terms of genericity and complexity: Some are generic while some models are relevant for specific areas of industry. The size of maturity questionnaires seems to vary from few questions to over 800 questions. Some maturity models can be executed as self-assessment, while other require a third-party to have the evaluation done.

In most cases, the models present the project management maturity in five-level scale (Wysocki 2013, 561-563). At the first level of maturity, results of project management in the company cannot be predicted, and they are depending on skills of individuals (Tayntor 2010, 6). Companies at this level are not investigating on project management training (Kerzner 2019, 46). At the second level of maturity, basic processes already exist, and they can be repeated (Tayntor 2010, 6). Organization is aware of lower costs and shortened schedules due to the use of project management (Kerzner 2019, 65). At the third level, project management processes are followed through the organization (Tayntor 2010, 6). Portfolio management and organizational strategy are aligned (Turner 2014, 457). According to Kerzner (2019, 69; 84) it usually takes anything from six months to two years to complete the second level of maturity and years to reach the third level. The fourth and fifth levels need much of top management attention and high investments and seem to be challenging to reach (Wagner 2012, 52). Project management maturity levels should not be seen as rewards. In fact, levels 1 or 2 may be sufficient for companies doing just few small project (Saros 2011).

## 6.2 Best way to measure project management maturity in the case company

For example, costs, time, resources, genericity, ease of use, customizability, benchmarking possibilities and theoretical framework might be considered when choosing a project management maturity model for an organization. The case company chose to conduct a simplified self-assessment questionnaire of 25 questions designed by the author to suit the company's own needs. Also, this questionnaire can be used in the future to measure the progress in project management. The questionnaire is based on project management process groups and knowledge areas by Project Management Institute (PMI). For example, models such as OPM3 by PMI and Harold Kerzner's model use the same categorization. In the survey, respondents were asked to score each question on a scale of one to five where one means the matter described in the question does not exist and five indicates exemplary execution.

In April 2023, the questionnaire was done in Forms and it was sent to 65 directors, business leads, project managers and project team members. 27 responses were received by the deadline and based on them the project management maturity level of the case company in April 2023 is 2,04 out of five. The result can be considered relatively predictable. The assessment process conducted in the case company is presented in the picture 16.



**Picture 16.** Summary of the assessment process in the case company.

## 6.3 Proposals from the project management maturity survey

Both organizational context and types of projects PMO is going to manage need to be understood when initiating the PMO function. Project management maturity is one of the factors in organizational context (Turner 2014, 492-494). Establishing a PMO is a project itself (Crawford 2011, 75, 77) and may take two to five years (Crawford 2011, xlii). The role of the PMO evolves over time as the maturity level of the organization increases (Aziz 2014). Based on the current maturity level of the company, it is suggested for PMO of the case company to start as a supportive function and to develop company's project culture by providing support, guidelines, status reporting, tools, and templates.

Based on the result of the project management maturity assessment, quality management, risk management and integration management (especially lessons learned) had the lowest scoring averages. Besides, many people gave the score 1 for human resource management and questions concerning instructions. Thus, it is recommended to develop first in these in the case company. In the thesis it is stated that providing instructions and training especially for risk management and quality management is recommended, as well as developing quality management plan template and a process for qualitative risk analysis. Lessons learned can be collected in a shared file and there should be a process utilizing them. Creating instructions for work breakdown structure (WBS) and developing human resources management plan are worth mentioning, as well. After six or more months or after stabled, it is suggested to move to further developments, for example to ensuring the plans for different areas are conducted properly. According to literature (Turner 2014, 486), as PMO is established, handover of maturing the project management for the PMO can be done.

Research objectives were achieved in the thesis. The case company ended up to a self-designed and simplified project management maturity assessment, that could be sent to a large target group desired by PMO. The results and development need were predictable but gave credibility to the development work ahead.

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Dear all,

The purpose of this Project Management Maturity Questionnaire is to understand the current state of project management maturity at xxxxxxxxxx and to identify the development needs in our project management processes. It can be also used later to measure the progress. This Survey has been made in cooperation with xxxxxxxxxx and it's part of Hanna's master's thesis in Turku University of Applied Sciences.

Please answer these 25 questions about project management in xxxxxxxxxx. All these questions have the same five answer opinions. If the question is not relevant or you don't understand it, you can skip it without answering.

This questionnaire takes just about 10 minutes to complete. Please respond at the latest 30<sup>th</sup> April. Your responses are anonymous.

[To the questionnaire](#)

Thank you for your time!

Kind Regards,  
Hanna  
MBA Student, Project Management

1. What market area are you located in? \*

- Finland
- Sweden
- Estonia
- Latvia
- Lithuania

2. What organization do you belong to? \*

- Distribution T&B
- Distribution PC&Van
- Retail
- DS&D
- HR
- Finance
- GMT



3. Do we use gates (initiation, execution, deployment, review) to review and control project work, according to internal instructions of our organization?

1 = not existing, 2 = occasionally, 3 = in almost all cases, 4 = completely, 5 = exemplary  
(Skip the question if you don't understand it)

- 1
- 2
- 3
- 4
- 5

4. Do we use lessons learned when defining further development for project management practices in our organization?

1 = not existing, 2 = occasionally, 3 = in almost all cases, 4 = completely, 5 = exemplary  
(Skip the question if you don't understand it)

- 1
- 2
- 3
- 4
- 5

5. Do we plan the project handover and have a maintenance/support plans in our organization?

1 = not existing, 2 = occasionally, 3 = in almost all cases, 4 = completely, 5 = exemplary  
(Skip the question if you don't understand it)

- 1
- 2
- 3
- 4
- 5

6. Do we make project scope management plans (= what includes and what excludes & how scope changes are handled) in our organization?

1 = not existing, 2 = occasionally, 3 = in almost all cases, 4 = completely, 5 = exemplary  
(Skip the question if you don't understand it)

- 1
- 2
- 3
- 4
- 5

7. Do we have scope management instructions in place or trainings on-going in our organization?

1 = not existing, 2 = occasionally, 3 = in almost all cases, 4 = completely, 5 = exemplary  
(Skip the question if you don't understand it)

- 1
- 2
- 3
- 4
- 5

8. Do we collect project requirements in our organization?

1 = not existing, 2 = occasionally, 3 = in almost all cases, 4 = completely, 5 = exemplary  
(Skip the question if you don't understand it)

- 1
- 2
- 3
- 4
- 5

9. Do we create project work breakdown structures (WBS) in our organization?

1 = not existing, 2 = occasionally, 3 = in almost all cases, 4 = completely, 5 = exemplary  
(Skip the question if you don't understand it)

- 1
- 2
- 3
- 4
- 5

10. Do we make project time management plans and project schedules with estimate activity durations in our organization?

1 = not existing, 2 = occasionally, 3 = in almost all cases, 4 = completely, 5 = exemplary  
(Skip the question if you don't understand it)

- 1
- 2
- 3
- 4
- 5

11. Do we have time management instructions in place or trainings on-going in our organization?

1 = not existing, 2 = occasionally, 3 = in almost all cases, 4 = completely, 5 = exemplary  
(Skip the question if you don't understand it)

- 1
- 2
- 3
- 4
- 5

12. Do we have a process for controlling the project schedule in our organization?

1 = not existing, 2 = occasionally, 3 = in almost all cases, 4 = completely, 5 = exemplary  
(Skip the question if you don't understand it)

1

2

3

4

5

13. Do we make project cost management plans including defining how budget status is monitored in our organization?

1 = not existing, 2 = occasionally, 3 = in almost all cases, 4 = completely, 5 = exemplary  
(Skip the question if you don't understand it)

1

2

3

4

5

14. Do we have cost management instructions in place or trainings on-going in our organization?

1 = not existing, 2 = occasionally, 3 = in almost all cases, 4 = completely, 5 = exemplary  
(Skip the question if you don't understand it)

1

2

3

4

5

15. Do we have project budgets determined and allowed in our organization?

1 = not existing, 2 = occasionally, 3 = in almost all cases, 4 = completely, 5 = exemplary  
(Skip the question if you don't understand it)

- 1
- 2
- 3
- 4
- 5

16. Do we make project quality management plans including quality metrics and testing plan in our organization?

1 = not existing, 2 = occasionally, 3 = in almost all cases, 4 = completely, 5 = exemplary  
(Skip the question if you don't understand it)

- 1
- 2
- 3
- 4
- 5

17. Do we have quality management instructions in place or trainings on-going in our organization?

1 = not existing, 2 = occasionally, 3 = in almost all cases, 4 = completely, 5 = exemplary  
(Skip the question if you don't understand it)

- 1
- 2
- 3
- 4
- 5

18. Do we define test cases in our organization?

1 = not existing, 2 = occasionally, 3 = in almost all cases, 4 = completely, 5 = exemplary  
(Skip the question if you don't understand it)

- 1
- 2
- 3
- 4
- 5

19. Do we make human resource management plans in our organization?

1 = not existing, 2 = occasionally, 3 = in almost all cases, 4 = completely, 5 = exemplary  
(Skip the question if you don't understand it)

- 1
- 2
- 3
- 4
- 5

20. Do we have human resource management instructions in place or trainings on-going in our organization?

1 = not existing, 2 = occasionally, 3 = in almost all cases, 4 = completely, 5 = exemplary  
(Skip the question if you don't understand it)

- 1
- 2
- 3
- 4
- 5

21. Do the project sponsor, project manager, steering committee members and project team members know their roles and responsibilities?

1 = not existing, 2 = occasionally, 3 = in almost all cases, 4 = completely, 5 = exemplary  
(Skip the question if you don't understand it)

- 1
- 2
- 3
- 4
- 5

22. Do we make project communication plans including communication needs and reporting methods in our organization?

1 = not existing, 2 = occasionally, 3 = in almost all cases, 4 = completely, 5 = exemplary  
(Skip the question if you don't understand it)

- 1
- 2
- 3
- 4
- 5

23. Do we have communication management instructions in place or trainings on-going in our organization?

1 = not existing, 2 = occasionally, 3 = in almost all cases, 4 = completely, 5 = exemplary  
(Skip the question if you don't understand it)

- 1
- 2
- 3
- 4
- 5

24. Do we identify project stakeholders in our organization?

1 = not existing, 2 = occasionally, 3 = in almost all cases, 4 = completely, 5 = exemplary  
(Skip the question if you don't understand it)

- 1
- 2
- 3
- 4
- 5

25. Do we make risk management plans in our organization?

1 = not existing, 2 = occasionally, 3 = in almost all cases, 4 = completely, 5 = exemplary  
(Skip the question if you don't understand it)

- 1
- 2
- 3
- 4
- 5

26. Do we have risk management instructions in place or trainings on-going in our organization?

1 = not existing, 2 = occasionally, 3 = in almost all cases, 4 = completely, 5 = exemplary  
(Skip the question if you don't understand it)

- 1
- 2
- 3
- 4
- 5



27. Do we perform qualitative risk analysis in our organization?

1 = not existing, 2 = occasionally, 3 = in almost all cases, 4 = completely, 5 = exemplary  
(Skip the question if you don't understand it)

1

2

3

4

5

28. Please add comments to complement your ratings:

Kirjoita vastaus

needed for reporting the	QUESTION	Average	Mode	Deviation	n
PROJECT INTEGRATION MANAGEMENT	1. Do we use gates (initiation, execution, deployment, review) to review and control project work, according to internal instructions of our organizations?	2	2	0,85	25
	2. Do we use lessons learned when defining further development for project management practices in our organization?	1,77	2	0,65	26
	3. Do we plan the project handover and have a maintenance/support plan in our organization?	2,22	2	0,7	27
PROJECT SCOPE MANAGEMENT	4. Do we make scope management plans (= what includes and what excludes & how scope changes are handled) in our organization?	2,37	2	0,79	27
	5. Do we have scope management instructions in place or trainings on-going?	1,58	1	0,76	26
	6. Do we collect requirements in our organization?	2,23	2	0,91	26
PROJECT TIME MANAGEMENT	7. Do we create work breakdown structures (WBS) in our organization?	1,86	1	0,79	21
	8. Do we make time management plans and project schedules with estimate activity durations in our organization?	2,48	2	0,98	27
	9. Do we have time management instructions in place or trainings on-going?	1,52	1	0,75	27
PROJECT COST MANAGEMENT	10. Do we have a process for controlling the schedule in our organization?	2,19	2	0,75	26
	11. Do we make cost management plans including defining how budget status is monitored in our organization?	2,43	2	0,9	23
	12. Do we have cost management instructions in place or trainings on-going?	1,84	1	0,94	25
PROJECT QUALITY MANAGEMENT	13. Do we have a project budgets determined in our organization?	2,92	2	1,1	24
	14. Do we make quality management plans including quality metrics and testing plan in our organization?	1,77	1	0,86	26
	15. Do we have quality management instructions in place or trainings on-going?	1,44	1	0,77	25
PROJECT HUMAN RESOURCE MANAGEMENT	16. Do we define test cases in our organization?	2,12	2	0,67	25
	17. Do we make human resource management plans in our organization?	2,04	1	0,9	27
	18. Do we have human resource management instructions in place or trainings on-going?	1,78	1	1,05	27
PROJECT COMMUNICATION MANAGEMENT	19. Do the project sponsor, project manager, steering committee member and project team member know their roles and responsibilities?	2,3	2	0,67	27
	20. Do we make communication plans including communication needs and creating reporting methods in our organization?	2,15	2	0,77	27
	21. Do we have communication management instructions in place or trainings on-going?	1,58	1	0,76	26
PROJECT RISK MANAGEMENT	22. Do we identify stakeholders in our organization?	2,58	2	0,99	26
	23. Do we make risk management plans in our organization?	2,19	2	0,92	27
	24. Do we have risk management instructions in place or trainings on-going?	1,81	1	1,02	26
	25. Do we perform qualitative risk analysis in our organization?	1,88	2	0,6	25

1 = not existing, 2 = occasionally, 3 = in almost all cases, 4 = completely, 5 = exemplary

